Zenator® Systems

ASSET INTEGRITY MANAGEMENT SYSTEM

Functionality, Technical and FAQs Information
Completion Management Software

Houston, Rio de Janeiro, Belfast, Norwich and Perth
May 2017

Table of Contents

Introduction

The document contains Zenator Functionality Information and some frequently asked questions. It has been produced for customers that want to develop an understanding of *Zenator* beyond the sales literature. Read this document after reading the General Information document and in conjunction with IT Information FAQs.

The references made to *Zenator* in this document are based on the following deployment options:

- *Zenator Live!*, the Falcon-hosted solution from Belfast, Northern Ireland
- *Zenator Systems*, the Customer-hosted, Installed solution

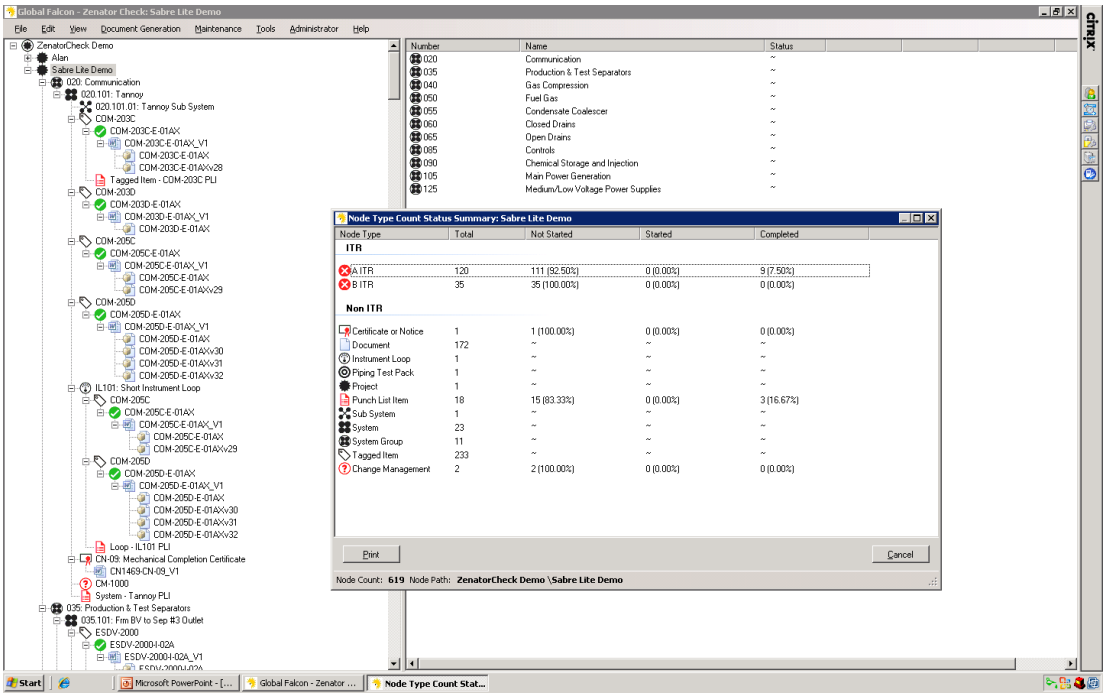
Zenator Systems and *Zenator Live!* are hereinafter referred to as "*Zenator*". Global Falcon Americas, Inc. (GFA), is the Houston-based, US affiliate of Falcon Global Limited (FGL), hereinafter "Falcon".

The Software Products Currently Available

- ***Zenator Systems**, comprising*
  - *Check*
  - *Launch*
  - *Allocator*
  - *Reports Plus*
  - *Reporting Dashboard*
  - *Walkdown Capture & Check Synch*
  - *Administrator*

Zenator Check

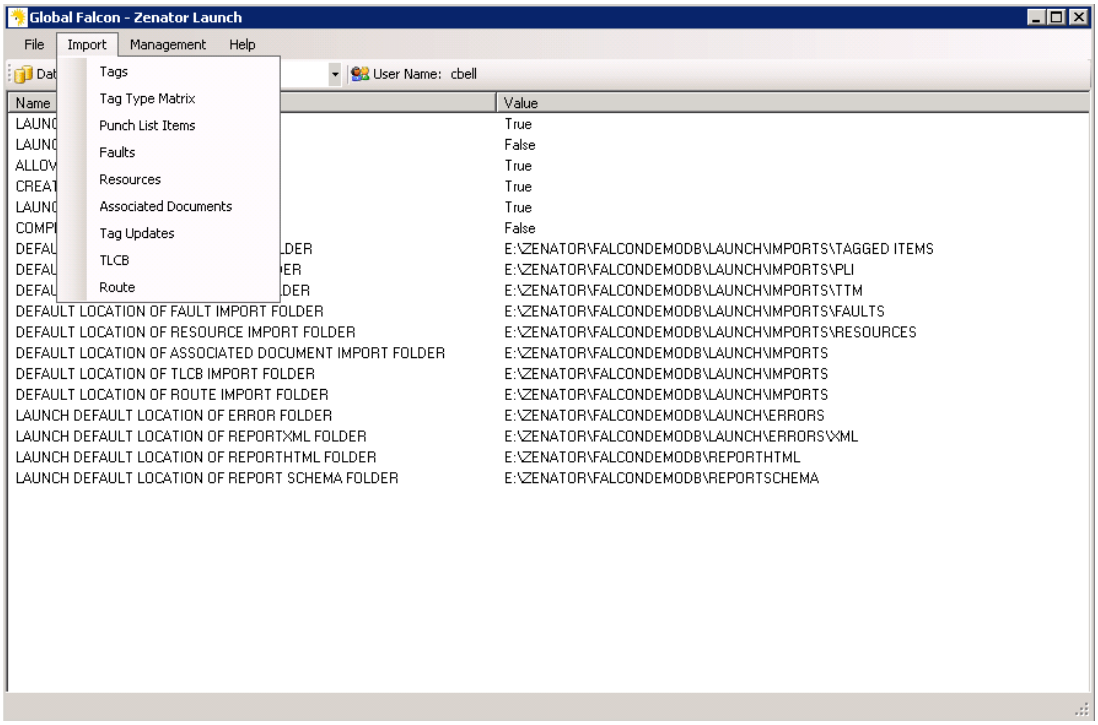
Zenator Check is the primary module that makes up Zenator. Zenator Check allows for a user friendly and controlled way to control, track, manage and report on the entire project.



Zenator Launch

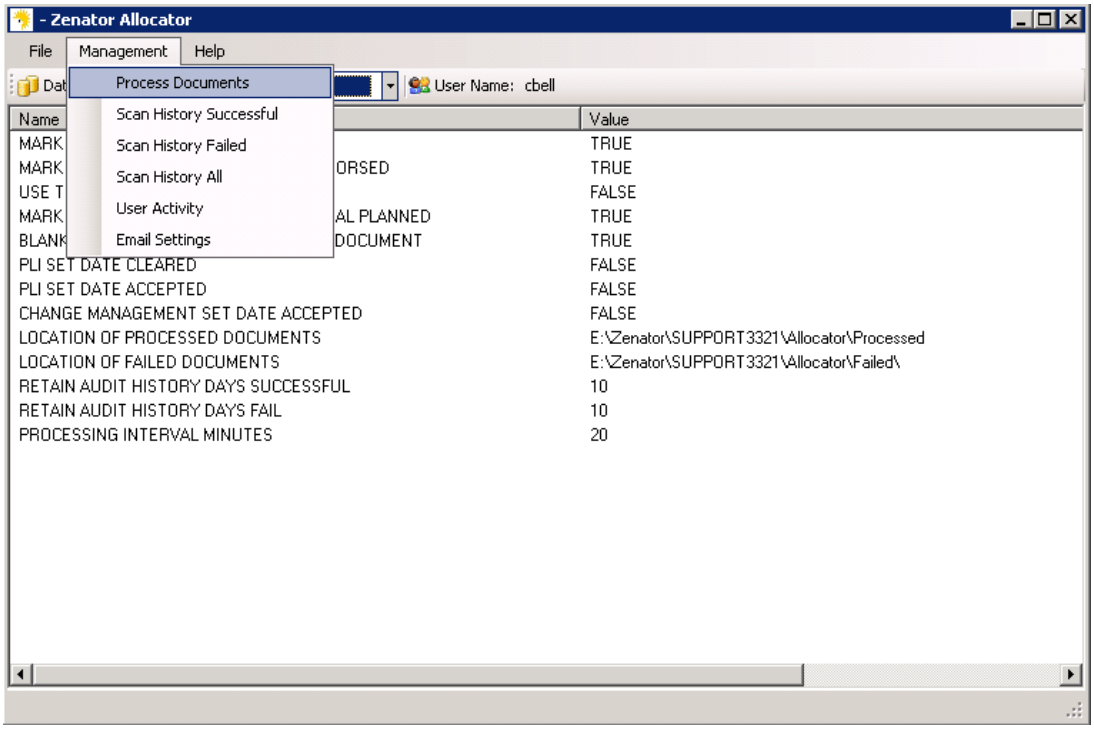
Zenator Launch is an import tool which allows a variety of data to be imported into Zenator in a very controlled manner from either Microsoft Excel or XML files. The categories of data that can be imported are as follows:

- *Tagged Items*
- *Tagged Items Updates*
- *Test Packs, Instrument Loops & Electrical Circuits*
- *Punch List Items*
- *Tag Type Matrix*
- *Documents (links to external documents)*
- *Route (planning information)*
- *Punch List Faults*
- *Resources*
- *Certificates*
- *ITRs*
- *Isolations*



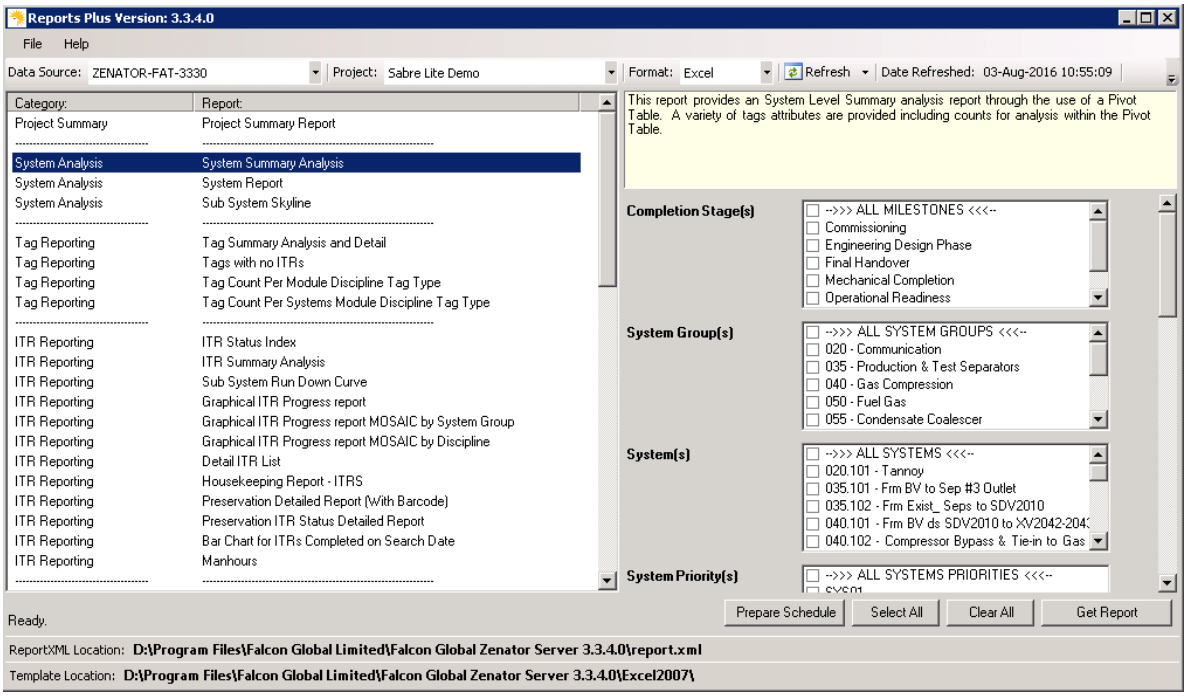
Zenator Allocator

Zenator Allocator processes all completed documents (AITR Checksheets, BITR Checksheets, Certificates for example) that originated from Zenator. All generated documents within Zenator contain bar codes which allows for the easy processing of the completed documents in electronic form back into Zenator.



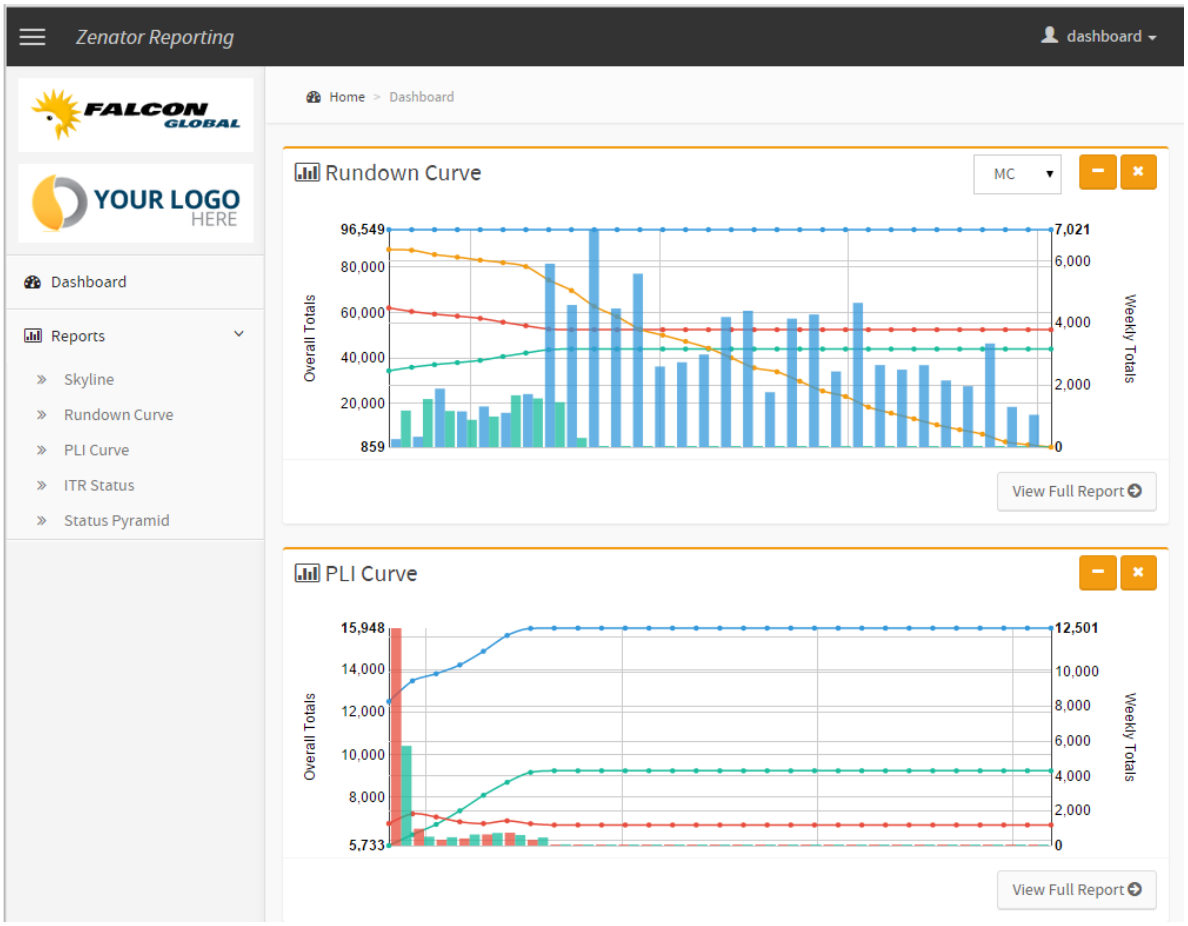
Zenator Reports Plus

Zenator Reports Plus is a comprehensive reporting tool which allows the user to produce a wide variety of Management, Graphical and Detailed reports covering all aspects of the information within Zenator.



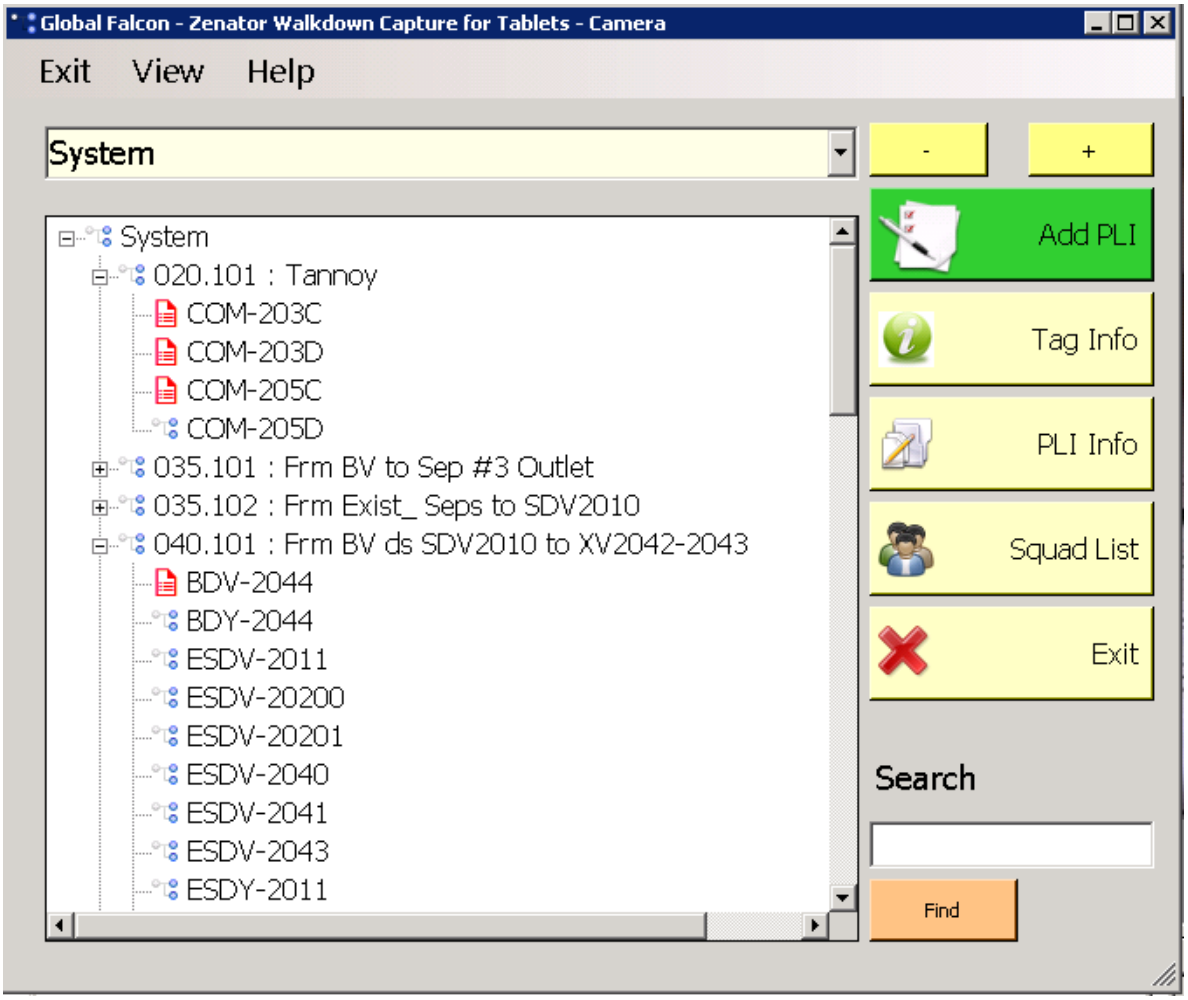
Zenator Dashboard

Zenator Dashboard is a Browser based reporting tool allowing important key performace indicators to be reviewed using any mobile device (Smart Phone, Tablet, etc) with an internet connection.



Zenator Walkdown Capture & Check Synch

Zenator Walkdown Capture is a Microsoft Windows Tablet module which allows for the electronic capture of Punch List Item data and images during walkdown inspections. Punch List Items can be accurately captured quickly and efficiently in the field. A server side module Check Synch controls the preparation and processing of the data to and from the Tablet device.



Zenator Administrator

Zenator Administrator is provided to allow the administrative tasks within Zenator to be controlled under a menu driven utility. Zenator Administrator allows the following tasks to be easily controlled:

- *Project Database creation*
- *Project Database patching (following the release of new Zenator upgrade versions)*
- *Creation of Zenator Administrators*
- *Creation of Data Connections (referred to as Data Sources within Zenator)*

Business Requirements

1.1 User Friendliness

Software needs to be simple to learn how to use and easy to maintain familiarity over time.

We believe that true user friendliness and the ability of users to retain their knowledge of our software is a function of several variables, not simply the ergonomic design of a User Interface. From the outset, and with a legacy product providing many lessons learned, we declared three abiding principles in the design and delivery of Zenator:

- *User Friendliness*
  - *A project hierarchy tree structure*
  - *Be intuitive to our key Stakeholders*
  - *Logical workflows, interesting icons with traffic light status*
- *A Philiosophy of Train the Trainer*
  - *Layered training for all levels of users*
  - *Concentrate on Power Users and Super Users*
  - *Provide mentoring and good support*
- *Configurable software*
  - *Negate the need for Customisation*
  - *Ability to wrap around customers' workflows*
  - *Able to develop new ways of working*

1. *We resolved that Zenator must be **User Friendly**. It must speak to the needs of Engineers and Managers intimately involved in Commissioning & Startup, providing them with the information they need to do their job. To all the Stakeholders that provided our user base, it must be intuitive, effective in delivery and where possible provide an elegant solution.*

2. *We already knew there are different types of users on a project, each with different needs. Our philiosophy has always been to **Train the Trainer** since we knew that most organisations understand the need to retain knowledge and be a learning organisation. We intimately understood the need for a fairly flat hierarchy of users, such as:*
   - *User – Engineer or Technician, probably from outside the Commissioning Team*
   - *Specialist User – Engineer, Technician or Technical Clerk, probably from the Commissioning Team*
   - *Power User – specially trained engineer, key person on small to mega projects*
   - *Super User / Administrator – specially trained, experienced engineer, on mega to giga projects*

   Our approach was to focus on the Power Users and Super Users, the people that are the knowledge base for Zenator on a project. Training is given to all levels of users and is delivered in a layering process, starting with non-users and building from there. Our 5-day training programs concentrate on providing the carefully chosen Power Users and Super Users with the skills and expertise needed to mentor and guide all other users on the project. By the end of the course they are not experts, but to use an analogy they are novice drivers that have passed a driving test and are competent to sit behind the wheel; they are not yet expert drivers and will need mentoring for some time.

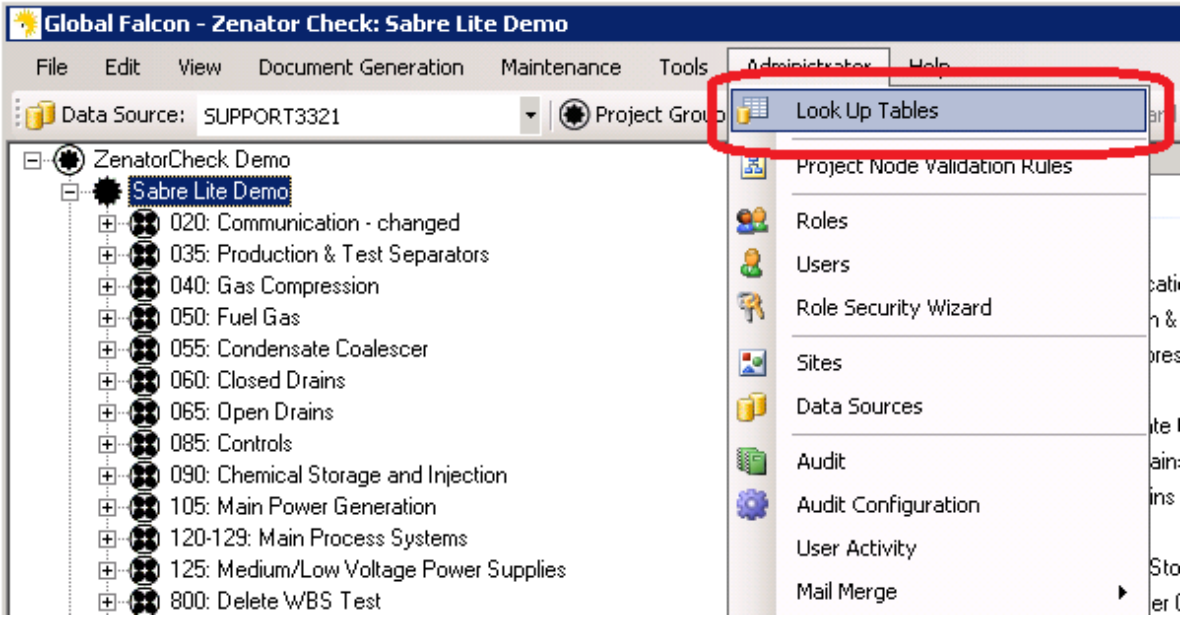
3. ***Configurable** is a frequently recurring word used to describe Zenator, many of its features and functionality. In 2006 set out to design Zenator on the basis that it would be configurable, and therefore able to wrap around the work processes of most, if not all, of our customers. We reasoned*

that if our objective to be configurable, thus meeting the needs of our customers, is successful, then customers would not require much, if any, customisation. Since its commercial release in November 2009, we have done very little paid customisation work in Zenator on behalf of a particular customer.

1.2 Configuration – Lookup Codes

Provides a repository for all commonly used engineering attributes to ensure consistent high quality data is entered and maintained within the system.

Zenator contains a "Lookup" area which is part of the Zenator administrative function. This allows a compreshive number of predefined attributes such as Disciplines, Tag Types, Punch List Categories etc to be pre-defined and easily maintained. This ensures data is entered to Zenator is consistient which in turn allows for meanfully analysis of the data within Zenator.

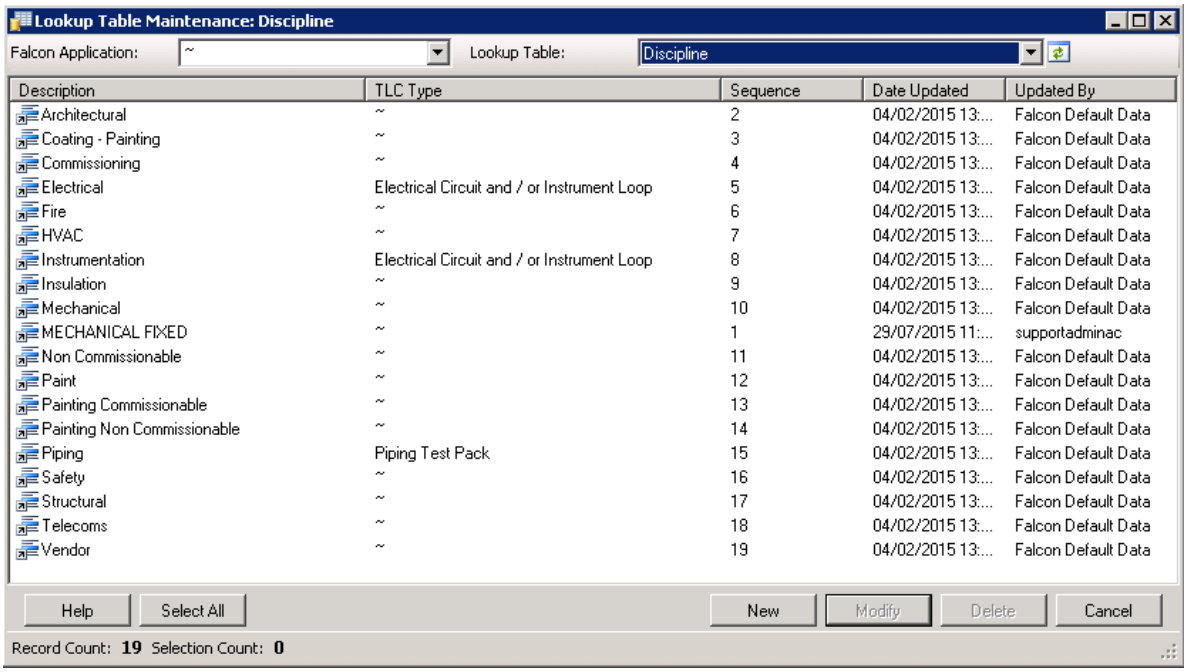


This lookup area allows for the following codes to be maintained:

- *Certificate Categories*
- *Certificate or Notice Types*
- *Change Management Types*
- *Disciplines*
- *Punch List Items Fault Codes*
- *Preservation Frequency Types*
- *Inhibit Types*
- *Isolation Types*
- *Punch List Items Activity Types*
- *Punch List Items Categories*
- *Punch List Items Statuses*
- *System Priorities*
- *Tag Modules*

- *Tag Services*
- *Tag Statuses*
- *Tag Types*
- *Tag Type Mains*
- *Technical Query (Change Management) Actions*
- *Unit of Measure*

Disciplines are maintained as follows:



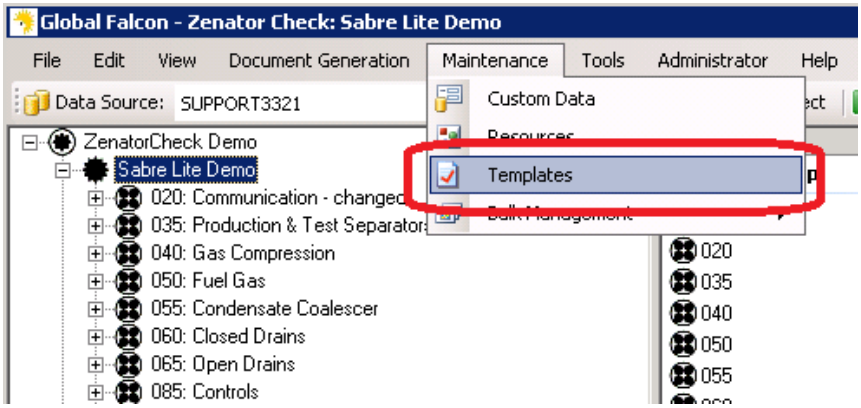
Within each maintenance screen a user can utilise the following options:

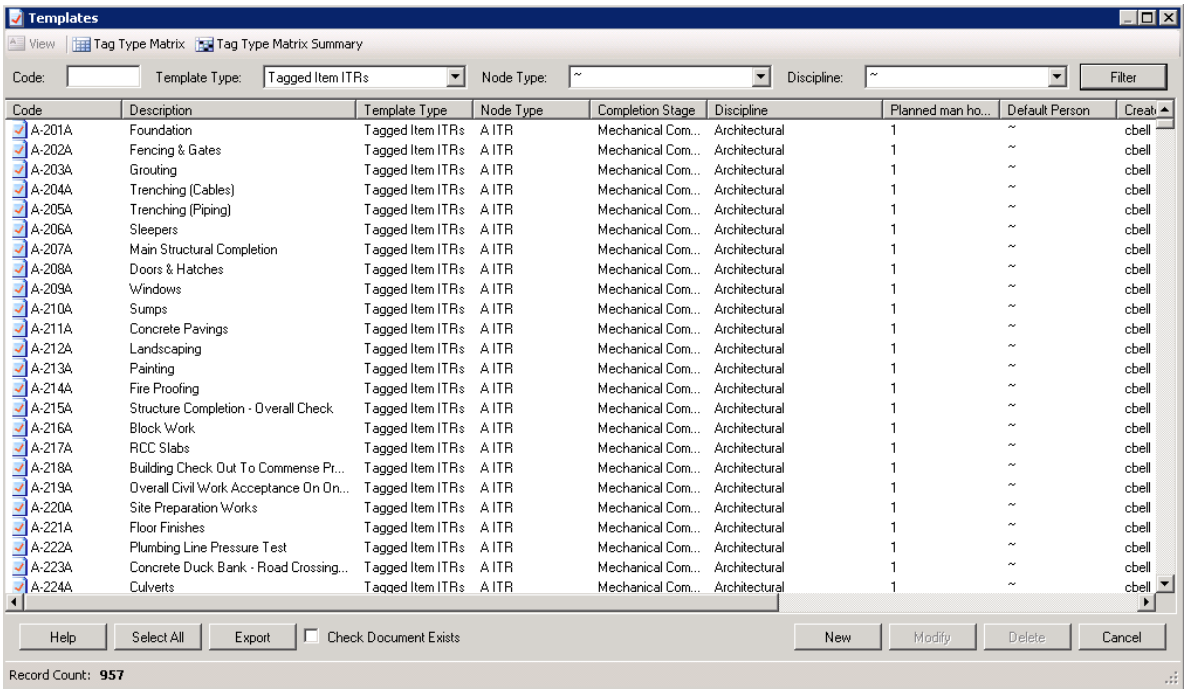
- *New – allows the user to create a new record*
- *Modify – allows the user to modify (single or multiple) records*
- *Delete – allows the user to delete (single or multiple) records*

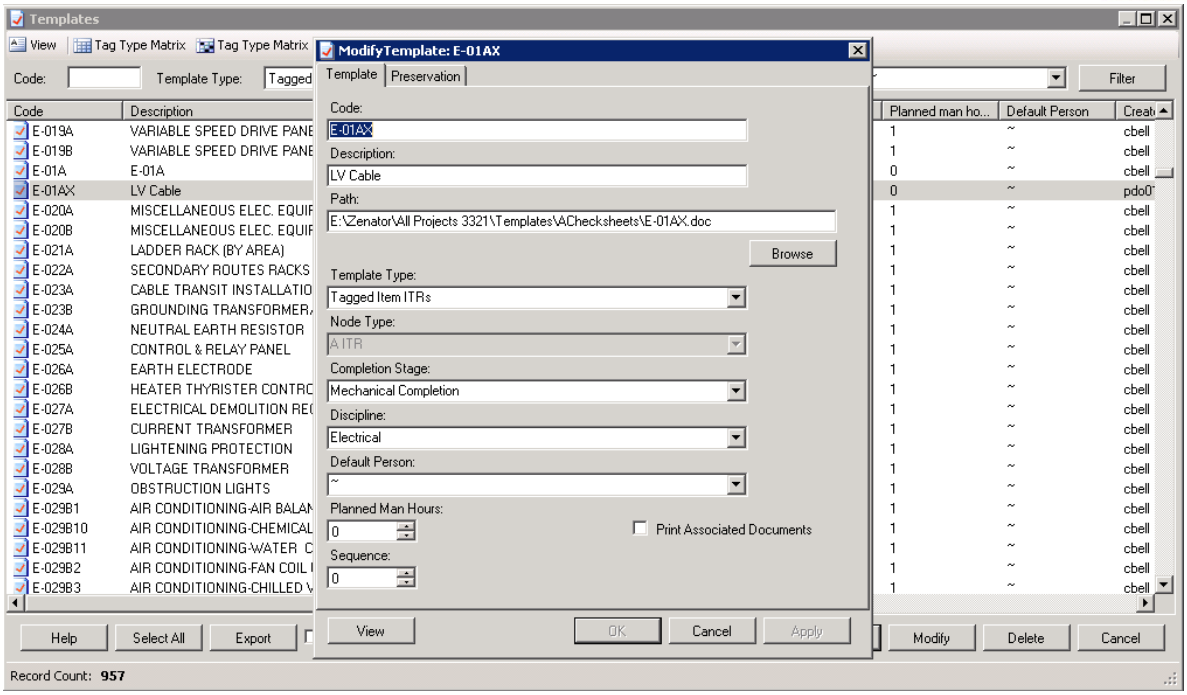
1.3 Configuration – Document Templates

Provides a repository for all generated document templates.

Zenator contains a "Template" area which is part of the Zenator administrative function. This allows templates to be created and maintained for all generated documents within Zenator. The templates registered within Zenator are linked to underlyng Microsoft Word documents.







The types of Templates that are maintained within Zenator are:

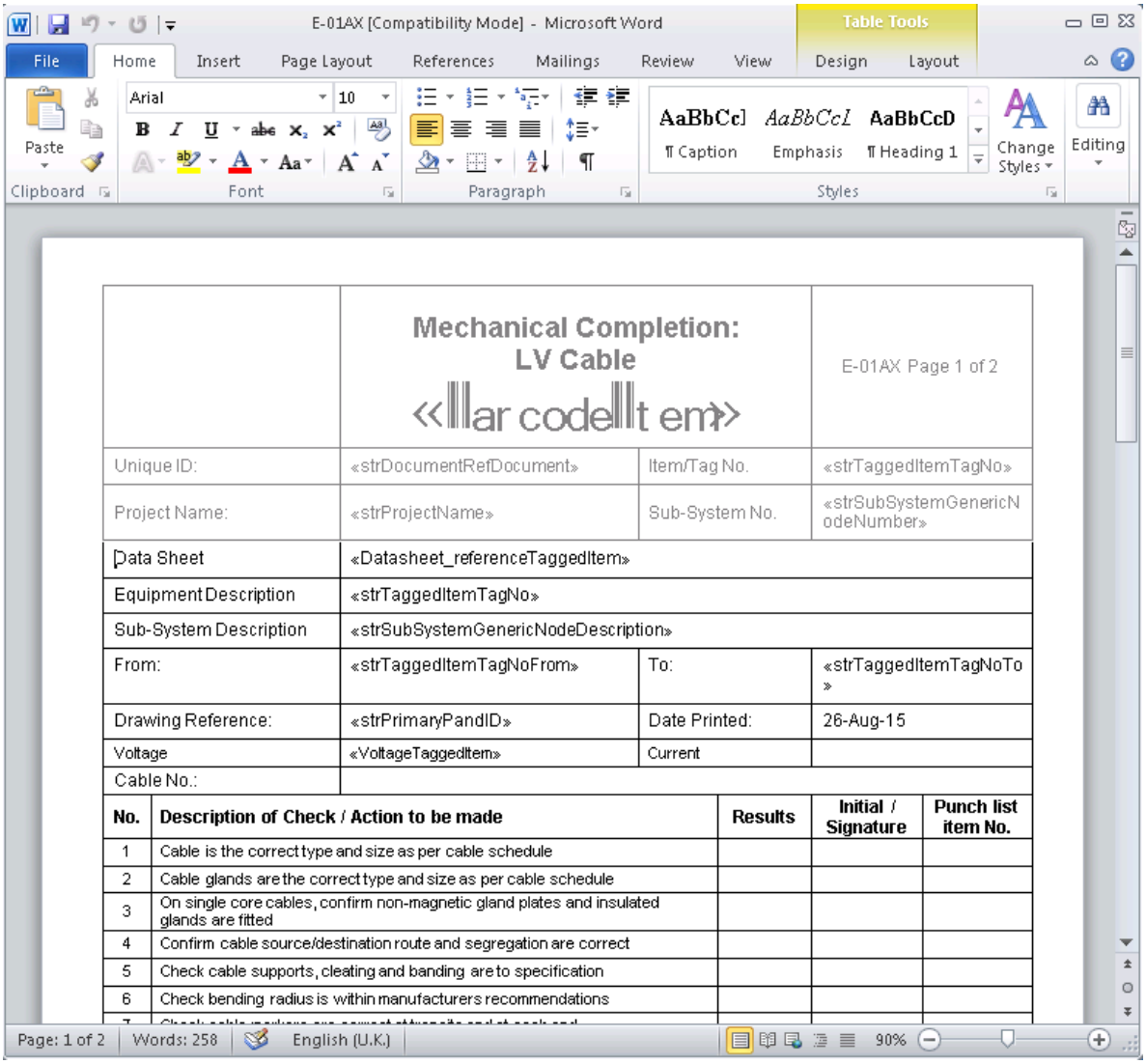
- *A ITR Checksheets*
- *B ITR Checksheets*
- *C ITR Checksheets*
- *E ITR Checksheets*
- *P ITR Checksheets (Preservations)*
- *V ITR Checksheets (Vendor)*
- *Electrical Circuit Checksheets*
- *Instrument Loop Checksheets*
- *Piping Test Pack Checksheets*
- *Bulk A ITR Checksheets*
- *Bulk B ITR Checksheets*
- *Certificate and Notices*
- *Punch List Items*
- *Change Management (Site Queries, Technical Queries, Non Conformance Reports, etc)*

Within the Template maintenance screen a user can utilise the following options:

- *New – allows the user to create a new record*
- *Modify – allows the user to modify (single or multiple) records*
- *Delete – allows the user to delete (single or multiple) records*
- *Export – allows the user to export the filter list to a CSV (comma delimated file)*

The underlying template word documents can also be modified as required using Microsoft Word.

An example of an Electrical AITR Checksheet Template is:



E-01AX [Compatibility Mode] - Microsoft Word

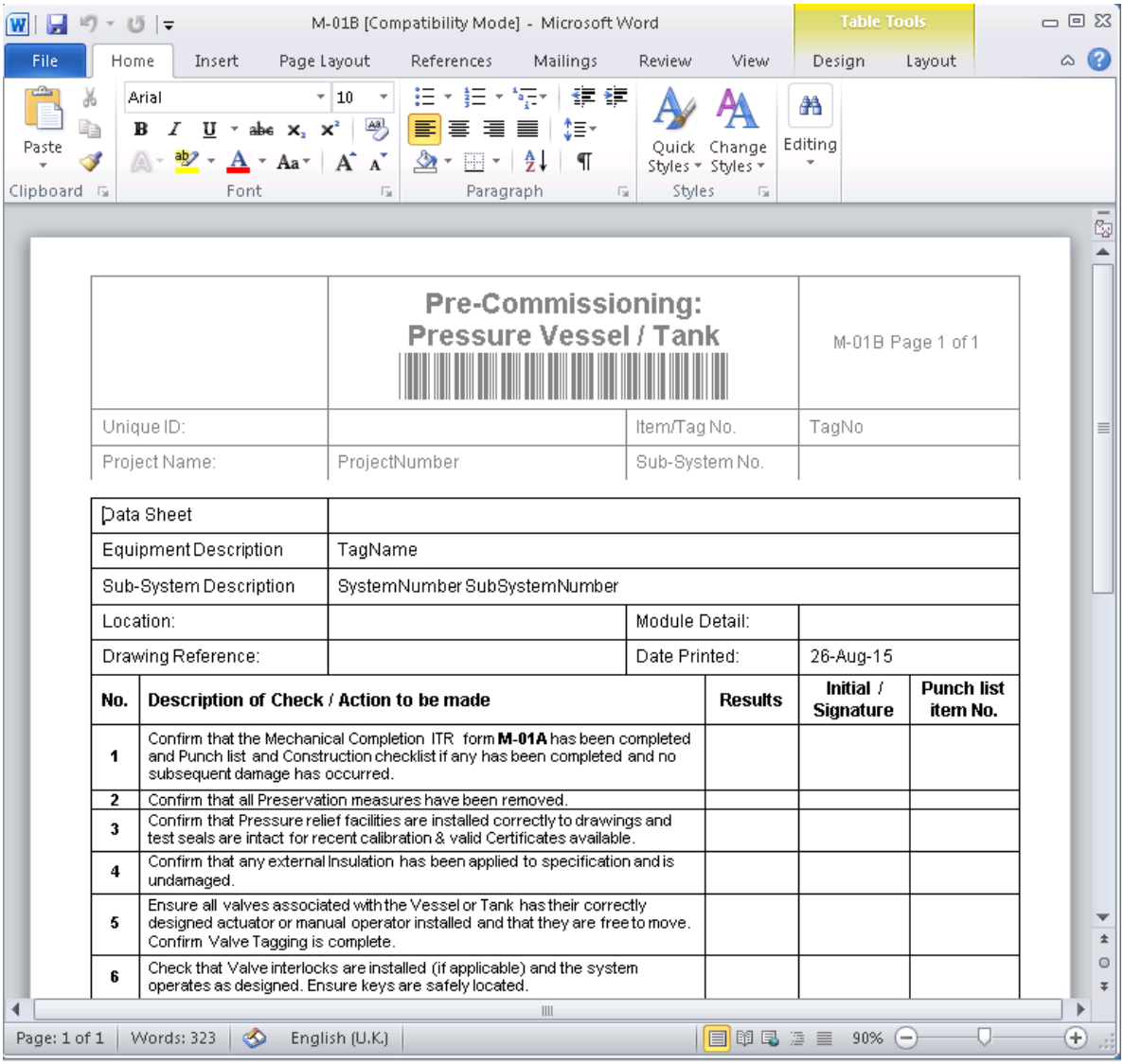
	Mechanical Completion: LV Cable «Bar code Item»		E-01AX Page 1 of 2
Unique ID:	«strDocumentRefDocument»	Item/Tag No.	«strTaggedItemTagNo»
Project Name:	«strProjectName»	Sub-System No.	«strSubSystemGenericNodeNumber»

Data Sheet	«Datasheet_referenceTaggedItem»		
Equipment Description	«strTaggedItemTagNo»		
Sub-System Description	«strSubSystemGenericNodeDescription»		
From:	«strTaggedItemTagNoFrom»	To:	«strTaggedItemTagNoTo»
Drawing Reference:	«strPrimaryPandID»	Date Printed:	26-Aug-15
Voltage	«VoltageTaggedItem»	Current	
Cable No.:			

No.	Description of Check / Action to be made	Results	Initial / Signature	Punch list item No.
1	Cable is the correct type and size as per cable schedule			
2	Cable glands are the correct type and size as per cable schedule			
3	On single core cables, confirm non-magnetic gland plates and insulated glands are fitted			
4	Confirm cable source/destination route and segregation are correct			
5	Check cable supports, cleating and banding are to specification			
6	Check bending radius is within manufacturers recommendations			

Page: 1 of 2 | Words: 258 | English (U.K.) | 90%

An example of a Mechanical BITR Checksheet Template is:



M-01B [Compatibility Mode] - Microsoft Word

	Pre-Commissioning: Pressure Vessel / Tank	M-01B Page 1 of 1

Unique ID:		Item/Tag No.	TagNo
Project Name:	ProjectNumber	Sub-System No.	

Data Sheet	
Equipment Description	TagName
Sub-System Description	SystemNumber SubSystemNumber
Location:	Module Detail:
Drawing Reference:	Date Printed: 26-Aug-15

No.	Description of Check / Action to be made	Results	Initial / Signature	Punch list item No.
1	Confirm that the Mechanical Completion ITR form **M-01A** has been completed and Punch list and Construction checklist if any has been completed and no subsequent damage has occurred.			
2	Confirm that all Preservation measures have been removed.			
3	Confirm that Pressure relief facilities are installed correctly to drawings and test seals are intact for recent calibration & valid Certificates available.			
4	Confirm that any external Insulation has been applied to specification and is undamaged.			
5	Ensure all valves associated with the Vessel or Tank has their correctly designed actuator or manual operator installed and that they are free to move. Confirm Valve Tagging is complete.			
6	Check that Valve interlocks are installed (if applicable) and the system operates as designed. Ensure keys are safely located.			

Page: 1 of 1 | Words: 323 | English (U.K.) | 90%

The Microsoft Word document contains Mail Merge fields which are utilized by Zenator during the ITR Checksheet creation process.

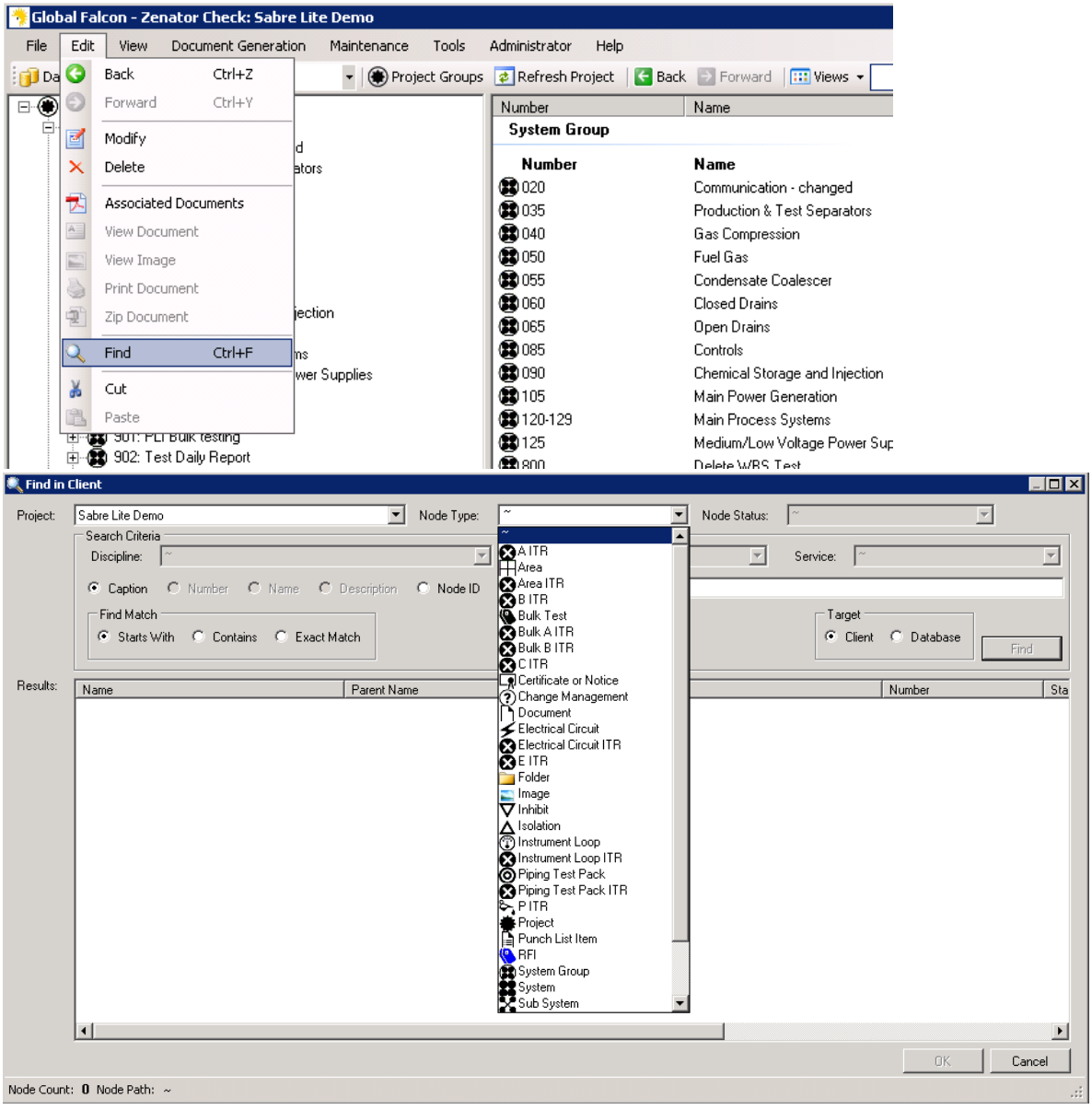
1.4 Search Functions

Detail the various search functions within Zenator.

Zenator contains a number of search functions to allow the user to find data:

Find Option

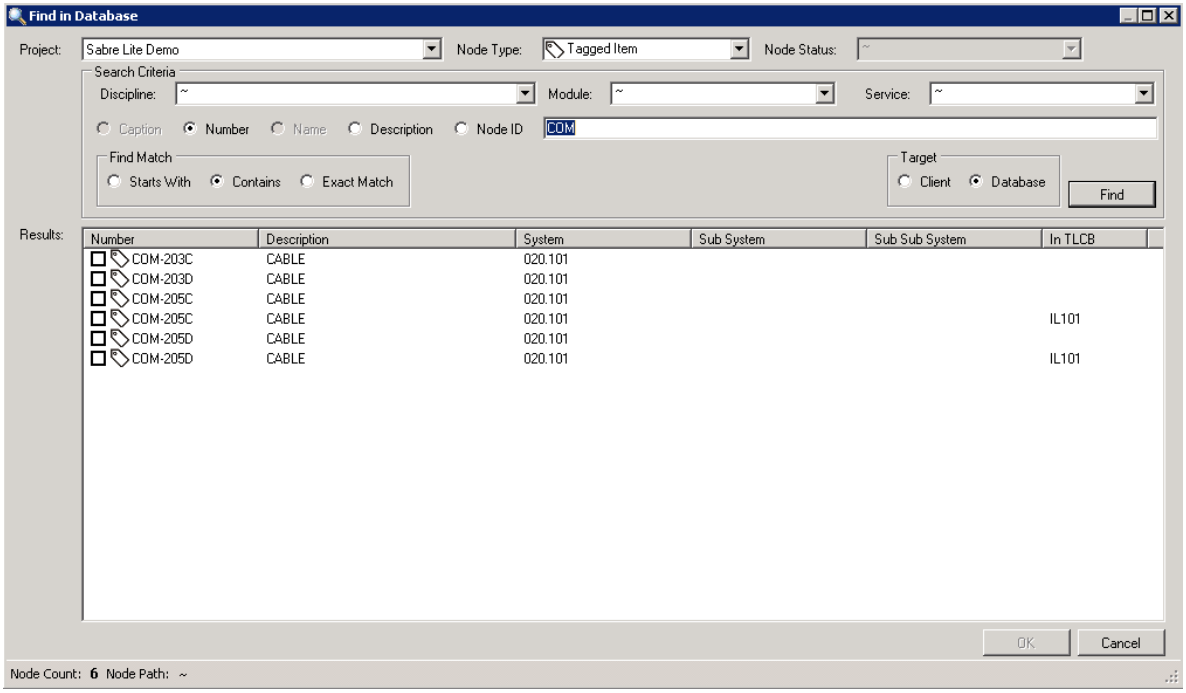
Zenator Check contains a extensive Find option which allows a user to search for all the different node types within Zenator.



Depending on the Node Type various other attributes are available:

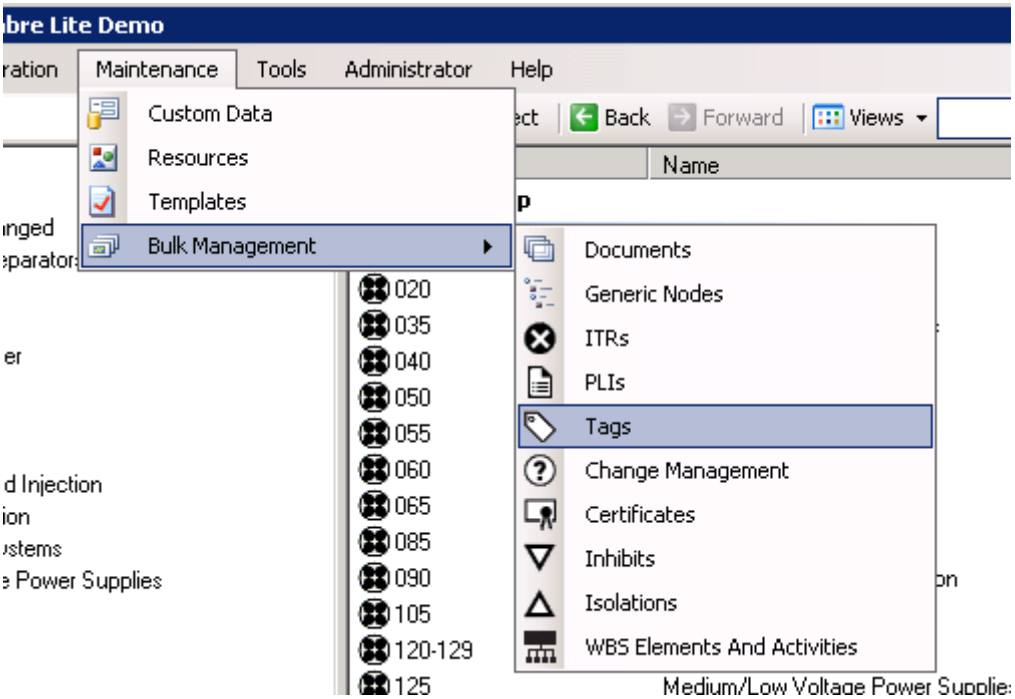
- *Node Status*
- *Discipline*
- *Tag Module*
- *Tag Service*
- *Find Match (Starts With, Contains & Exact Match)*

Search results show all matching records within the database.

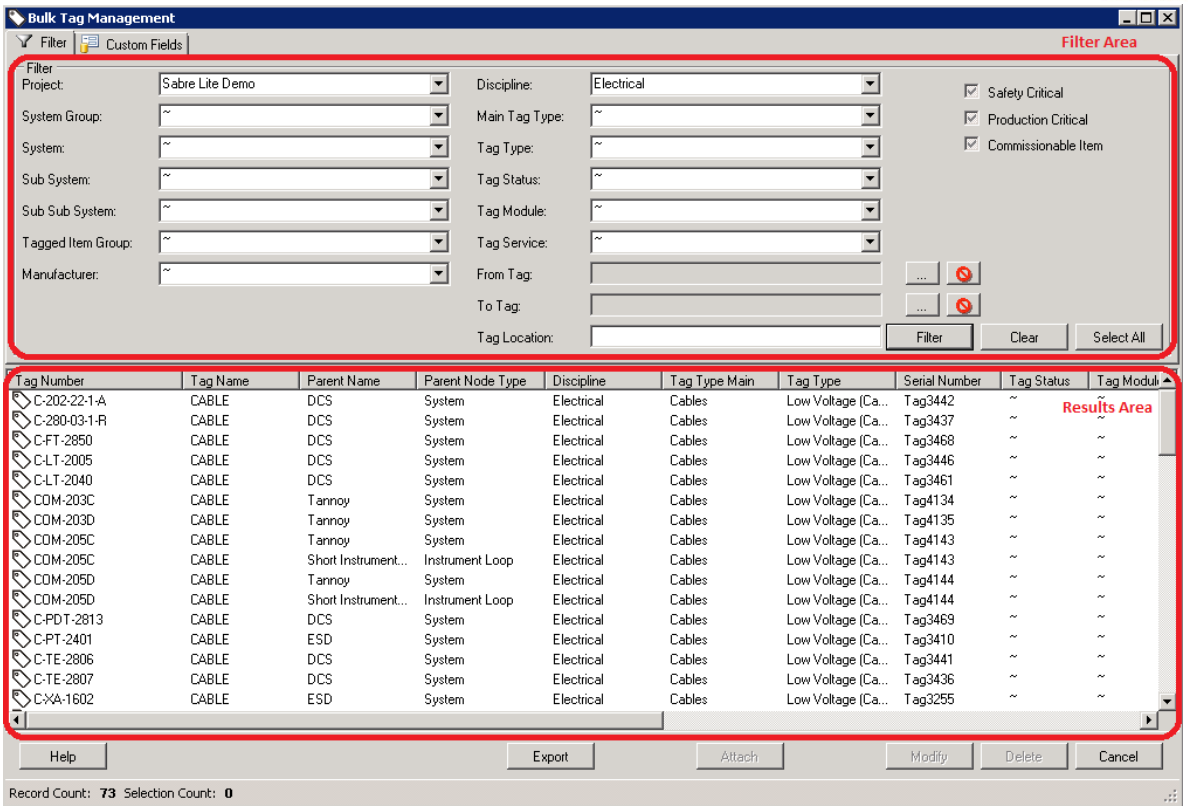


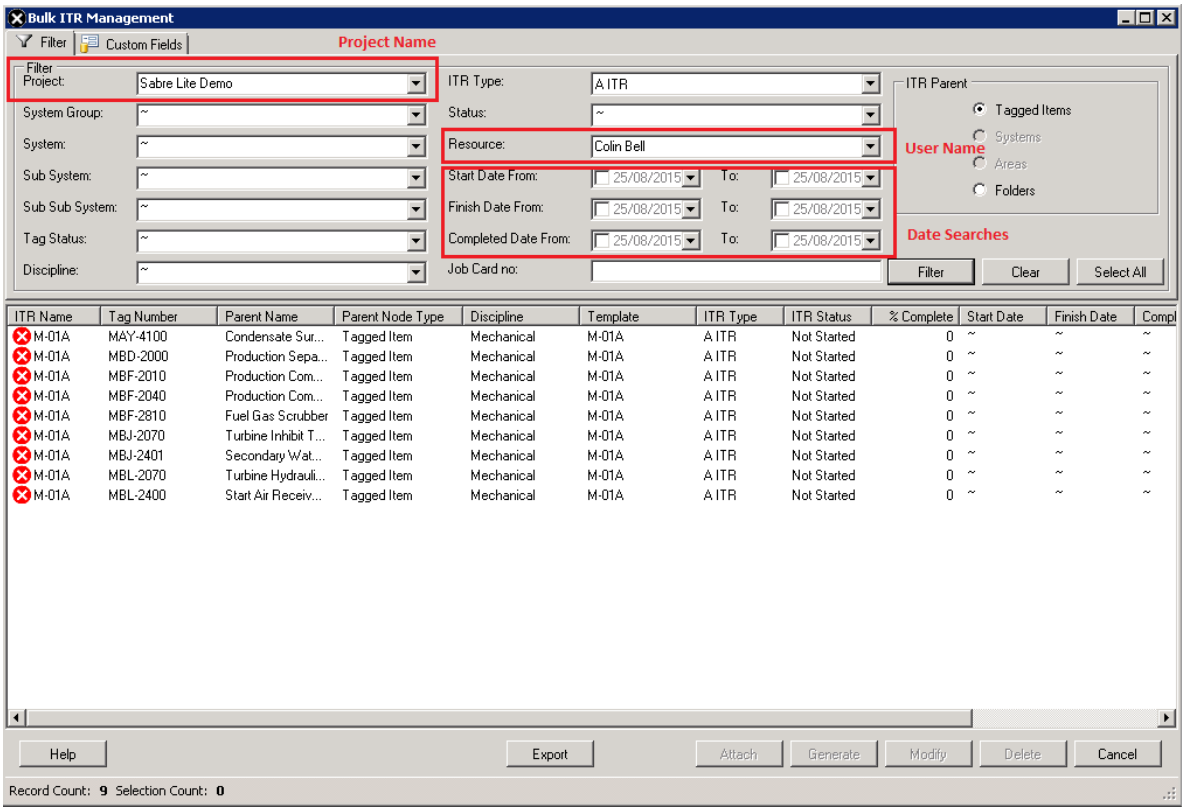
Bulk Management Screens – Find Option

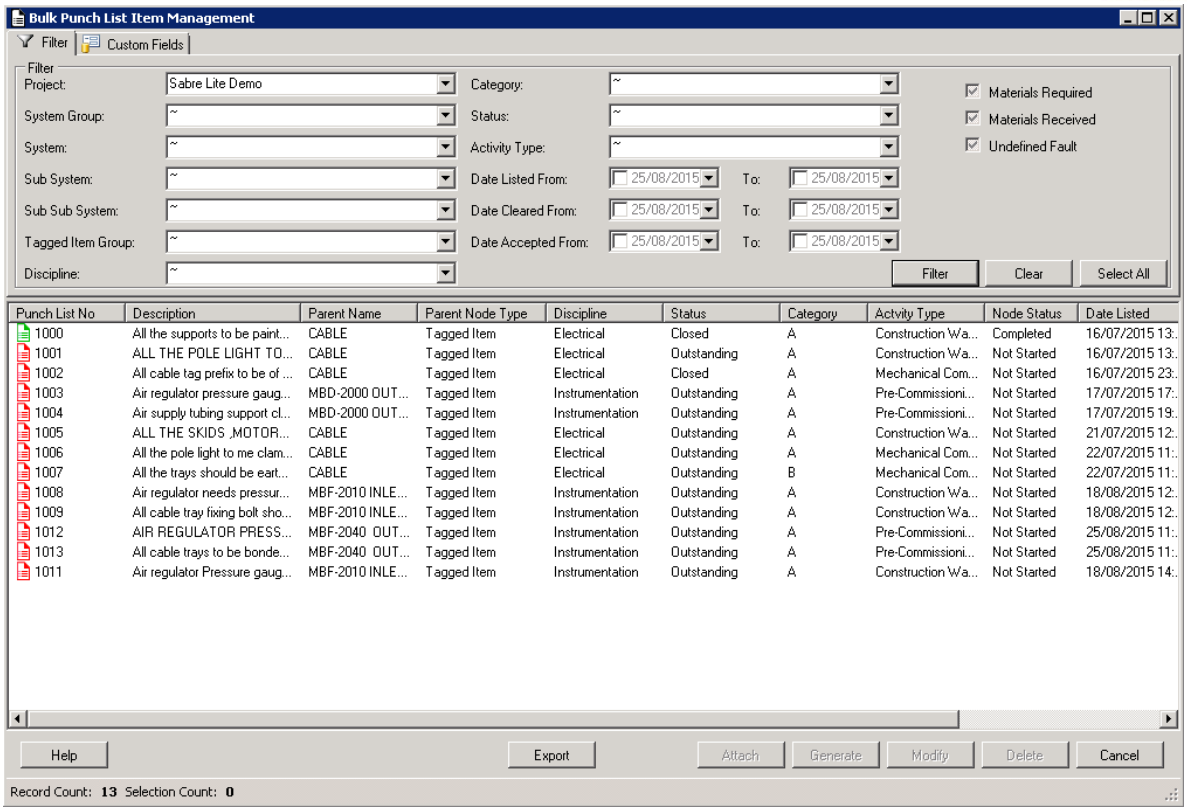
Zenator Check contains a number of Bulk Management screens which allow a user to perform actions on data within Zenator. The available Bulk Management screens are:



Each Bulk Management screen contains extensive search / filtering criteria to allow a user to search for data. This includes the ability to search using Custom Fields:


Bulk Tag Management
Filter
Custom Fields
Filter Area
Filter
Project: Sabre Lite Demo
System Group:
System:
Sub System:
Sub Sub System:
Tagged Item Group:
Manufacturer:
Discipline: Electrical
Main Tag Type:
Tag Type:
Tag Status:
Tag Module:
Tag Service:
From Tag:
To Tag:
Tag Location:
Safety Critical
Production Critical
Commissionable Item
Filter
Clear
Select All
Tag Number | Tag Name | Parent Name | Parent Node Type | Discipline | Tag Type Main | Tag Type | Serial Number | Tag Status | Tag Modul
C-202-22-1-A | CABLE | DCS | System | Electrical | Cables | Low Voltage (Ca... | Tag3442
C-280-03-1-R | CABLE | DCS | System | Electrical | Cables | Low Voltage (Ca... | Tag3437
C-FT-2850 | CABLE | DCS | System | Electrical | Cables | Low Voltage (Ca... | Tag3468
C-LT-2005 | CABLE | DCS | System | Electrical | Cables | Low Voltage (Ca... | Tag3446
C-LT-2040 | CABLE | DCS | System | Electrical | Cables | Low Voltage (Ca... | Tag3461
COM-203C | CABLE | Tannoy | System | Electrical | Cables | Low Voltage (Ca... | Tag4134
COM-203D | CABLE | Tannoy | System | Electrical | Cables | Low Voltage (Ca... | Tag4135
COM-205C | CABLE | Tannoy | System | Electrical | Cables | Low Voltage (Ca... | Tag4143
COM-205C | CABLE | Short Instrument... | Instrument Loop | Electrical | Cables | Low Voltage (Ca... | Tag4143
COM-205D | CABLE | Tannoy | System | Electrical | Cables | Low Voltage (Ca... | Tag4144
COM-205D | CABLE | Short Instrument... | Instrument Loop | Electrical | Cables | Low Voltage (Ca... | Tag4144
C-PDT-2813 | CABLE | DCS | System | Electrical | Cables | Low Voltage (Ca... | Tag3469
C-PT-2401 | CABLE | ESD | System | Electrical | Cables | Low Voltage (Ca... | Tag3410
C-TE-2806 | CABLE | DCS | System | Electrical | Cables | Low Voltage (Ca... | Tag3441
C-TE-2807 | CABLE | DCS | System | Electrical | Cables | Low Voltage (Ca... | Tag3436
C-XA-1602 | CABLE | ESD | System | Electrical | Cables | Low Voltage (Ca... | Tag3255
Results Area
Help
Export
Attach
Modify
Delete
Cancel
Record Count: 73 Selection Count: 0


Bulk ITR Management
Filter
Custom Fields
Project Name
Filter
Project: Sabre Lite Demo
System Group:
System:
Sub System:
Sub Sub System:
Tag Status:
Discipline:
ITR Type: A ITR
Status:
Resource: Colin Bell
User Name
Start Date From: 25/08/2015 To: 25/08/2015
Finish Date From: 25/08/2015 To: 25/08/2015
Completed Date From: 25/08/2015 To: 25/08/2015
Date Searches
Job Card no:
ITR Parent
Tagged Items
Systems
Areas
Folders
Filter
Clear
Select All
ITR Name | Tag Number | Parent Name | Parent Node Type | Discipline | Template | ITR Type | ITR Status | % Complete | Start Date | Finish Date | Compl
M-01A | MAY-4100 | Condensate Sur... | Tagged Item | Mechanical | M-01A | A ITR | Not Started | 0
M-01A | MBD-2000 | Production Sepa... | Tagged Item | Mechanical | M-01A | A ITR | Not Started | 0
M-01A | MBF-2010 | Production Com... | Tagged Item | Mechanical | M-01A | A ITR | Not Started | 0
M-01A | MBF-2040 | Production Com... | Tagged Item | Mechanical | M-01A | A ITR | Not Started | 0
M-01A | MBF-2810 | Fuel Gas Scrubber | Tagged Item | Mechanical | M-01A | A ITR | Not Started | 0
M-01A | MBJ-2070 | Turbine Inhibit T... | Tagged Item | Mechanical | M-01A | A ITR | Not Started | 0
M-01A | MBJ-2401 | Secondary Wat... | Tagged Item | Mechanical | M-01A | A ITR | Not Started | 0
M-01A | MBL-2070 | Turbine Hydrauli... | Tagged Item | Mechanical | M-01A | A ITR | Not Started | 0
M-01A | MBL-2400 | Start Air Receiv... | Tagged Item | Mechanical | M-01A | A ITR | Not Started | 0
Help
Export
Attach
Generate
Modify
Delete
Cancel
Record Count: 9 Selection Count: 0



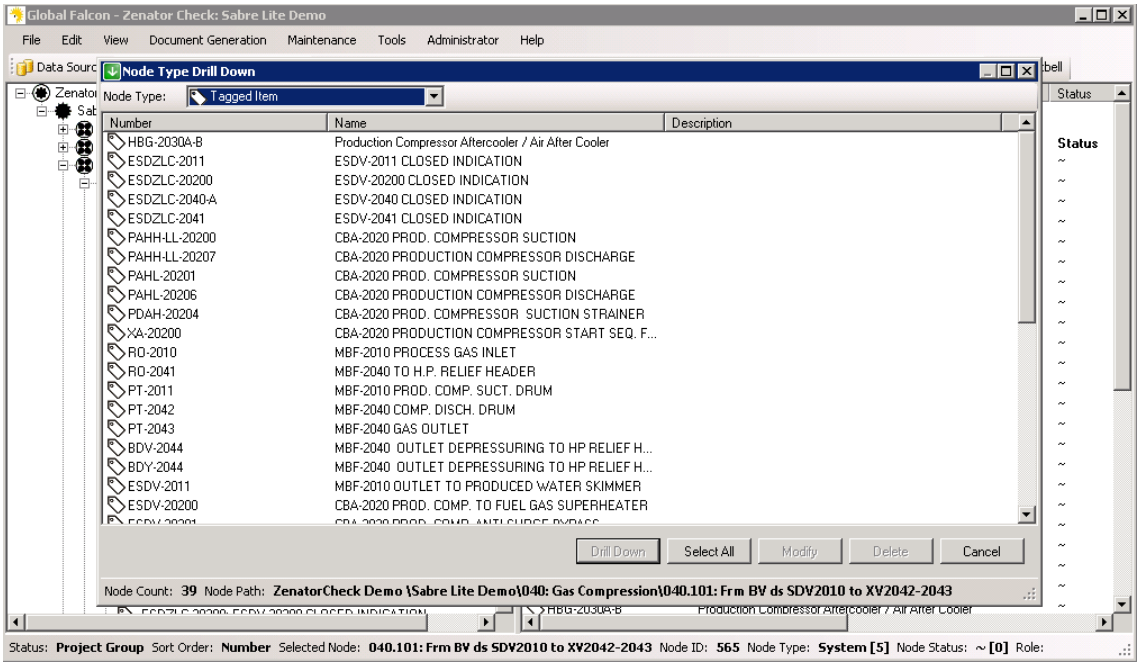
Within the Bulk Management screen a user can utilise the following options:

- *Filter – allows the user to enter filter criteria and search for matching records*
- *Export – allows the user to export the filter list to a CSV (comma delimated file)*
- *Attach – allows the user to attach external documents to the chosen records (single or multiple)*
- *Modify – allows the user to modify (single or multiple) records*
- *Delete – allows the user to delete (single or multiple) records*

Some screens have specialized options such as the "Generate" option within the above Punch List Item screen pictured above. In the case of the Generate option a user can generate the underlying PLI Template documents.

Drill Down Option

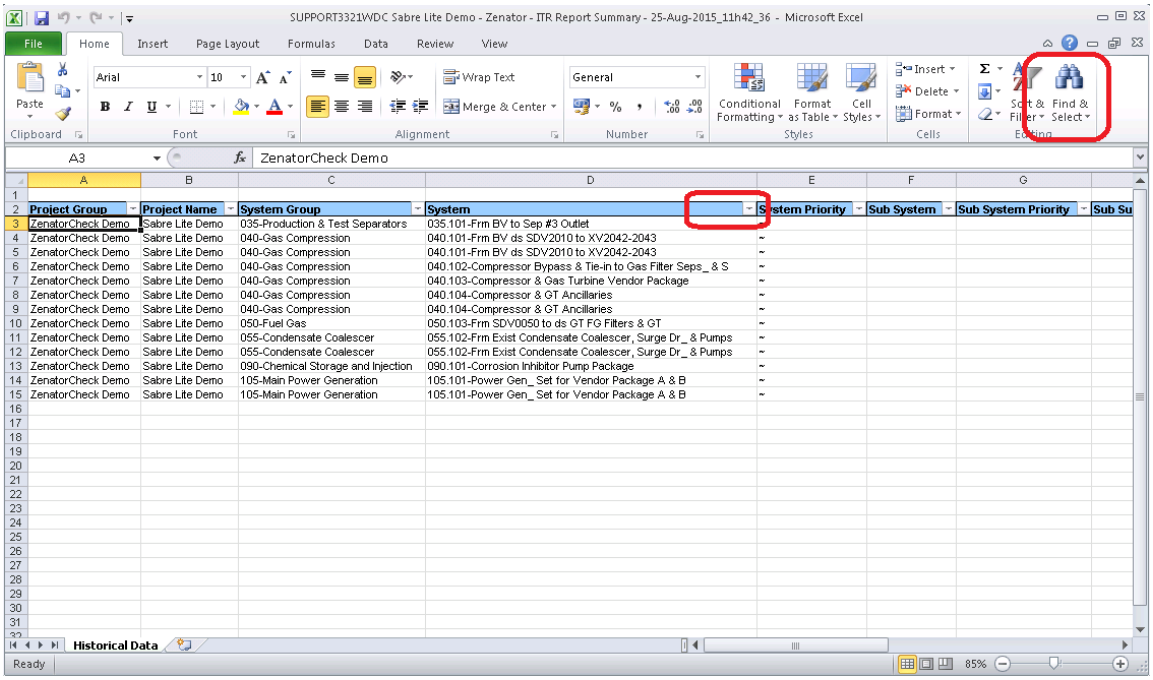
Zenator Check contains a option "Drill Down" which allows a user to search for related data under any branch of the tree. In the example below the Drill Down is being used to search for Tagged Items under the System 040.101.



A number of options are available for the display records using a Right Click menu.

Reporting Searches

Zenator Reports Plus exports all reports to Microsoft Excel files. The resulting reports can also be used for further detailed searches / investigations and further reporting using all the standard features of Excel (such as the Excel Find option and column Filters).



1.5 Equipment, Systems and Sub Systems within Zenator

Provide a clear visual representation of Equipment, Systems and Sub-systems and supporting information.

Examples of the tree structure in Zenator are given at 1.6, showing the project hierarchy with System Groups, Systems, Sub Systems, Equipment (Parent Tags) and (Child) Tags. Please note the structure can go to a Sub-sub-system level.

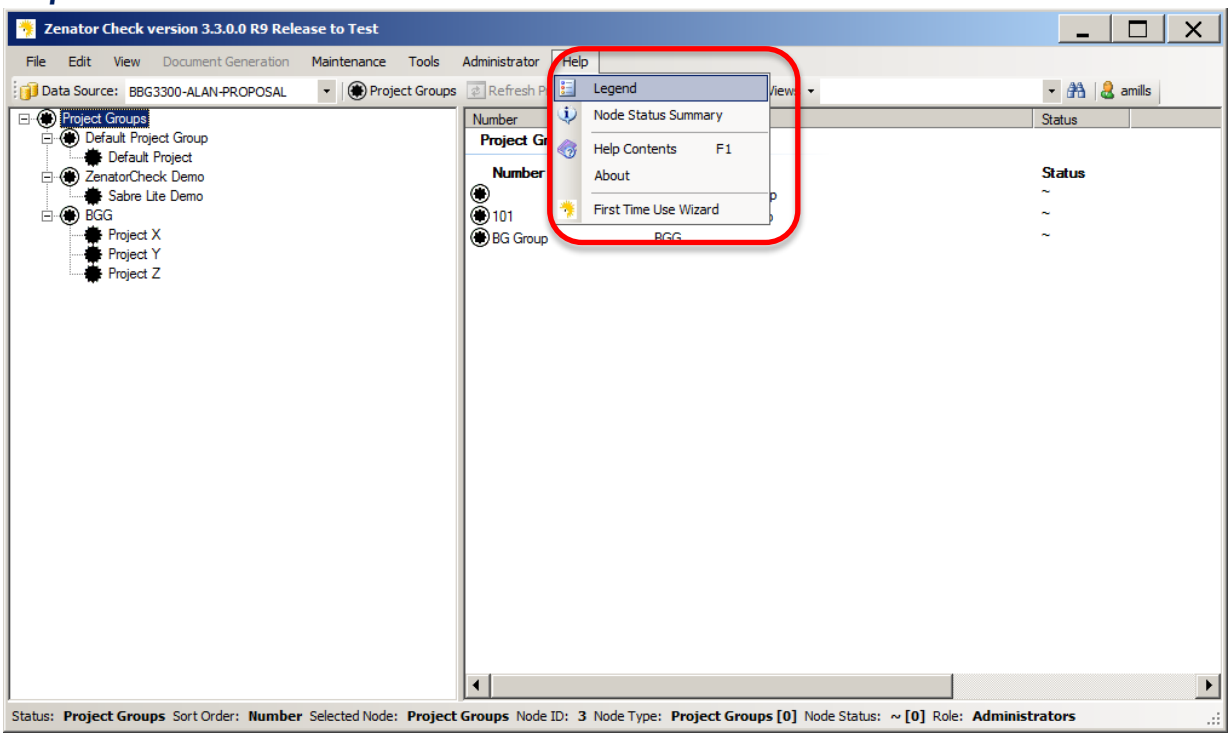
We attempt to demonstrate that in Zenator you have a clear visual representation of Equipment, Sub-systems and Systems and supporting information, through the familiar tree structure which we refer to as the project hierarchy.

Our responses are illustrated with annotated screenshots, as we believe this is the clearest way to convey the information requested. Our Help and Training materials are compiled similarly.

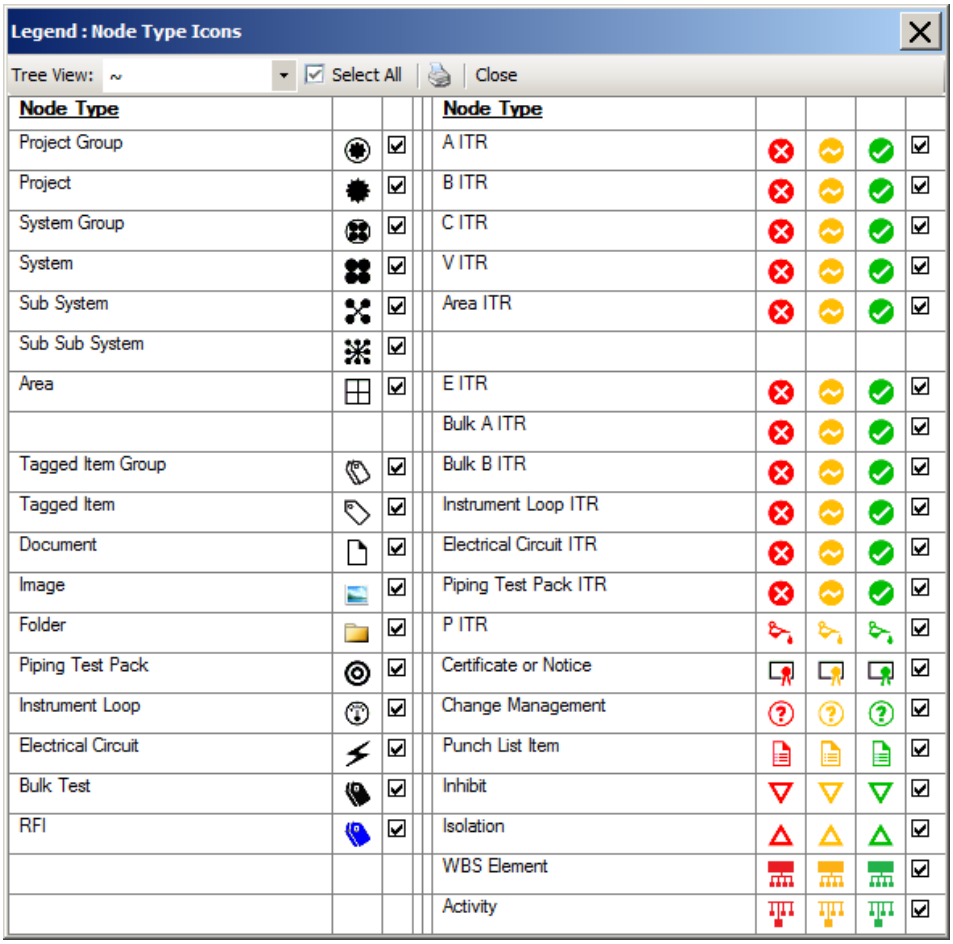
The steps we went through to create the examples included in this DOCUMENT

1. *Create a Project Database called BGG*
2. *In the BGG Database, populate Engineering Data, creating three Projects, X, Y & Z and Rules*
3. *Create Tag Type Matrices for Projects, X, Y & Z*
4. *Allocate and Generate Checksheets (ITRs) for Projects, X, Y & Z*
5. *Produce sample reports from Reports Plus for Projects, X, Y & Z*
6. *Produce examples of Bulk Management activities for each Project, X, Y & Z*

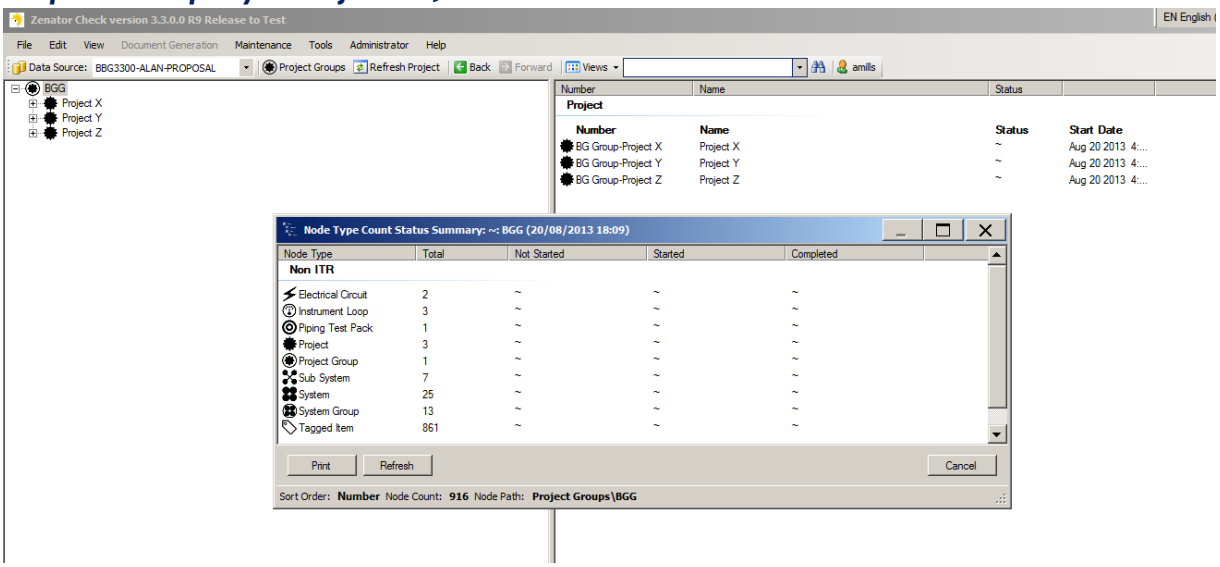
Steps 1 and 2



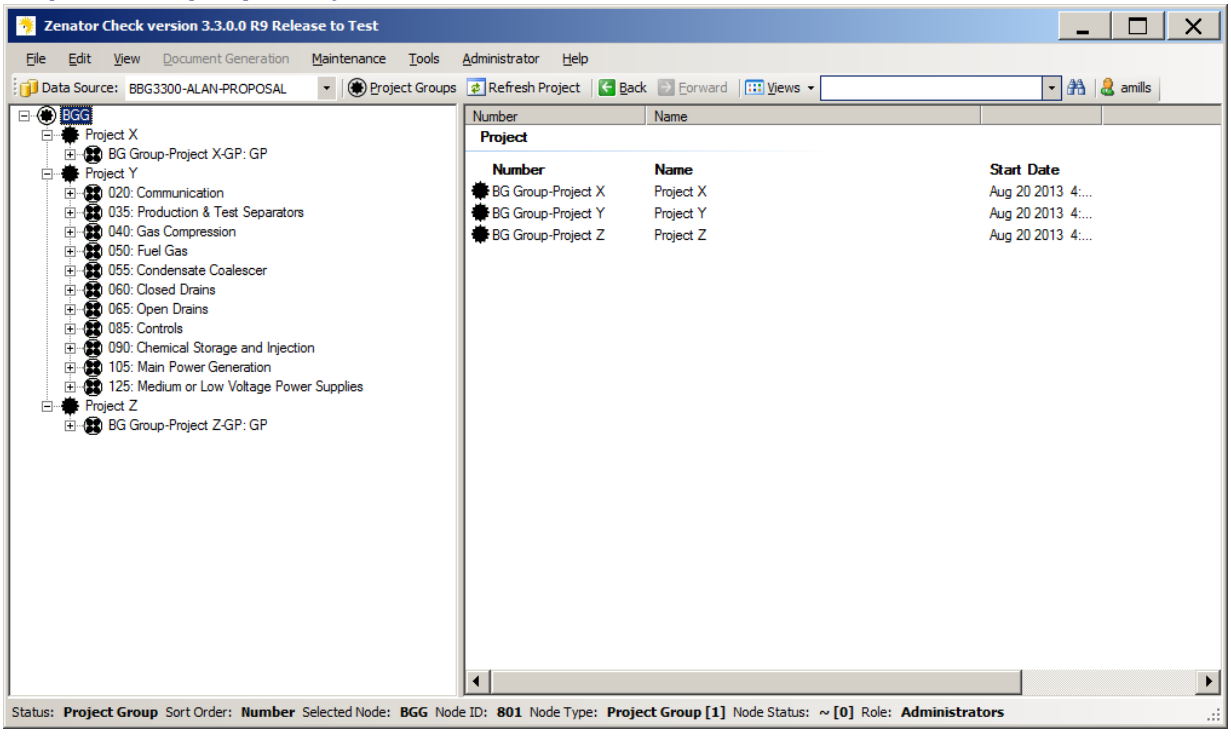
Legend



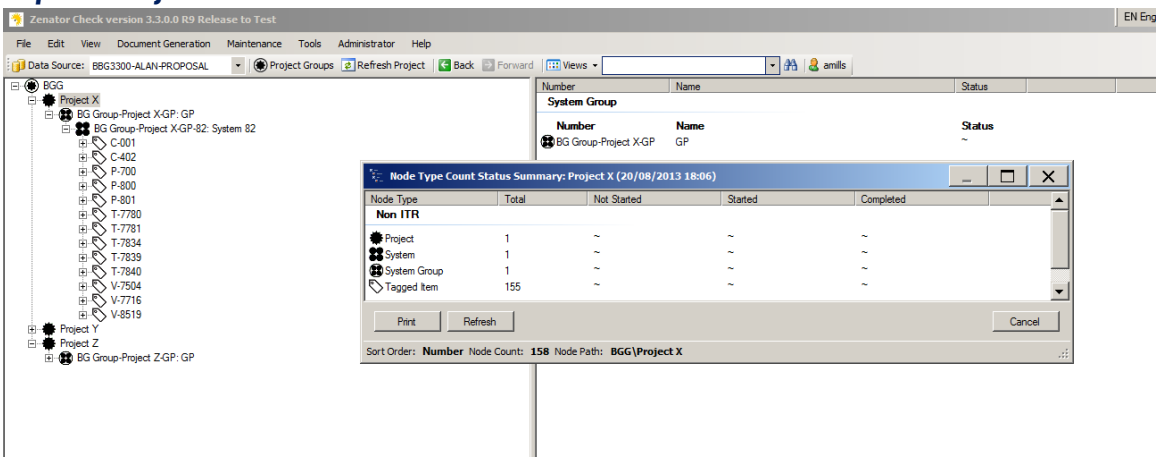
Step 2 - Company – Projects X, Y & Z



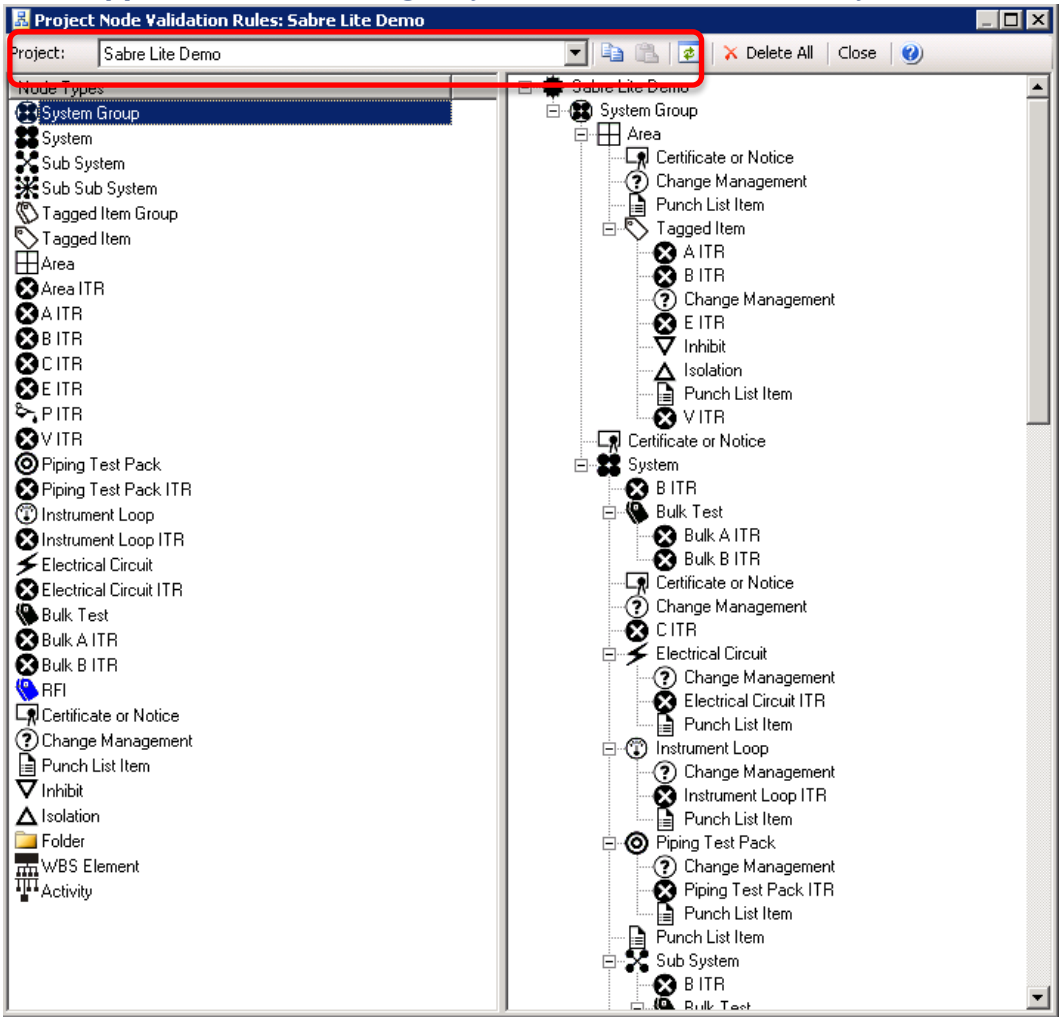
Step 2 - Company - Projects X, Y & Z



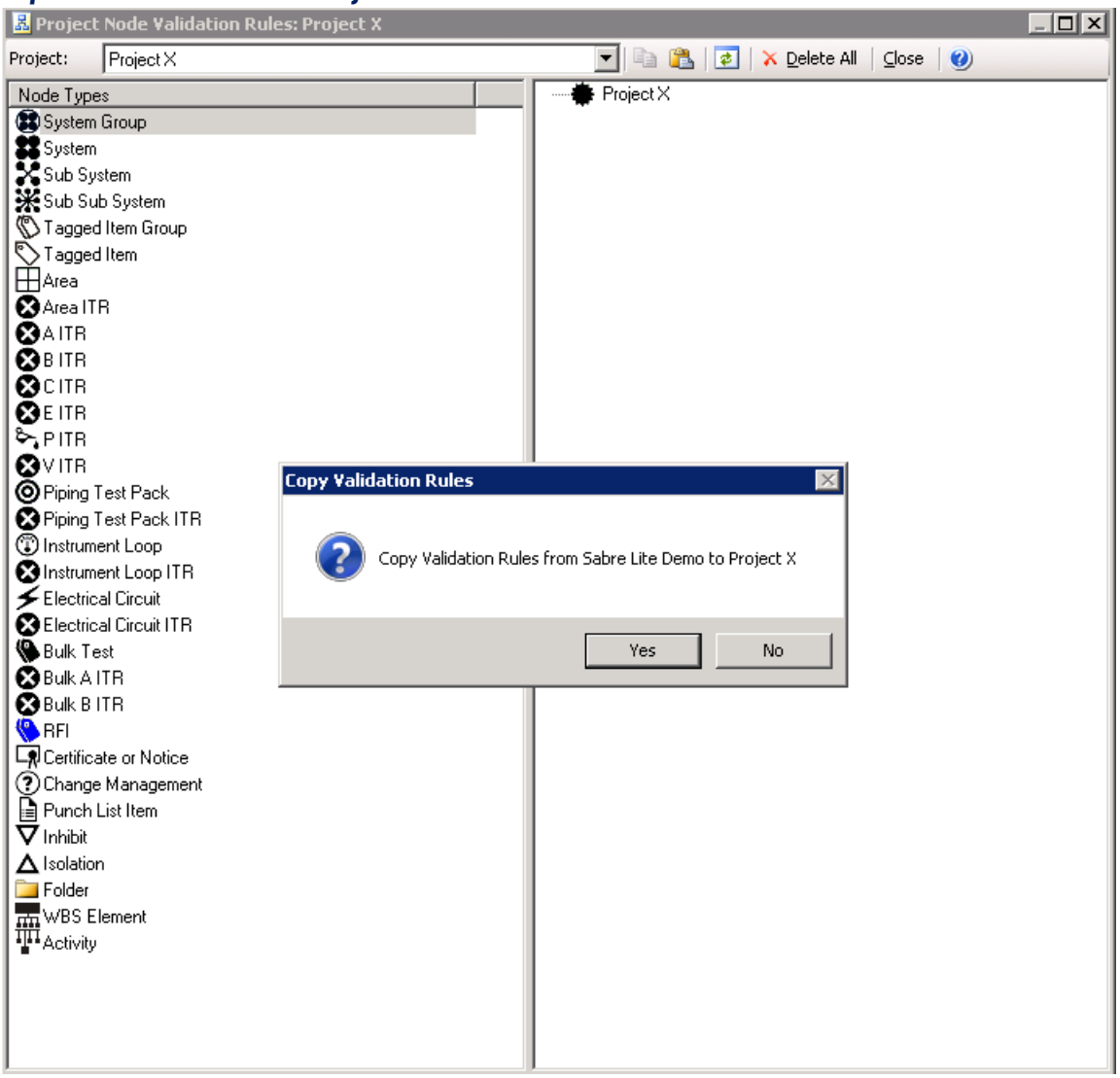
Step 2 - Project X



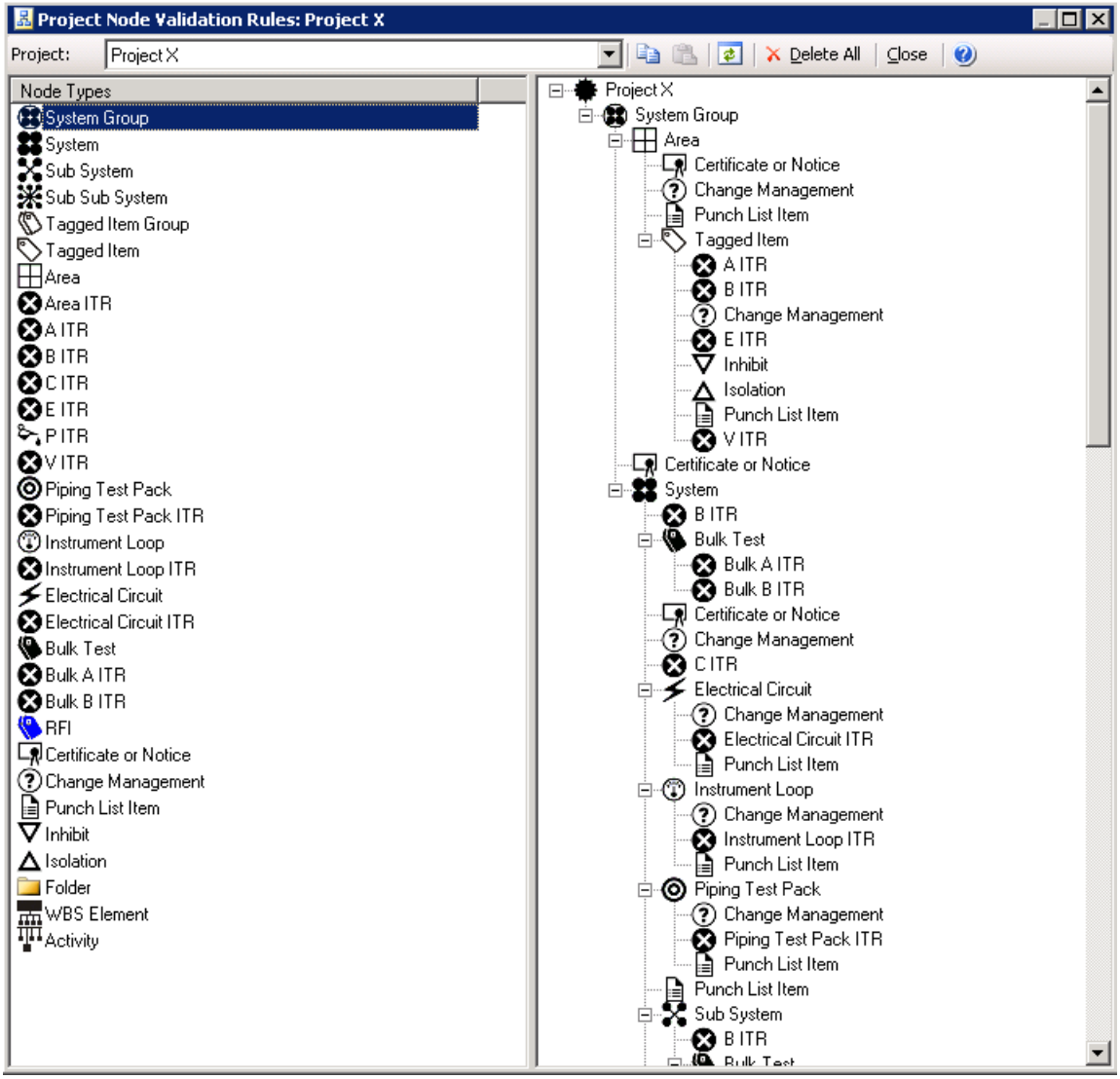
Step 2 – Copy Rules from Existing Project to Create Rules for Project X



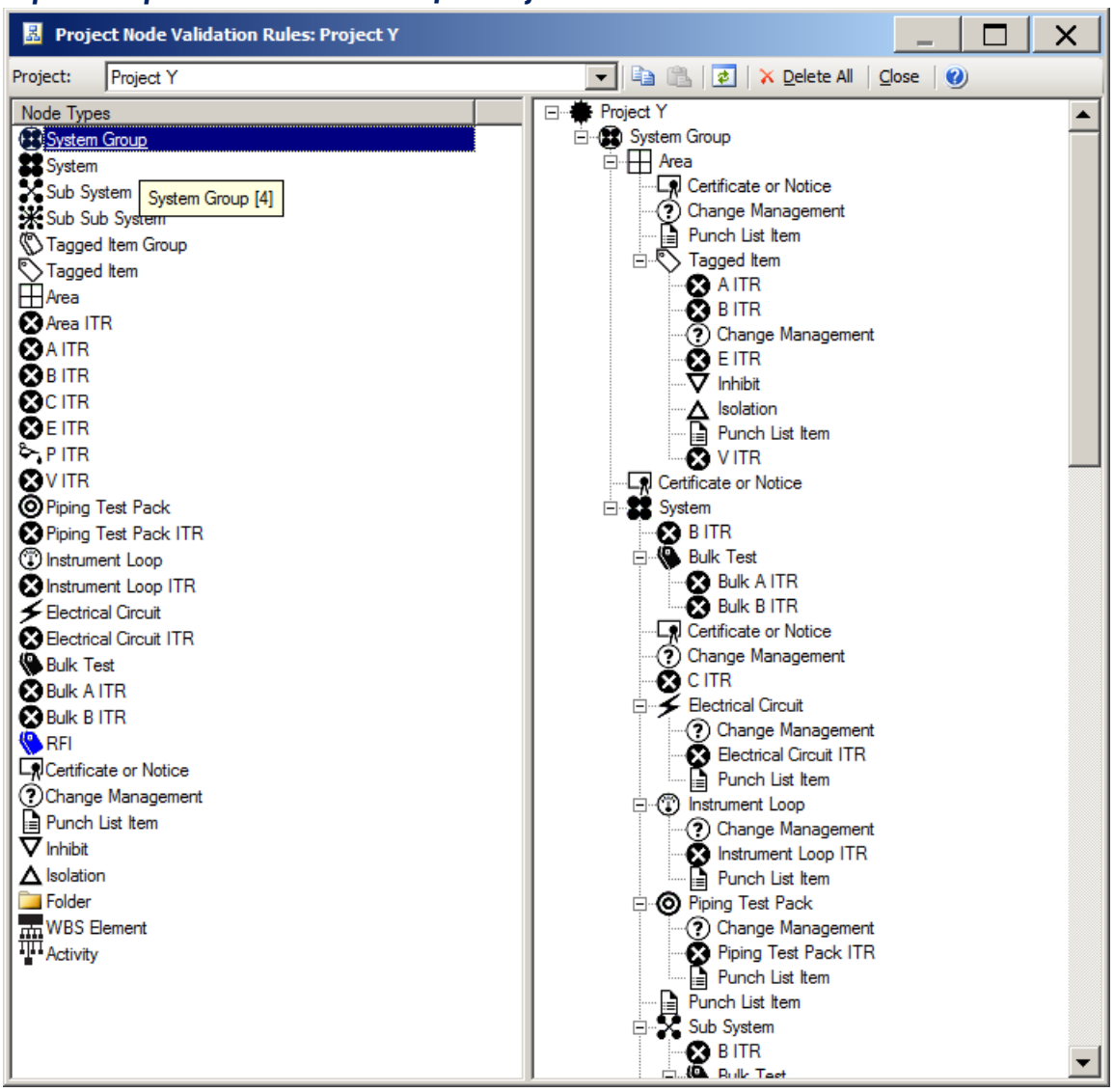
Step 2 – Paste Rules to Project X

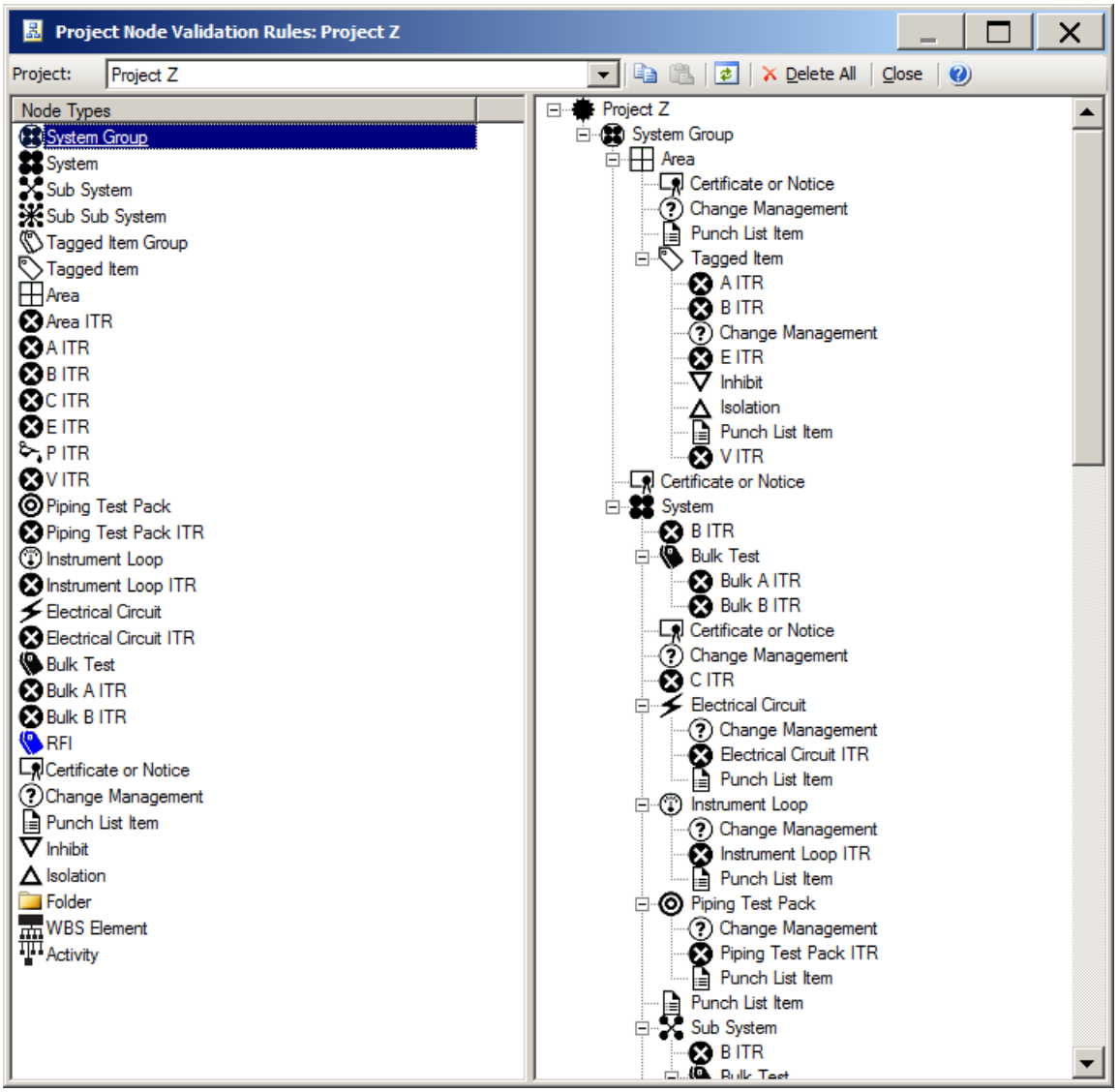


Step 2 –Rules for Project X

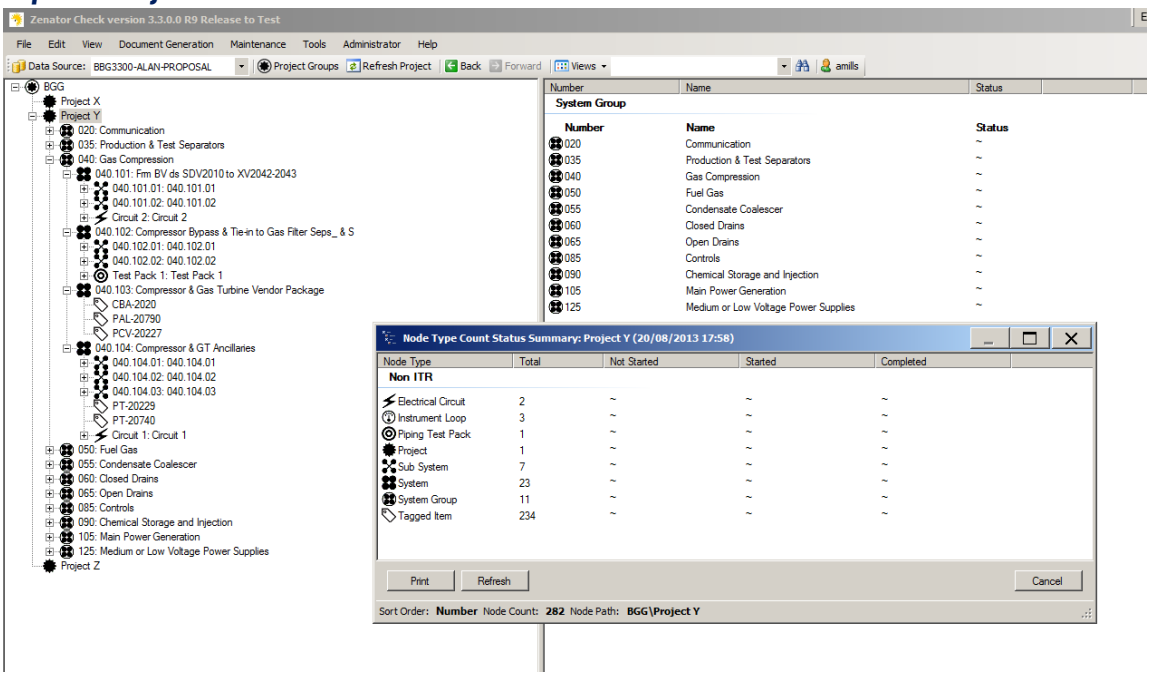


Step 2 – Repeat to Create Rules for Projects Y & Z

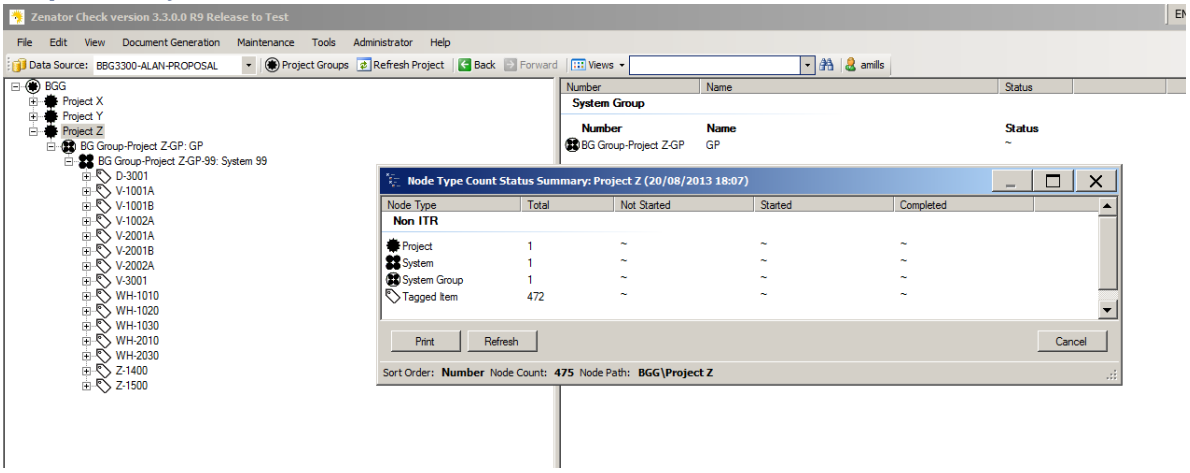



Project Node Validation Rules: Project Z
Project:
Project Z
Delete All
Close
Node Types
System Group
System
Sub System
Sub Sub System
Tagged Item Group
Tagged Item
Area
Area ITR
A ITR
B ITR
C ITR
E ITR
P ITR
V ITR
Piping Test Pack
Piping Test Pack ITR
Instrument Loop
Instrument Loop ITR
Electrical Circuit
Electrical Circuit ITR
Bulk Test
Bulk A ITR
Bulk B ITR
RFI
Certificate or Notice
Change Management
Punch List Item
Inhibit
Isolation
Folder
WBS Element
Activity
Project Z
System Group
Area
Certificate or Notice
Change Management
Punch List Item
Tagged Item
A ITR
B ITR
Change Management
E ITR
Inhibit
Isolation
Punch List Item
V ITR
Certificate or Notice
System
B ITR
Bulk Test
Bulk A ITR
Bulk B ITR
Certificate or Notice
Change Management
C ITR
Electrical Circuit
Change Management
Electrical Circuit ITR
Punch List Item
Instrument Loop
Change Management
Instrument Loop ITR
Punch List Item
Piping Test Pack
Change Management
Piping Test Pack ITR
Punch List Item
Punch List Item
Sub System
B ITR

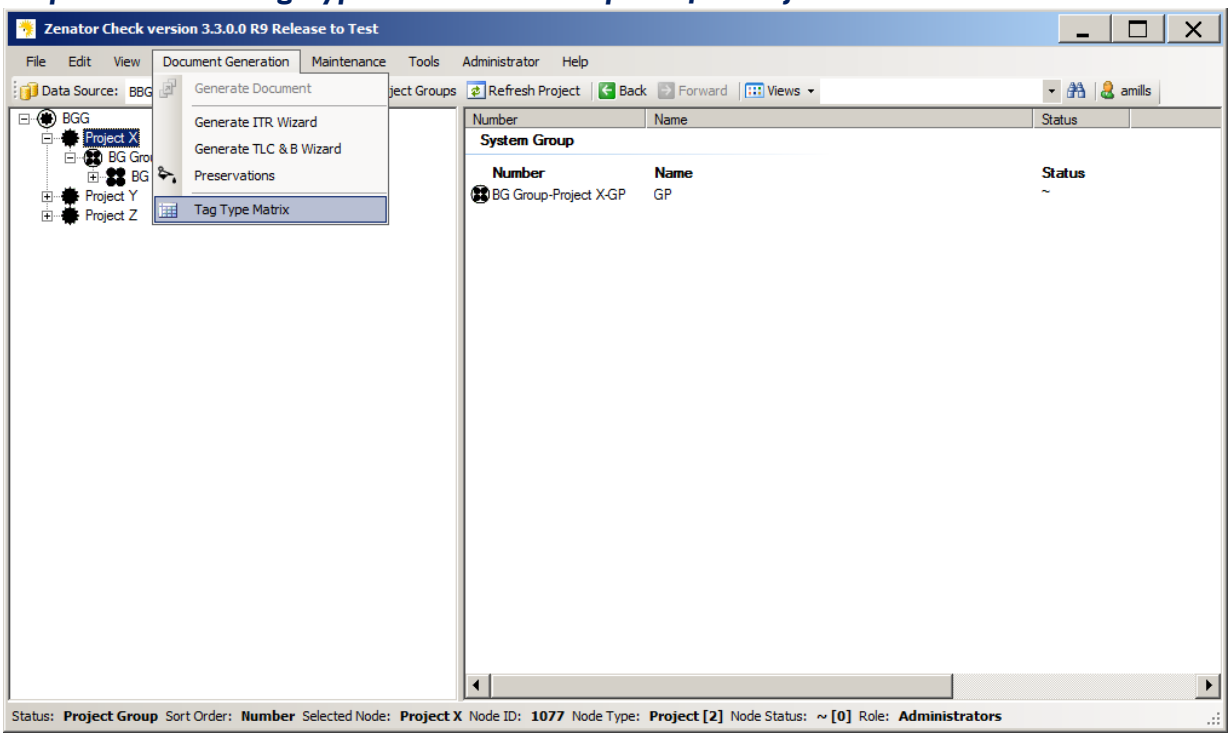
Step 2 - Project Y



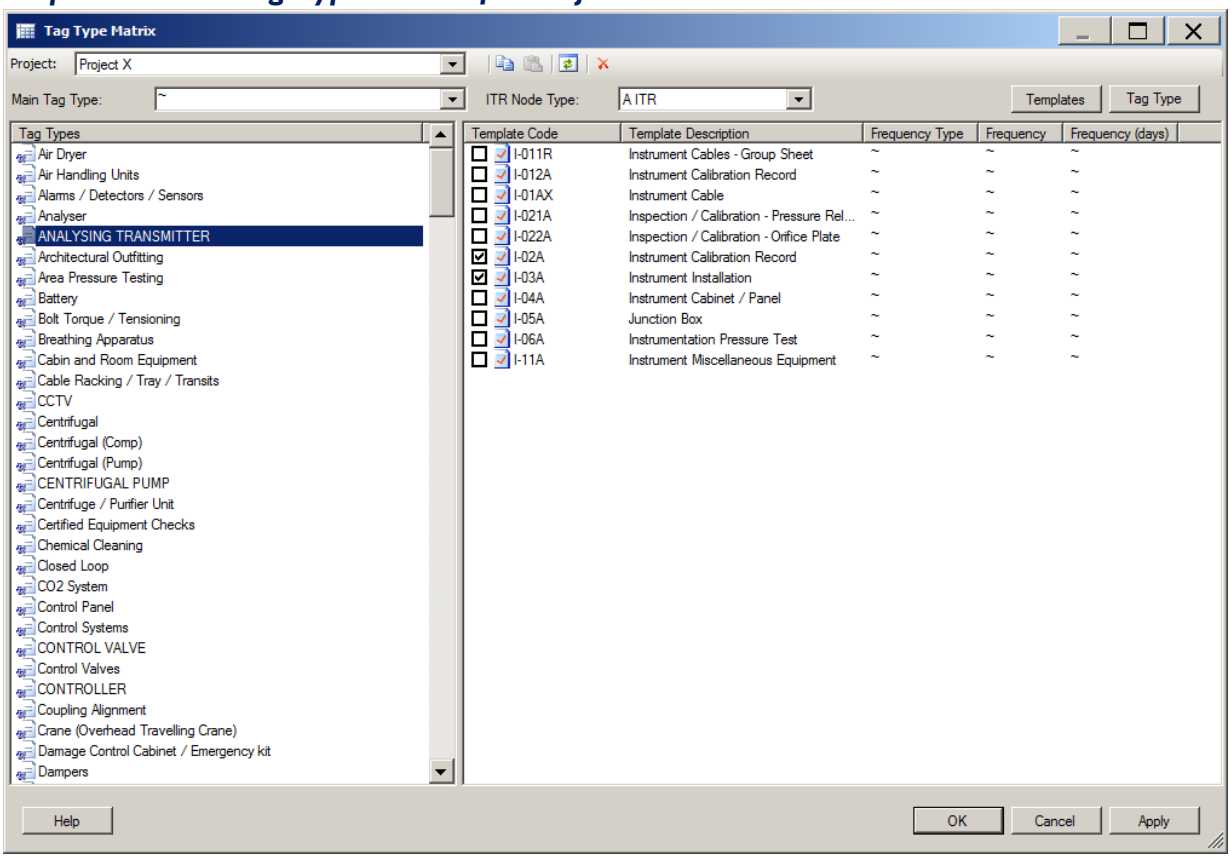
Step 2 - Project Z



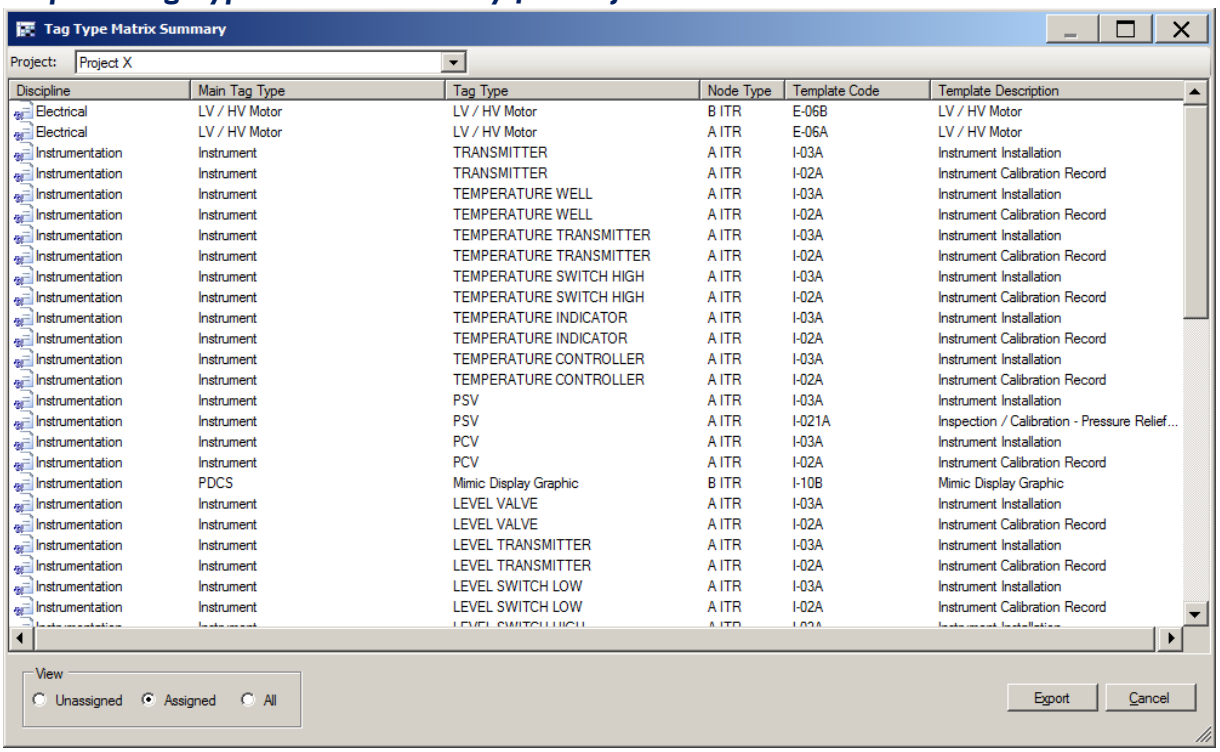
Step 3 – Choose Tag Type Matrix Menu Option for Project X



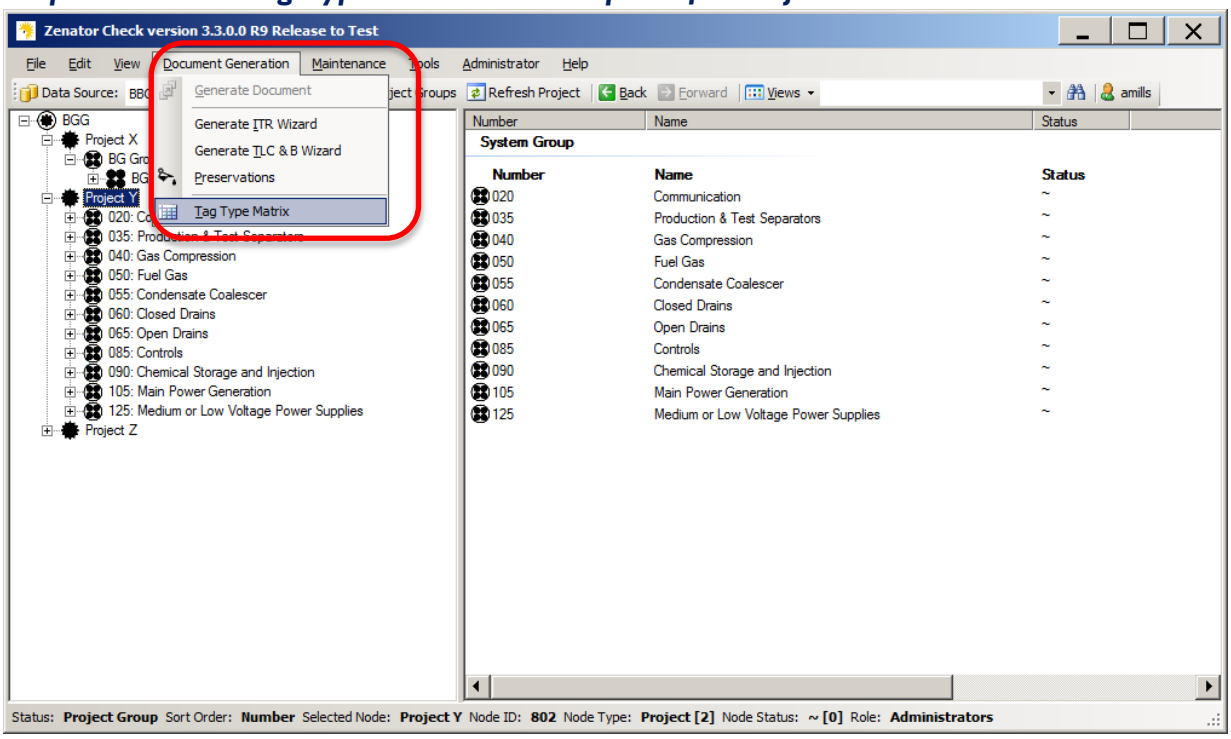
Step 3 – Create Tag Type Matrix for Project X



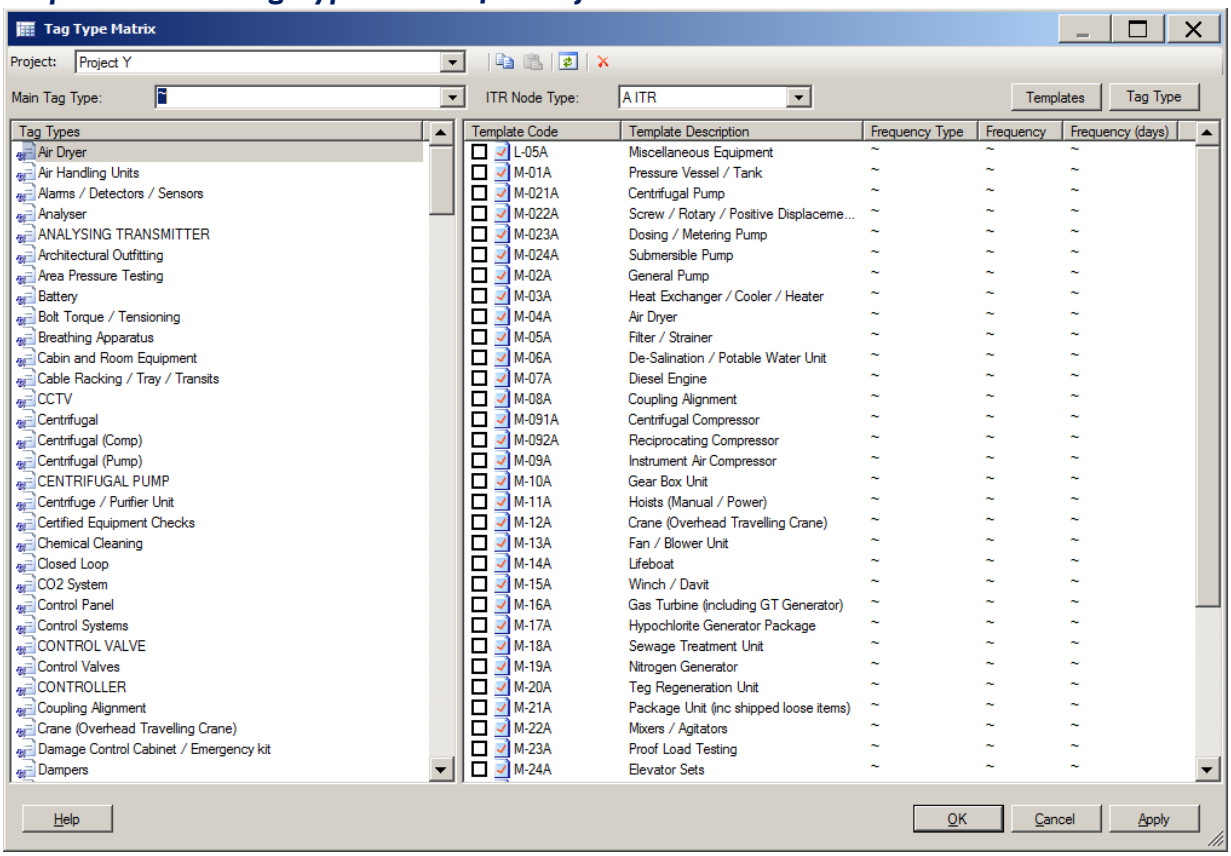
Step 3 – Tag Type Matrix Summary for Project X



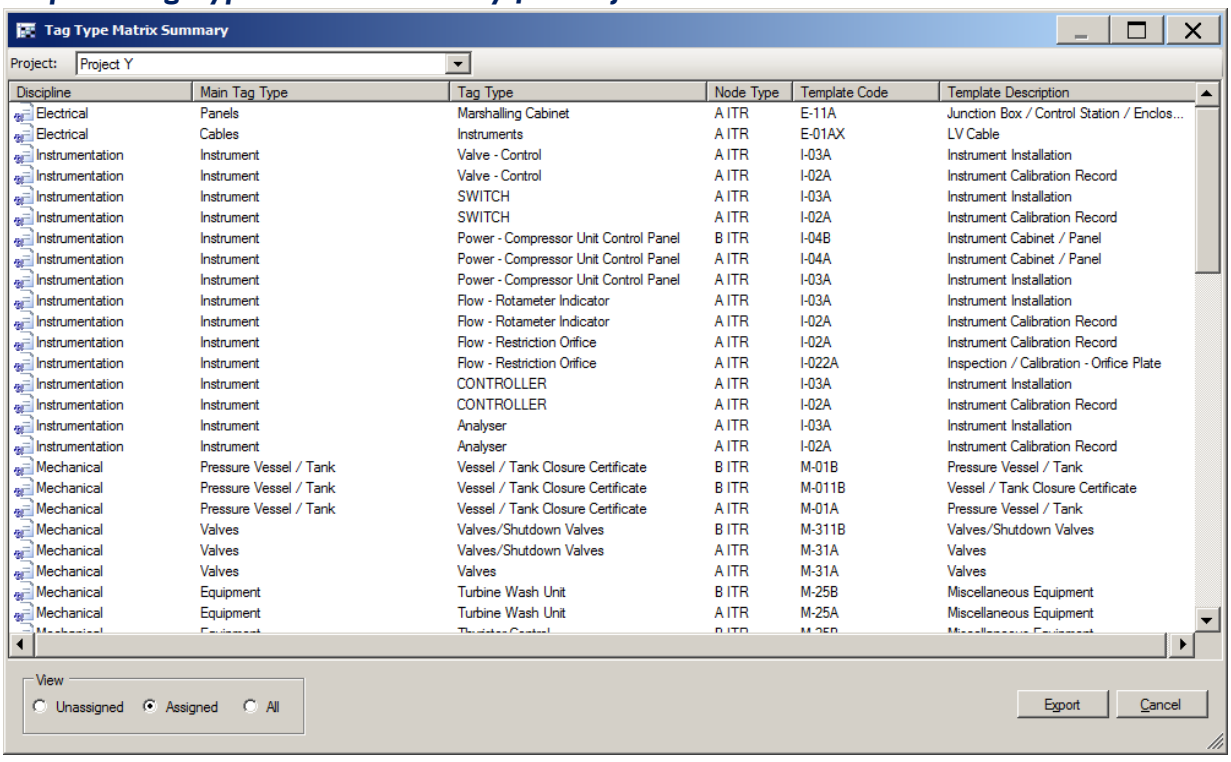
Step 3 – Choose Tag Type Matrix Menu Option for Project Y



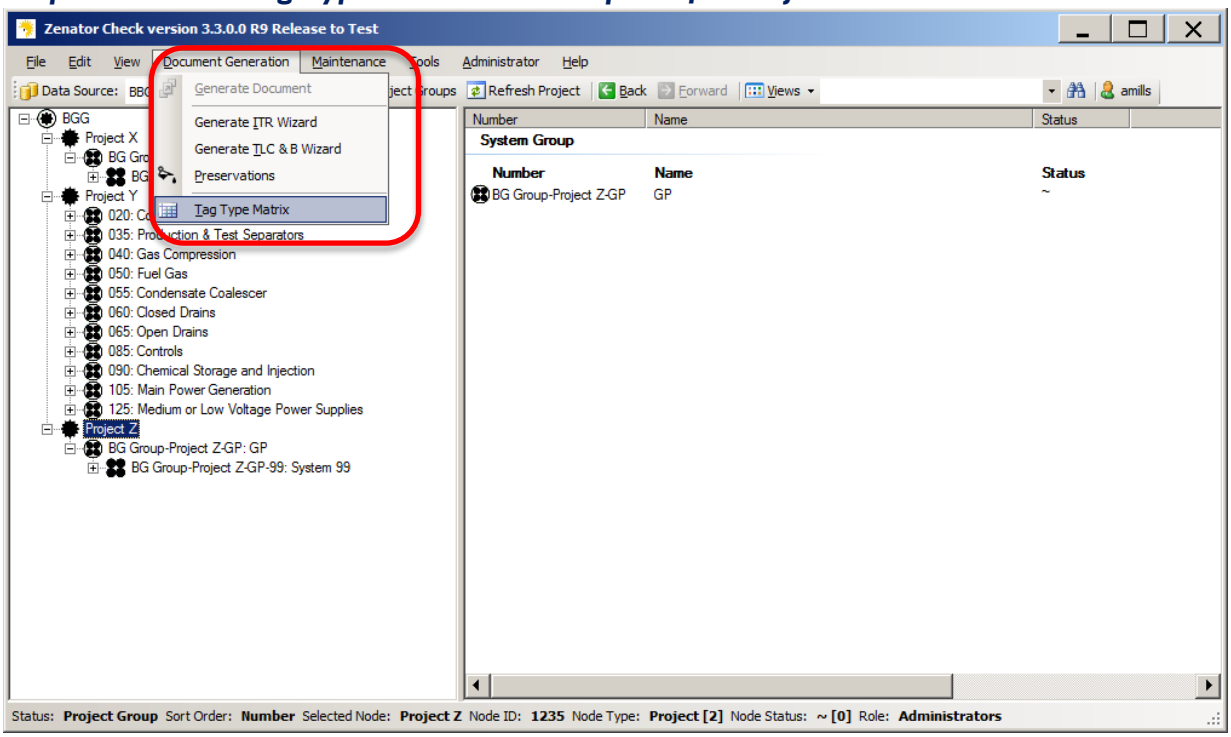
Step 3 – Create Tag Type Matrix for Project Y



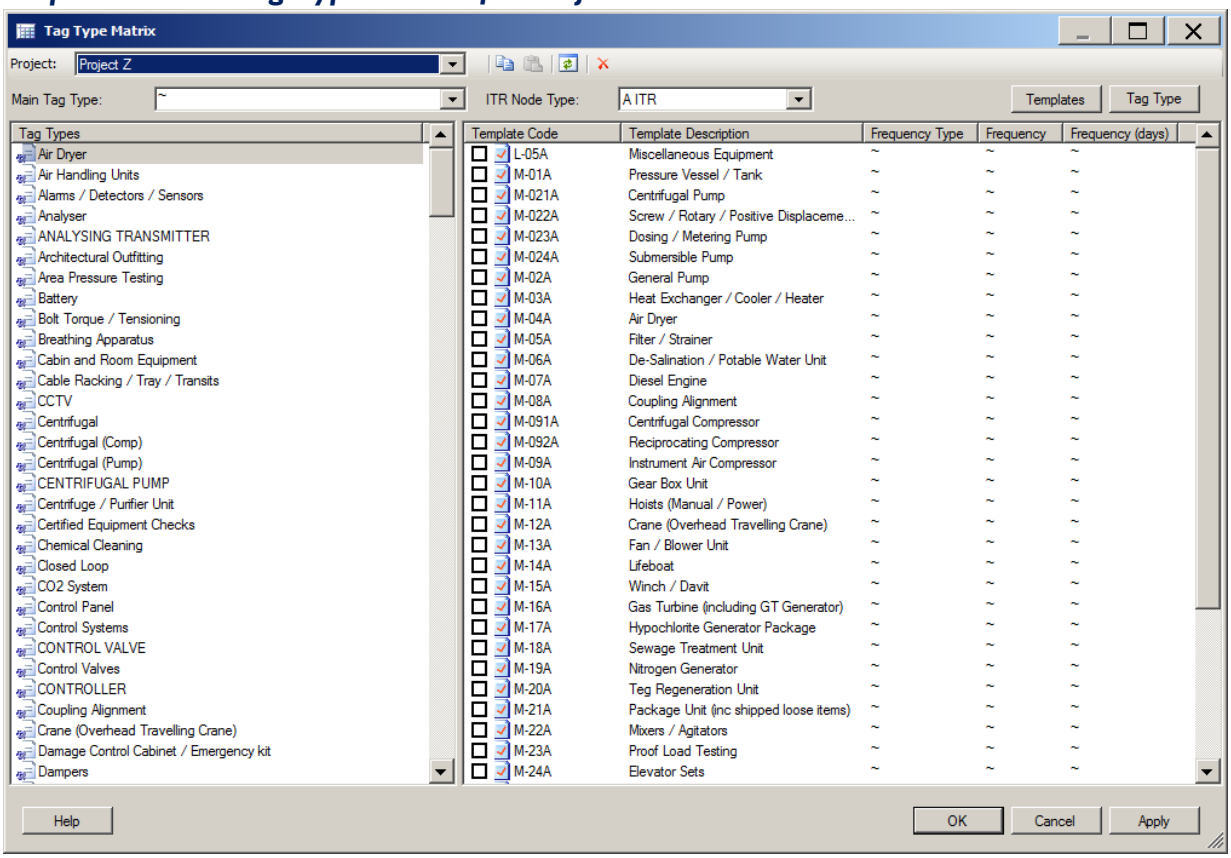
Step 3 – Tag Type Matrix Summary for Project Y



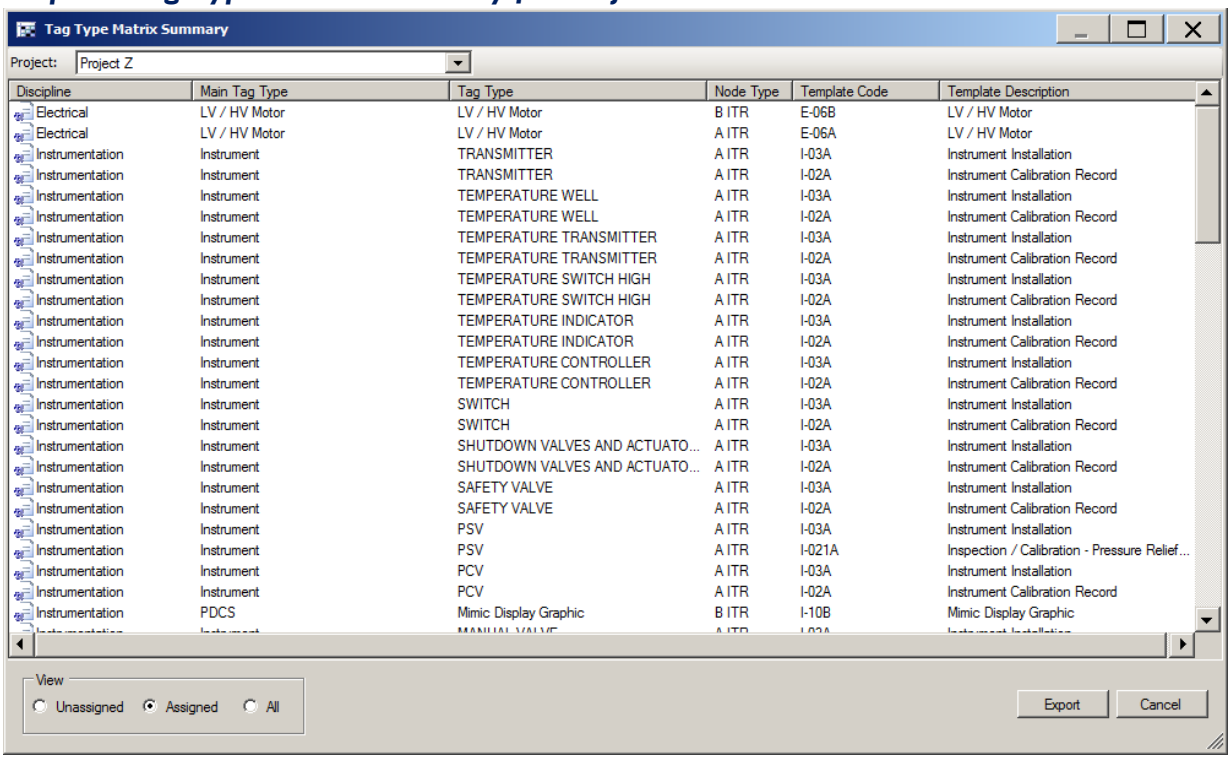
Step 3 – Choose Tag Type Matrix Menu Option for Project Z



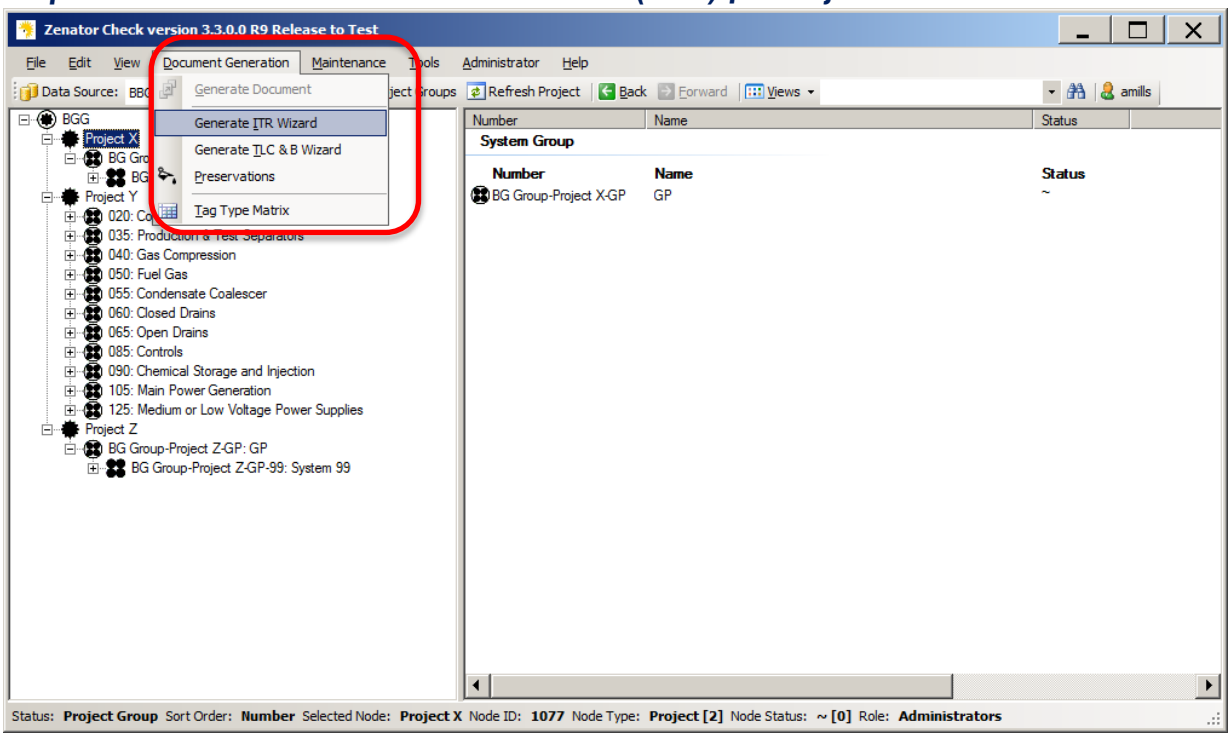
Step 3 – Create Tag Type Matrix for Project Z



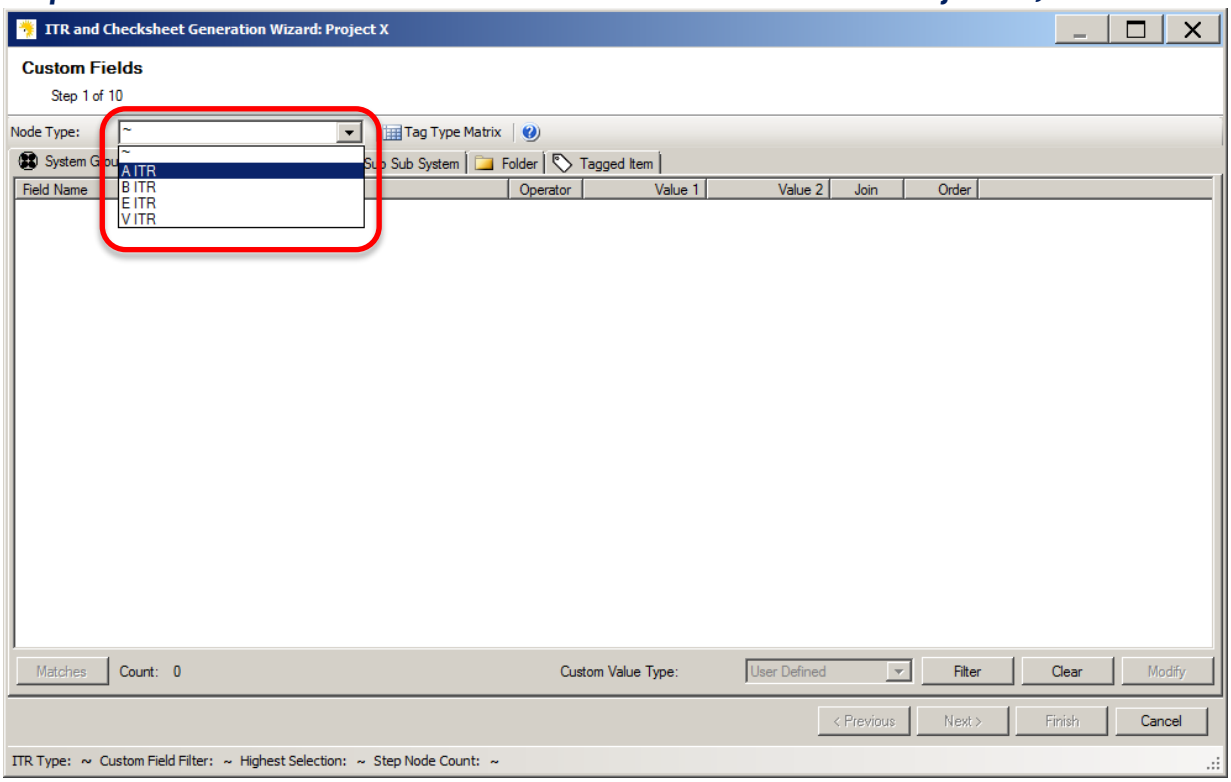
Step 3 – Tag Type Matrix Summary for Project Z



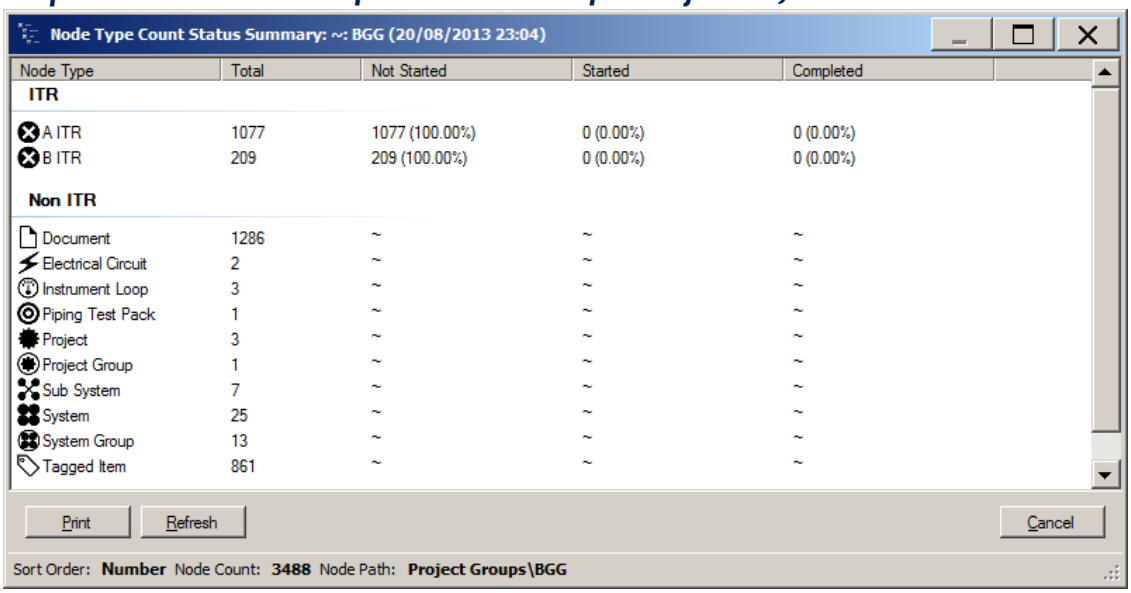
Step 4 – Allocate and Generate Checksheets (ITRs) for Project X



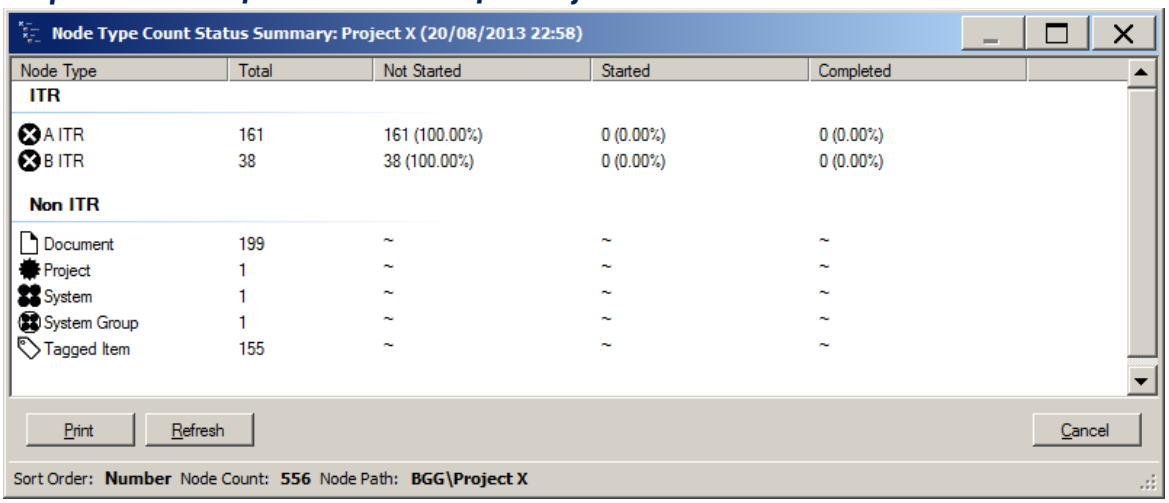
Step 4 – ITR Wizard to Allocate and Generate AITRs & BITRs - Projects X, Y &Z



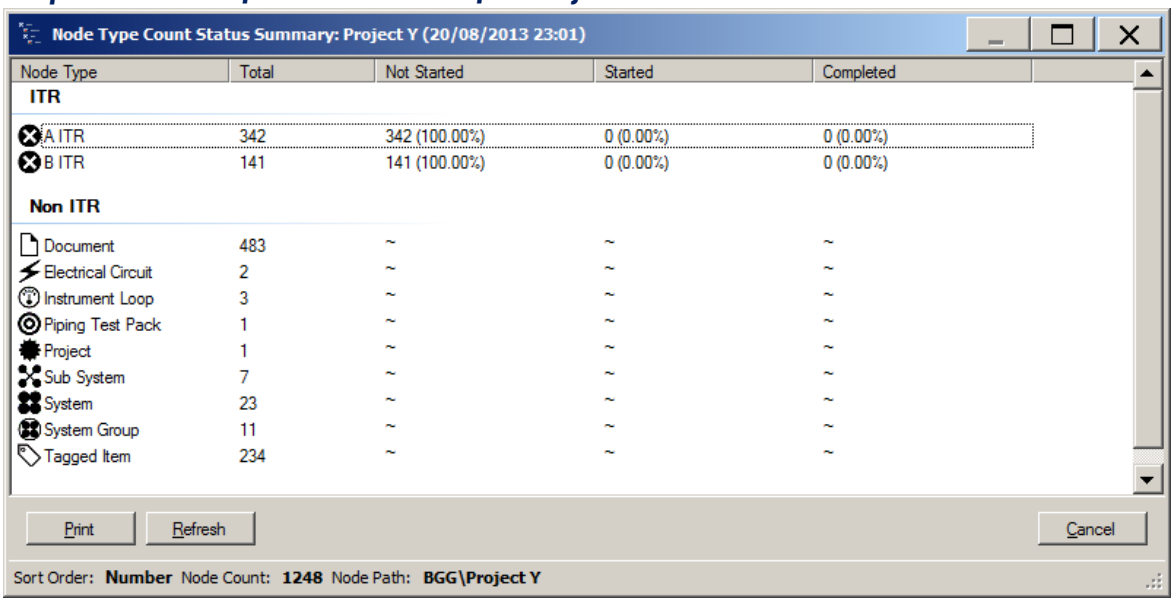
Step 4 – Overall Status of AITRs & BITRs for Projects X, Y & Z



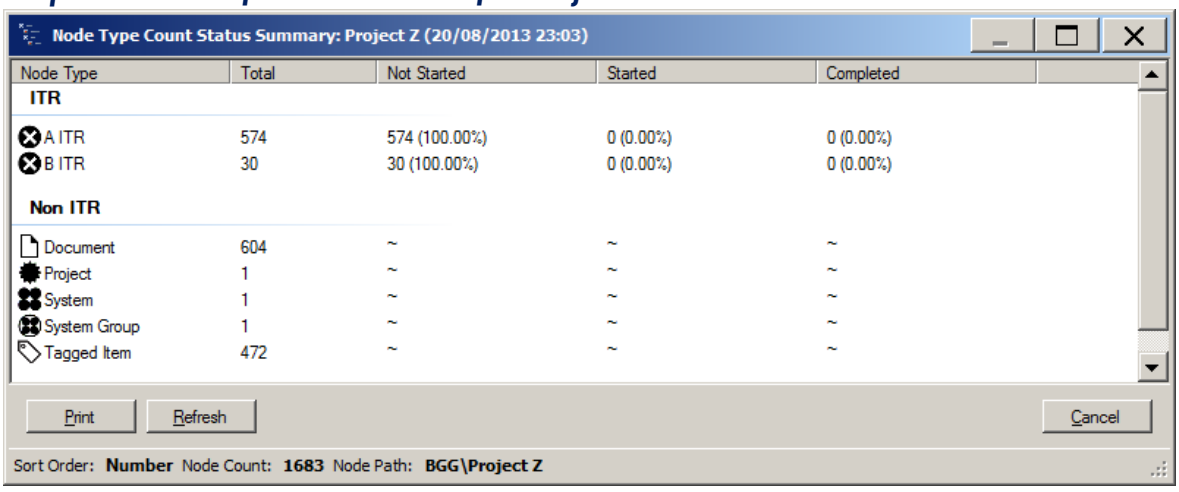
Step 4 – Status of AITRs & BITRs for Project X



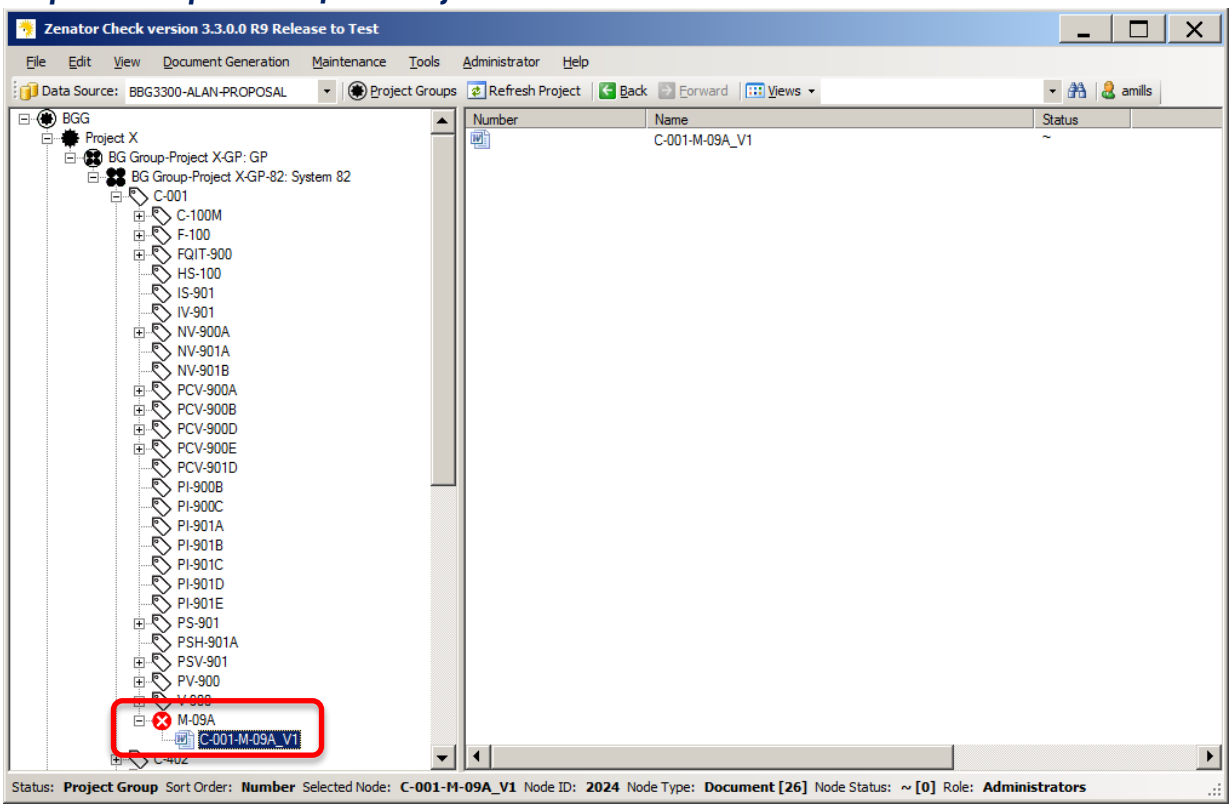
Step 4 – Status of AITRs & BITRs for Project Y



Step 4 – Status of AITRs & BITRs for Project Z



Step 4 – Sample AITR from Project X



Step 4 - Sample AITR M-09A, Tag C-001 from Project X

	Mechanical Completion: Compressor		M-09A Page 1 of 2
Unique ID:	C-001-M-09A_V1	Item/Tag No.	C-001
Project Name:	Project X	Sub-System No.	

Data Sheet			
Equipment Description	C-001		
Sub-System Description			
Location:		Module Detail:	~
Drawing Reference	EN_CAV 1-09	Date Printed:	20-Aug-13

No.	Description of Check / Action to be made	Results	Initial / Signature	Punch list item No.
1	**CONFIRM GENERAL COMPRESSOR UNIT DETAILS AND P.O. SPECIFICATION**			
1.1	Confirm that Compressor Package Unit has been installed in correct position according to vendor instructions, is undamaged with skid location and orientation correct.			
1.2	Check all nameplate details correct, it is securely attached, readable and not obscured and data conforms to information listed on this form.			
1.3	Check that a P.O. release note is available with a final agreed vendor punchlist from FAT if applicable.			
CHECK AND CONFIRM DETAILED INSTALLATION CHECKS FOR COMPRESSOR AS LISTED BELOW (2 – 26)				
2	Check that compressor jacking-screws have been installed to enable later alignment of Compressor to its Drive unit.			
3	Confirm that correct type, material grade and thickness of shims at the Compressor feet have been used.			
4	Confirm that Compressor casing / body holding-down bolts are of the correct type and grade and are tensioned correctly.			
5	Check that provision has been made at Compressor support feet for future dowelling (or mechanical locking) of casing in position following completion of hot-running alignment checks in commissioning phase.			

Step 4 - Sample AITR M-03A, Tag HBG-2030A-B from Project Y

	Mechanical Completion: Heat Exchanger / Cooler / Heater		M-03A Page 1 of 1
Unique ID:	HBG-2030A-B-M-03A_V1	Item/Tag No.	HBG-2030A-B
Project Name:	Project Y	Sub-System No.	040.101Frm BV ds SDV2010 to XV2042-2043

Data Sheet			
Equipment Description	HBG-2030A-B		
Sub-System Description	040.101.01		
Location:		Module Detail:	~
Drawing Reference		Date Printed:	20-Aug-13

No.	Description of Check / Action to be made	Results	Initial / Signature	Punch list item No.
1	Check Equipment and Nameplate comply with Data Sheet			
2	Confirm Nameplate installed correctly			
3	Installation and Holding Down in accordance with drawings and Manufacturers Instructions.			
4	Check Exchanger is level in accordance with Manufacturers specification.			
5	Check that Sliding feet are free & plate spray covers installed.			
6	Bolting and gasket materials correct. Bolts torque to specification.			
7	For plate exchangers, check end plate parallelism and plate compression bolt torque is correct as per vendor's manual.			
8	Spare nozzles blanked off in accordance with specification.			
9	Heater fittings, Trims, Platforms and access ladders are complete			
10	Main piping / Vent / Drain connections complete and supported correctly.			
11	Tubesheet and Tube Internals clean and undamaged			
12	Shell side and Tube externals clean and undamaged			
13	Adequate space for removal of tubes and maintenance.			
14	All valves and Instrumentation visible and accessible			
15	Equipment Release Note signed and All Punchlist Items cleared			
16	Earthing boss / Strap fitted.			
17	Exchanger Undamaged and External Painting / Insulation complete.			
18	Accessibility for Maintenance is acceptable			
19	Check all PSVs installed, undamaged and seals intact – complete ITR form **M-28A** for PSVs			

Remarks / Comments :

	Completed By	Approved By	Accepted By	ITR Input to Data Base
Company				
Signature				
Print Name				
Date of signing				

Step 4 - Sample BITR M-03B, Tag HBG-2030A-B from Project Y

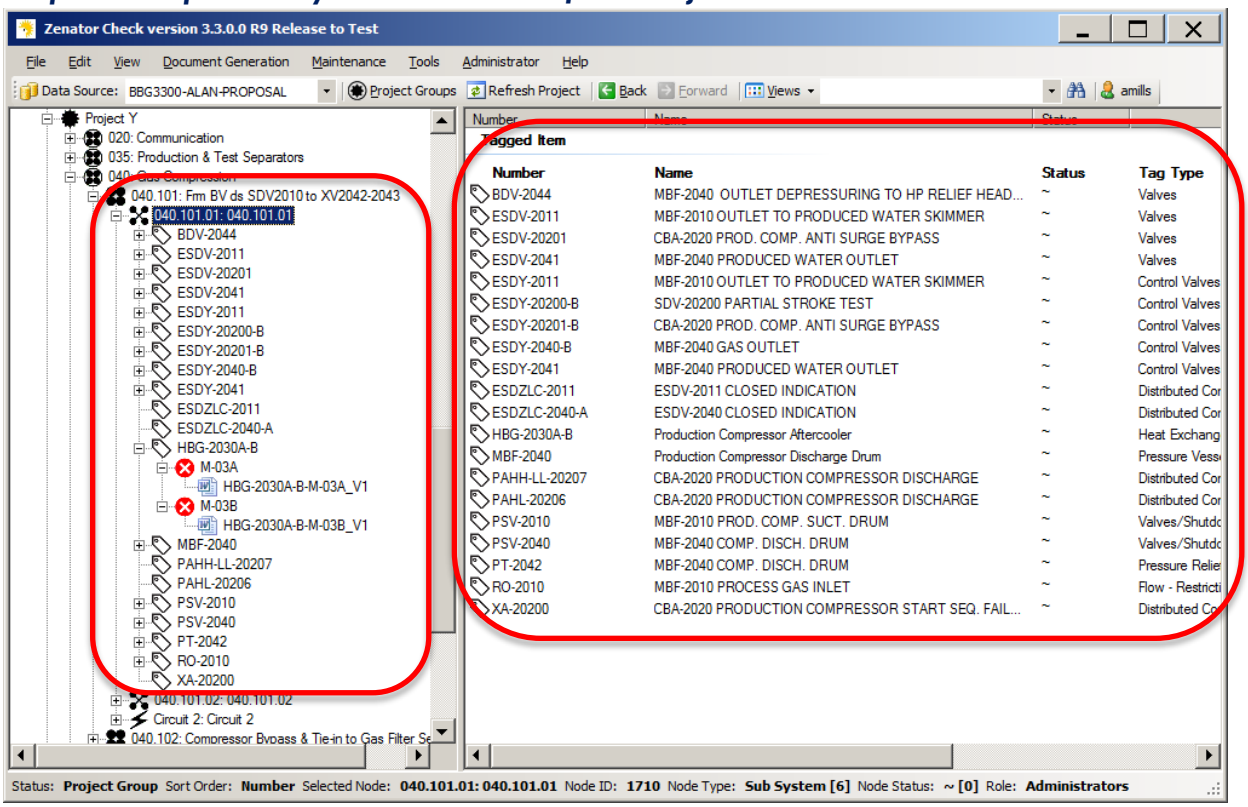
	Pre-Commissioning: Heater		M-03B Page 1 of 1
Unique ID:		Item/Tag No.	HBG-2030A-B
Project Name:	BG Group-Project Y	Sub-System No.	
Data Sheet			
Equipment Description	Production Compressor Aftercooler		
Sub-System Description	040.101 040.101.01		
Location:		Module Detail:	
Drawing Reference:		Date Printed:	20-Aug-13

No	Description of Check / Action to be made	Results	Initial / Signature	Punch list item No.
1	Confirm that the Mechanical Completion ITR form **M-03A** has been completed and Punch list and Construction checklist if any has been completed and no damage has occurred since mechanical completion.			
2	Confirm that all Preservation measures have been removed.			
3	a) Confirm that any external Insulation has been applied to specification and is undamaged. b) For Heaters with Refractory lining ensure this has been / is dried out to manufacturer's specification before operational use.			
4	Ensure all valves associated with the unit have their correctly designed actuator or manual operator installed and that they are free to move. Confirm Valve Tagging is complete.			
5	Check that Valve interlocks are installed (if applicable) and the system operates as designed. Ensure keys are safely located.			
6	Ensure manufacturer's documentation is readily available and correct for installed equipment and is ready for transfer to Operations Department as part of Turnover Acceptance.			
7	***In conjunction with instrument personnel, check the functional operation and record performance of the following:***			
	a) All Valves & Control devices (indicate tag No's on Test Report)			
	b) All High and Low Temperature and Flow Alarms and Shutdowns functions (indicate tag No's on Test Report)			
8	Following successful completion of all above checks, carry out a final Punchlist for the installed equipment, and roll-up all outstanding items into one composite list for Turnover Commissioning Package Acceptance.			
9	Update latest issue of design drawings for "As Built" Information.			

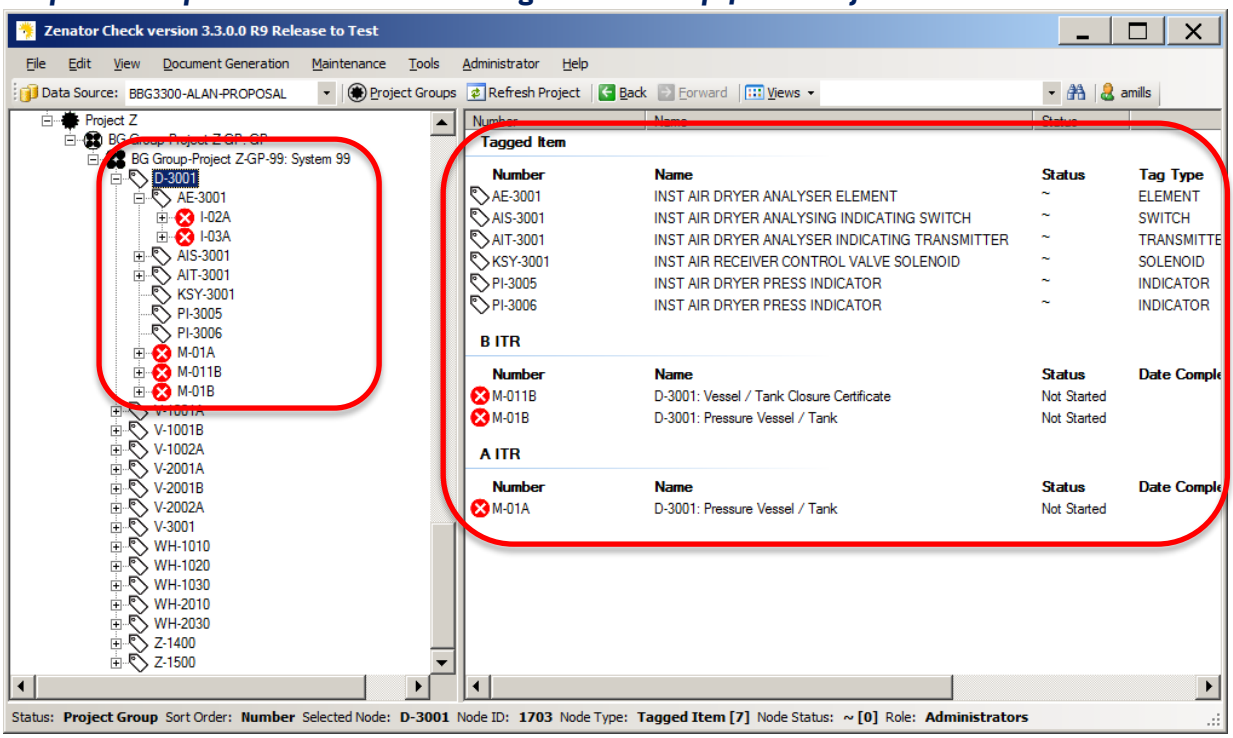
Remarks / Comments :

	Completed By	Approved By	Accepted By	ITR Input to Data Base
Company				
Signature				
Print Name				
Date of signing				

Step 4 - Sample Sub System 040.101.01 from Project Y



Step 4 - Sample Parent and Child Tag Relationship from Project Z

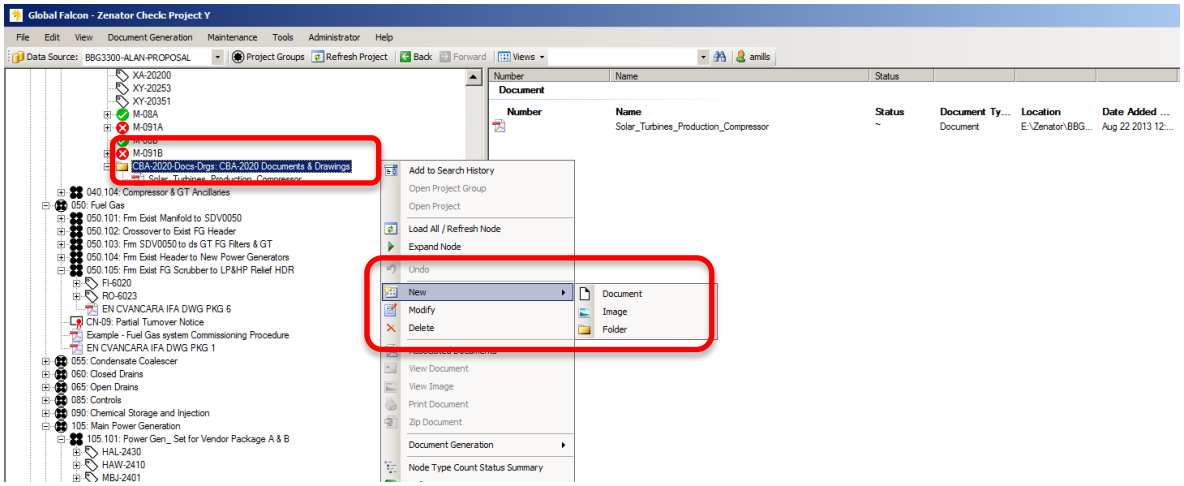


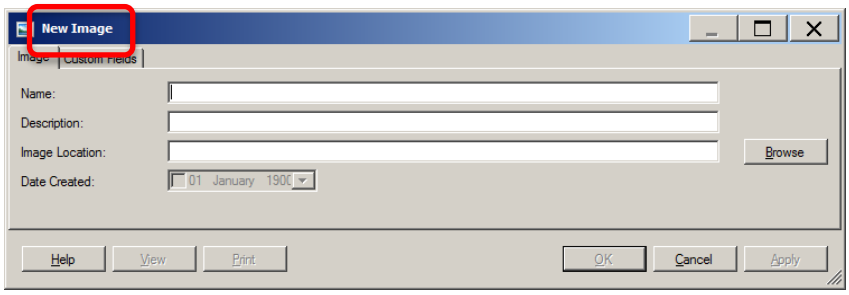
1.6 File Repository

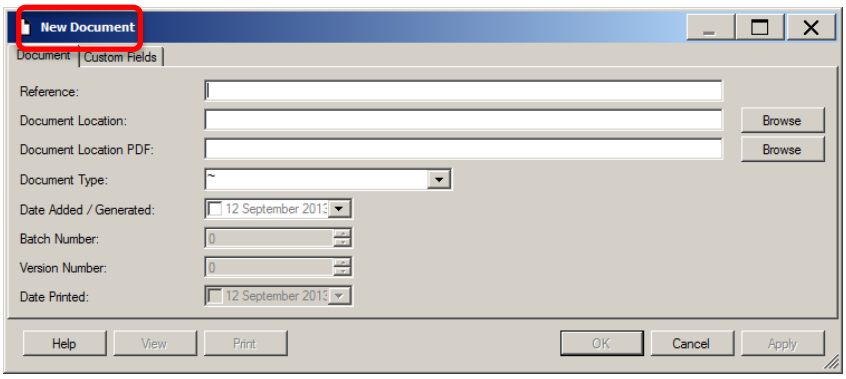
Provides a repository for files associated with calibration, testing and certification - word, excel, pdf, ppt, images.

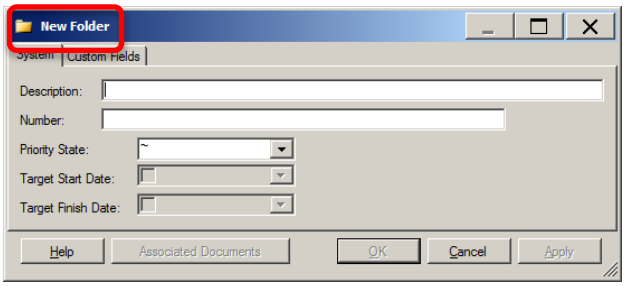
*We refer Zenator as an **Asset Integrity Management System**. It is the repository for every piece of documentation pertinent to the Handover of any part of and the entire facility. If any activity occurs on the project and it has impact on what is handover to Operations, then it must be stored*, controlled, managed and reported in Zenator. In the case of engineering deliverables such as drawings (P&IDs, Isometrics, SLDs, Data Sheets, GAs, Loop Diagrams) or documentation (Reports, Calculations, Correspondence) Zenator links to the original file and does not duplicate it. In certain circumstances, such as in challenging environments or where there is zero or limited internet connectivity, it may be advantageous for Zenator to store its own copy. As required, Zenator can store all types of electronic document in all the usual file formats including URL links.*

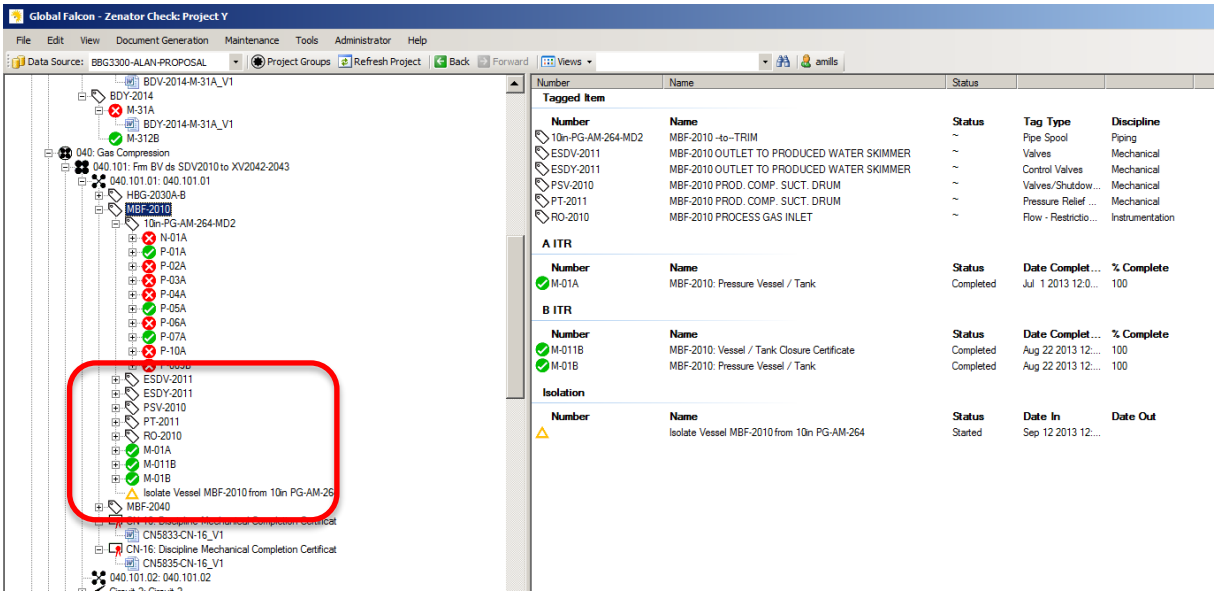
Adding a Document, Image or Folder to a Folder

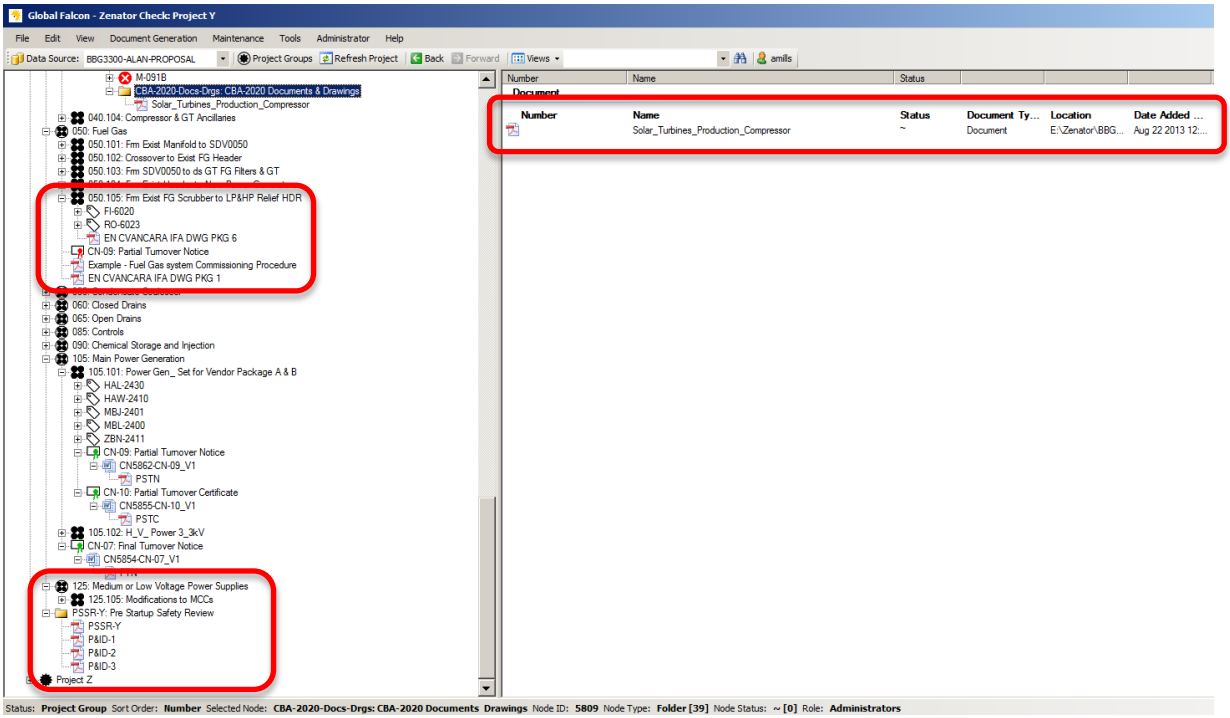







New Folder
System
Custom Fields
Description:
Number:
Priority State:
Target Start Date:
Target Finish Date:
Help
Associated Documents
OK
Cancel
Apply


Global Falcon - Zenator Check: Project Y
File Edit View Document Generation Maintenance Tools Administrator Help
Data Source: BBG3300-ALAN-PROPOSAL
Project Groups
Refresh Project
Back
Forward
Views
amills
BDY-2014-M-31A_V1
BDY-2014
M-31A
BDY-2014-M-31A_V1
M-312B
040: Gas Compression
040.101: Frm BV ds SDV2010 to XV2042-2043
040.101.01: 040.101.01
HBG-2030A-B
MBF-2010
10in-PG-AM-264-MD2
N-01A
P-01A
P-02A
P-03A
P-04A
P-05A
P-06A
P-07A
P-10A
ESDV-2011
ESDY-2011
PSV-2010
PT-2011
RO-2010
M-01A
M-011B
M-01B
Isolate Vessel MBF-2010 from 10in PG-AM-26
MBF-2040
CN5833-CN-16_V1
CN-16: Discipline Mechanical Completion Certificat
CN5835-CN-16_V1
040.101.02: 040.101.02
Number
Name
Status
Tagged Item
Number Name Status Tag Type Discipline
10in-PG-AM-264-MD2 MBF-2010 -to-TRIM ~ Pipe Spool Piping
ESDV-2011 MBF-2010 OUTLET TO PRODUCED WATER SKIMMER ~ Valves Mechanical
ESDY-2011 MBF-2010 OUTLET TO PRODUCED WATER SKIMMER ~ Control Valves Mechanical
PSV-2010 MBF-2010 PROD. COMP. SUCT. DRUM ~ Valves/Shutdow... Mechanical
PT-2011 MBF-2010 PROD. COMP. SUCT. DRUM ~ Pressure Relief ... Mechanical
RO-2010 MBF-2010 PROCESS GAS INLET ~ Flow - Restrictio... Instrumentation
A ITR
Number Name Status Date Complet... % Complete
M-01A MBF-2010: Pressure Vessel / Tank Completed Jul 1 2013 12:0... 100
B ITR
Number Name Status Date Complet... % Complete
M-011B MBF-2010: Vessel / Tank Closure Certificate Completed Aug 22 2013 12:... 100
M-01B MBF-2010: Pressure Vessel / Tank Completed Aug 22 2013 12:... 100
Isolation
Number Name Status Date In Date Out
Isolate Vessel MBF-2010 from 10in PG-AM-264 Started Sep 12 2013 12:...


Global Falcon - Zenator Check: Project Y
File Edit View Document Generation Maintenance Tools Administrator Help
Data Source: BBG3300-ALAN-PROPOSAL
Project Groups
Refresh Project
Back
Forward
Views
amills
M-091B
CBA-2020-Docs-Drgs: CBA-2020 Documents & Drawings
Solar_Turbines_Production_Compressor
040.104: Compressor & GT Ancillaries
050: Fuel Gas
050.101: Frm Exist Manifold to SDV0050
050.102: Crossover to Exist FG Header
050.103: Frm SDV0050 to ds GT FG Filters & GT
050.105: Frm Exist FG Scrubber to LP&HP Relief HDR
FI-6020
RO-6023
EN CVANCARA IFA DWG PKG 6
CN-09: Partial Turnover Notice
Example - Fuel Gas system Commissioning Procedure
EN CVANCARA IFA DWG PKG 1
060: Closed Drains
065: Open Drains
085: Controls
090: Chemical Storage and Injection
105: Main Power Generation
105.101: Power Gen_ Set for Vendor Package A & B
HAL-2430
HAW-2410
MBJ-2401
MBL-2400
ZBN-2411
CN-09: Partial Turnover Notice
CN5862-CN-09_V1
PSTN
CN-10: Partial Turnover Certificate
CN5855-CN-10_V1
PSTC
105.102: H_V_ Power 3_3kV
CN-07: Final Turnover Notice
CN5854-CN-07_V1
125: Medium or Low Voltage Power Supplies
125.105: Modifications to MCCs
PSSR-Y: Pre Startup Safety Review
PSSR-Y
P&ID-1
P&ID-2
P&ID-3
Project Z
Number
Name
Status
Document
Number Name Status Document Ty... Location Date Added ...
Solar_Turbines_Production_Compressor ~ Document E:\Zenator\BBG... Aug 22 2013 12:...
Status: Project Group Sort Order: Number Selected Node: CBA-2020-Docs-Drgs: CBA-2020 Documents Drawings Node ID: 5809 Node Type: Folder [39] Node Status: ~ [0] Role: Administrators

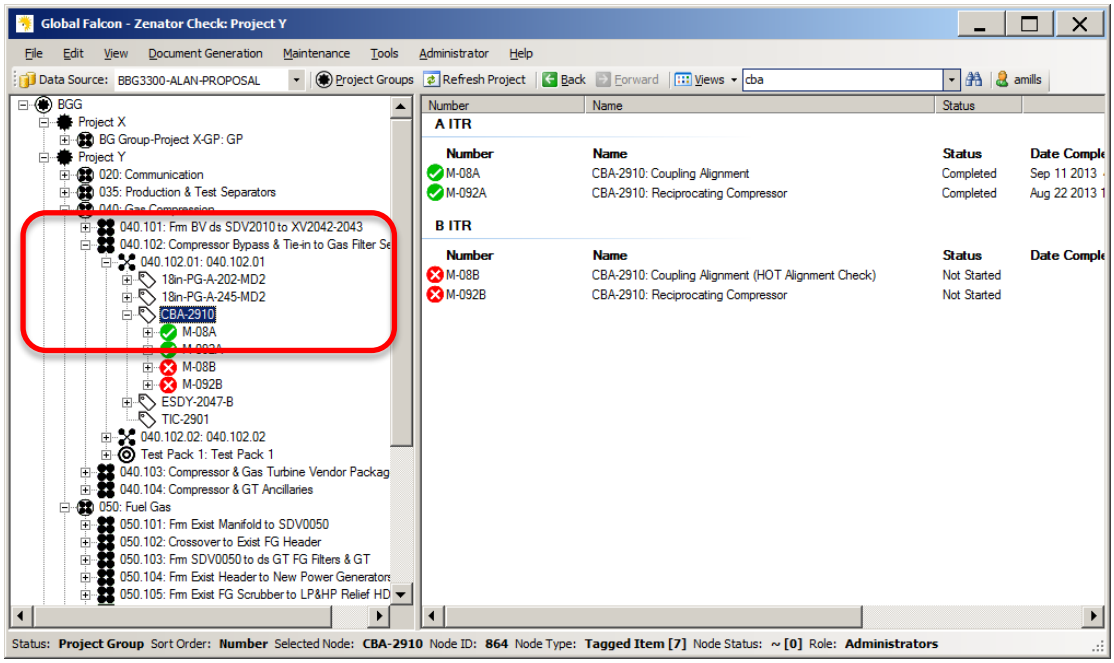
1.7 Equipment and Tags Information

Document individual equipment, sub-systems and systems manufacturers part numbers, reference numbers and Tag numbers against individual commissioning projects. (Note the Tag number correlates to individual Serial Number).

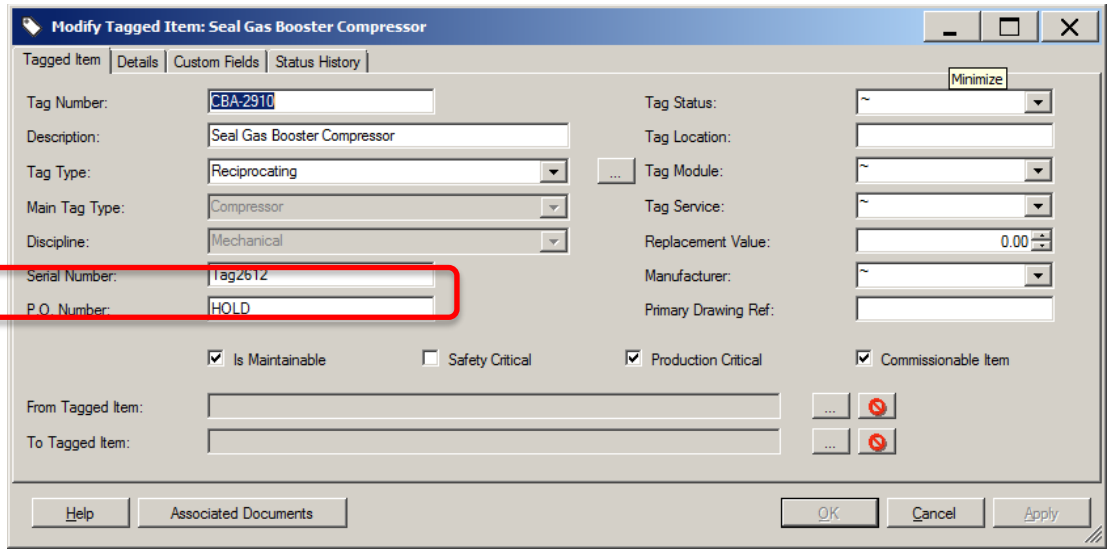
Also document Software Tags and their identificaion within Zenator.

Information that is commonly needed is either manually entered at the Tag Details screen, or more usually added to the Import Template and populated through Launch. Purchase Order Number, Serial Number, Manufacturer, Model Number are some of the commonly populated fields. Specific information not contained in a common field is entered to a Custom Field, either manually, or more usually added to the Import Template.

Example of Serial and Part Numbers on Seal Gas Booster Compressor, Tag CBA-2910

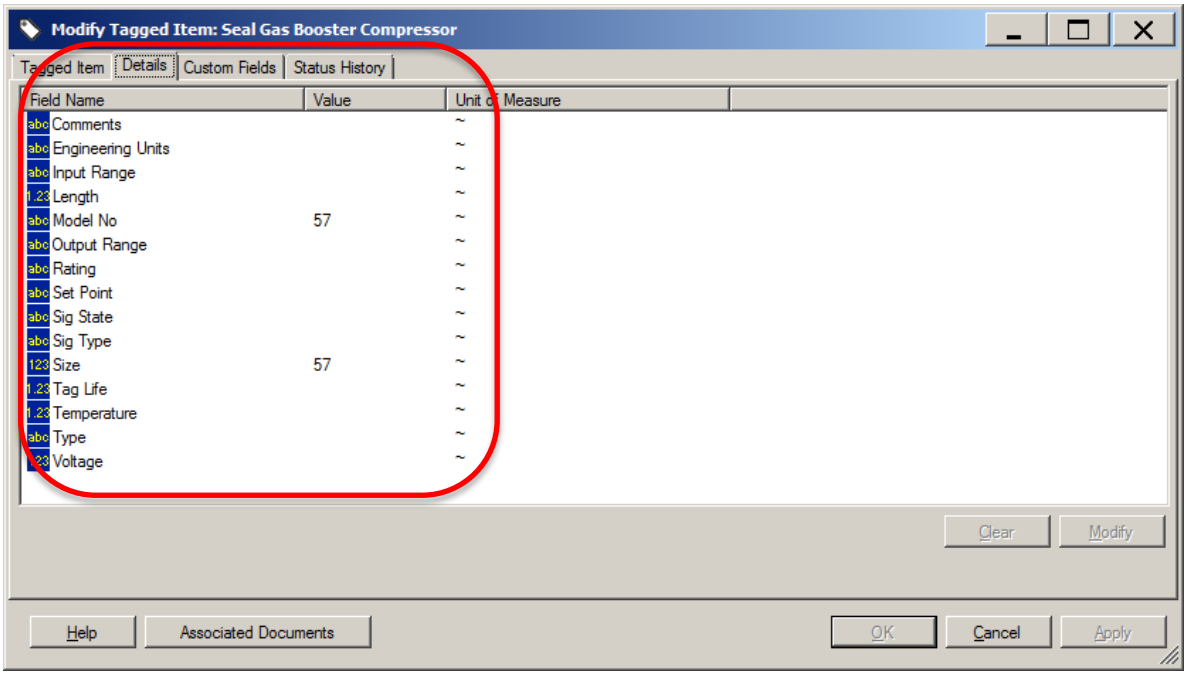


Tag Details Screen showing Serial Number

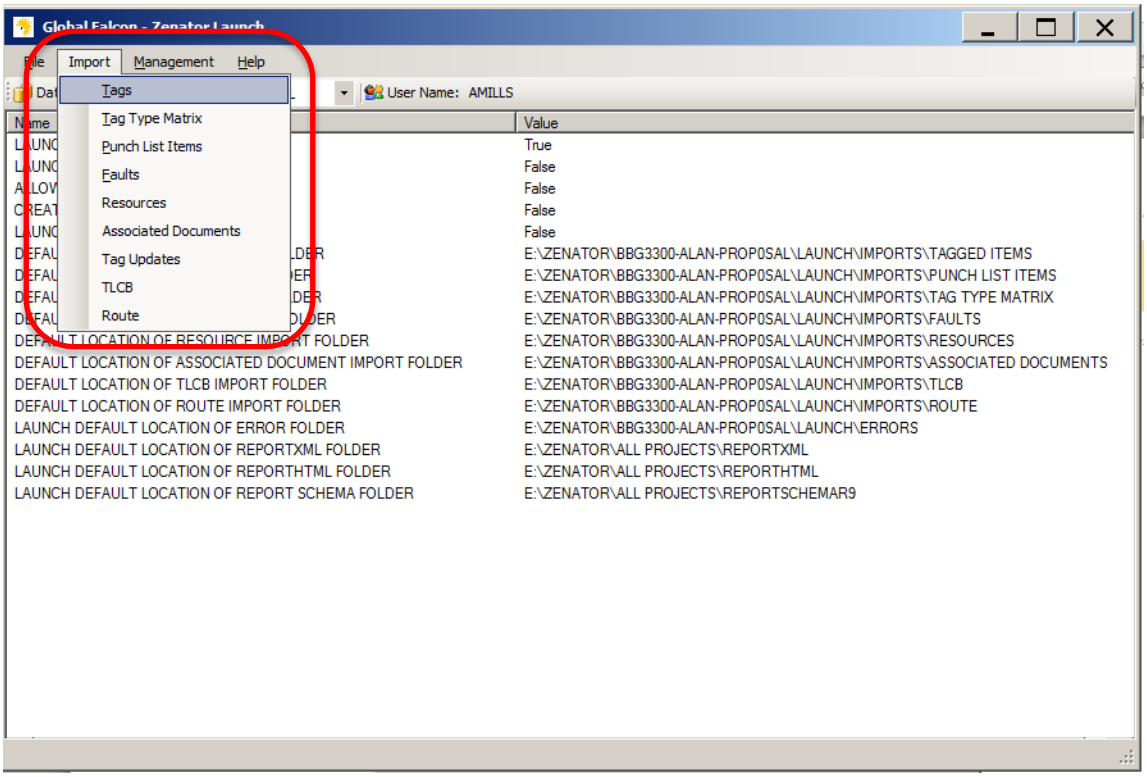


Details Fields to Populate Data through Launch

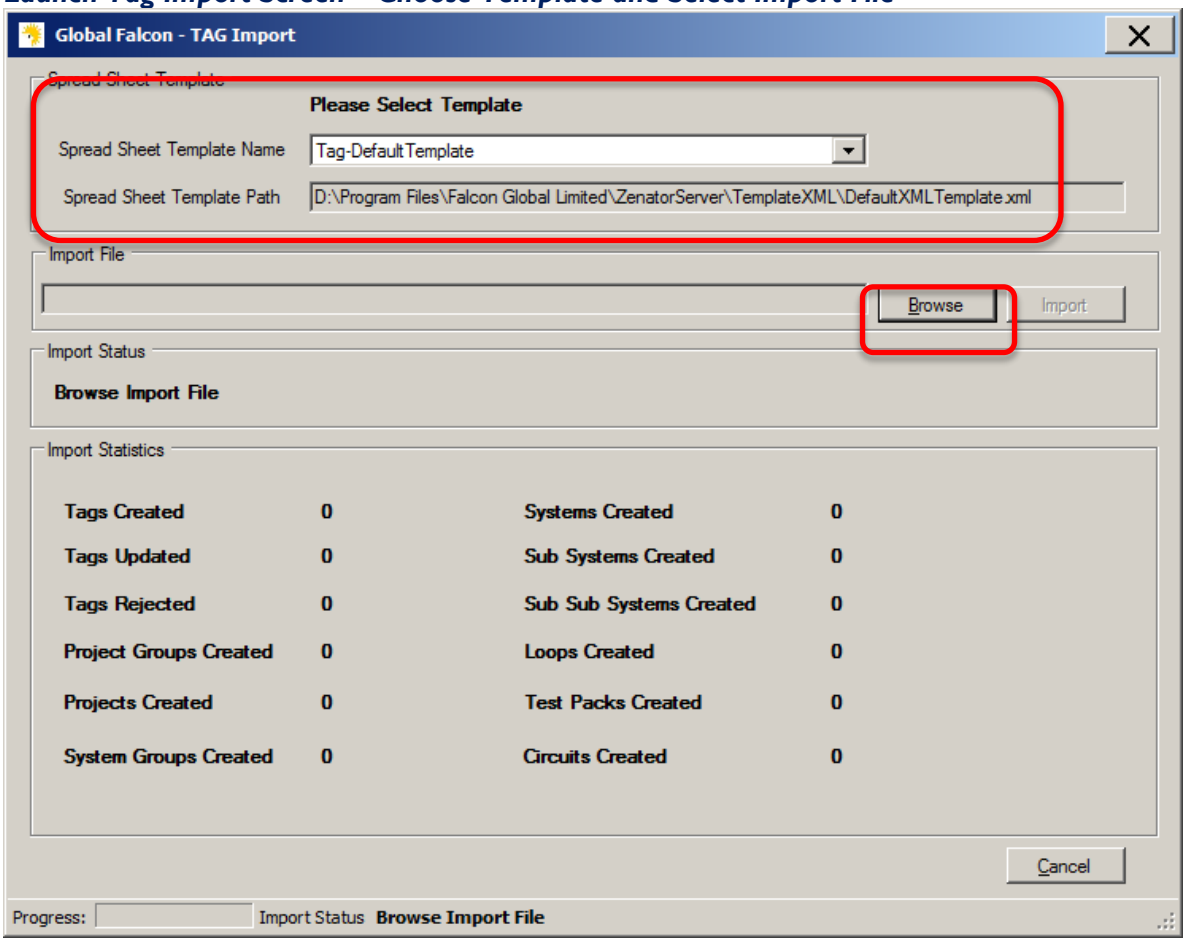
Custom Fields are added to the Tag Data Template and Populated through Launch



Custom Fields are added to the Tag Data Template and Populated through Launch



Launch Tag Import Screen – Choose Template and Select Import File



Import Template for Project Y (Mandatory and Common Fields, Cols A to M)

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Deleted	Tag No	Tag Name	Discipline	Parent Tag No	Status	Commissionable	Location	Module	Service	Is Maintainable	Serial No	P.O. Number
2		10in-PG-AM-264-MD2	MBF-2010 –to–TRIM	Piping	MBF-2010	~			~	~		Tag2831	
3		10in-PG-AM-285-ME2	NAP2900–to–TRIM	Piping	NAP2900	~			~	~		Tag2832	
4		18in-PG-A-202-MD2	18"-PG-AM202-MD2–to–18"-PG-A234-MD2	Piping		~			~	~		Tag2849	
5		18in-PG-A-234-MD2	18"-PG-A202-MD2–to–18"-PG-A245-MD2	Piping		~			~	~		Tag2850	
6		18in-PG-A-245-MD2	18"-PG-2014-D2–to–18"-PG-2016-D2	Piping		~			~	~		Tag2848	
7		2in-PG-AM-293-MF1	2"-PG-AM276-MD2–to–CBA-2910	Piping		~			~	~		Tag2861	
8		AAP-_2075	Heater for Lube Oil Tank BBJ-2074	Mechanical		~			~	~		Tag2619	24834-MIS-MRA-MCCS-00001
9		ABJ-2070	Turbine Fired Wash Tank	Mechanical		~			~	~		Tag2595	24834-MIS-MRA-MCCS-00001

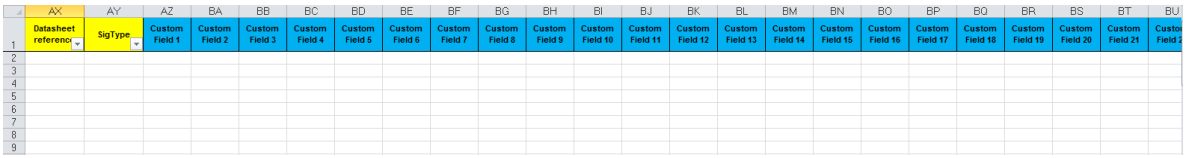
Import Template for Project Y (Mandatory and Common Fields, Cols N to AD)

	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AD
1	Manufacturer	Replacement Value	Primary Drawing Ref	Loop	Test Pack	Circuit	Main	Sub	System Group Name	System Group Number	System Name	System Number	Sub System Name	Sub System Number	Project Group
2	~						Piping	Pipe Spool	Gas Compression	040	Compressor Bypass & Tie-in to	040.101	040.101.01	040.101.01	BGG
3	~						Piping	Pipe Spool	Gas Compression	040	Compressor Bypass & Tie-in to	040.102	040.102.02	040.102.02	BGG
4	~						Piping	Pipe Spool	Gas Compression	040	Compressor Bypass & Tie-in to	040.102	040.102.01	040.102.01	BGG
5	~						Piping	Pipe Spool	Gas Compression	040	Compressor Bypass & Tie-in to	040.102	040.102.02	040.102.02	BGG
6	~						Piping	Pipe Spool	Gas Compression	040	Compressor Bypass & Tie-in to	040.102	040.102.01	040.102.01	BGG
7	~						Piping	Pipe Spool	Gas Compression	040	Compressor Bypass & Tie-in to	040.102	040.102.02	040.102.02	BGG
8	~						Heat Exchanger	Heat Exchanger	Gas Compression	040	Compressor & GT Ancillaries	040.104	040.104.01	040.104.01	BGG
9	~						Pressure Vessel / Tank	Tank	Gas Compression	040	Compressor & GT Ancillaries	040.104	040.104.01	040.104.01	BGG

Import Template for Project Y (Mandatory and Common Fields, Cols AE to AW)

	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW
1	Project Group Number	Project	Project Number	From Tag	To Tag	Comments	Temperature	Rating	Size	Voltage	Type	Length	Input Range	Output Range	Units	Eng Units	Set Point	Model No	Loop Diagram Referenc
2	BG Group	Project Y	BG Group-Project Y	~	~														
3	BG Group	Project Y	BG Group-Project Y	~	~														
4	BG Group	Project Y	BG Group-Project Y	~	~														
5	BG Group	Project Y	BG Group-Project Y	~	~														
6	BG Group	Project Y	BG Group-Project Y	~	~														
7	BG Group	Project Y	BG Group-Project Y	~	~														
8	BG Group	Project Y	BG Group-Project Y	~	~														
9	BG Group	Project Y	BG Group-Project Y	~	~														

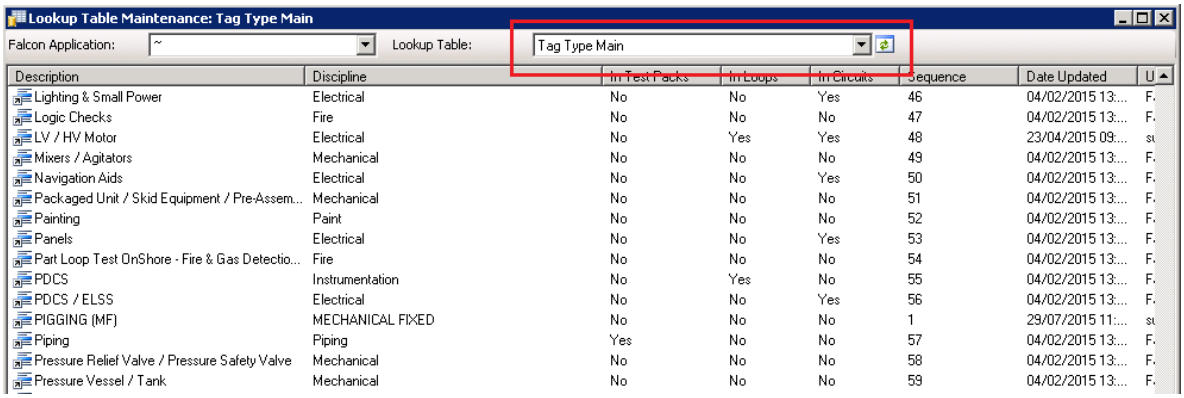
Import Template for Project Y (Common Fields, Cols to AY, Custom Fields from AZ)



	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU
1	Datasheet referenc	SigType	Custom Field 1	Custom Field 2	Custom Field 3	Custom Field 4	Custom Field 5	Custom Field 6	Custom Field 7	Custom Field 8	Custom Field 9	Custom Field 10	Custom Field 11	Custom Field 12	Custom Field 13	Custom Field 14	Custom Field 15	Custom Field 16	Custom Field 17	Custom Field 18	Custom Field 19	Custom Field 20	Custom Field 21	Custo Field
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								

Identification of Software Tags

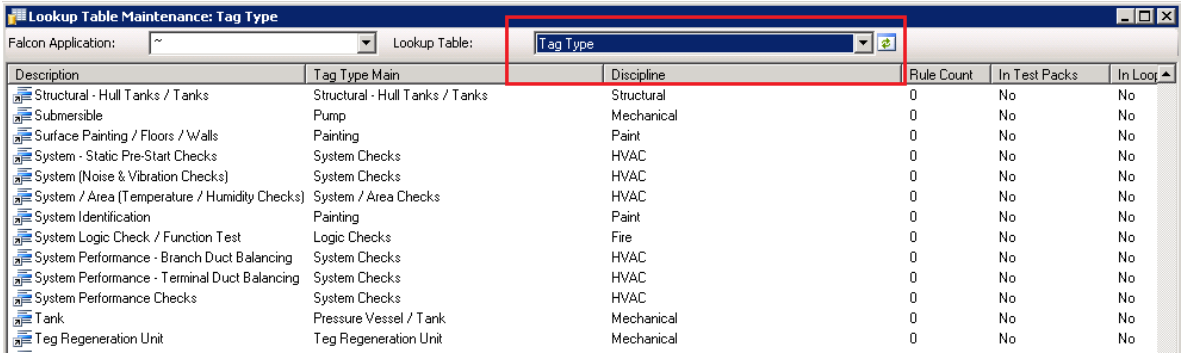
Tag Type Main and Tag Type should be used to identify Software Tags. The Tag Type Main would be used to identify 1 or more high level groupings of the Software Tags and the Tag Type would be used to identify the individual Tag Types.



Lookup Table Maintenance: Tag Type Main

Falcon Application: ~ Lookup Table: Tag Type Main

Description	Discipline	In Test Packs	In Loops	In Circuits	Sequence	Date Updated	U
Lighting & Small Power	Electrical	No	No	Yes	46	04/02/2015 13:...	F
Logic Checks	Fire	No	No	No	47	04/02/2015 13:...	F
LV / HV Motor	Electrical	No	Yes	Yes	48	23/04/2015 09:...	su
Mixers / Agitators	Mechanical	No	No	No	49	04/02/2015 13:...	F
Navigation Aids	Electrical	No	No	Yes	50	04/02/2015 13:...	F
Packaged Unit / Skid Equipment / Pre-Assem...	Mechanical	No	No	No	51	04/02/2015 13:...	F
Painting	Paint	No	No	No	52	04/02/2015 13:...	F
Panels	Electrical	No	No	Yes	53	04/02/2015 13:...	F
Part Loop Test OnShore - Fire & Gas Detectio...	Fire	No	No	No	54	04/02/2015 13:...	F
PDCS	Instrumentation	No	Yes	No	55	04/02/2015 13:...	F
PDCS / ELSS	Electrical	No	No	Yes	56	04/02/2015 13:...	F
PIGGING (MF)	MECHANICAL FIXED	No	No	No	1	29/07/2015 11:...	su
Piping	Piping	Yes	No	No	57	04/02/2015 13:...	F
Pressure Relief Valve / Pressure Safety Valve	Mechanical	No	No	No	58	04/02/2015 13:...	F
Pressure Vessel / Tank	Mechanical	No	No	No	59	04/02/2015 13:...	F

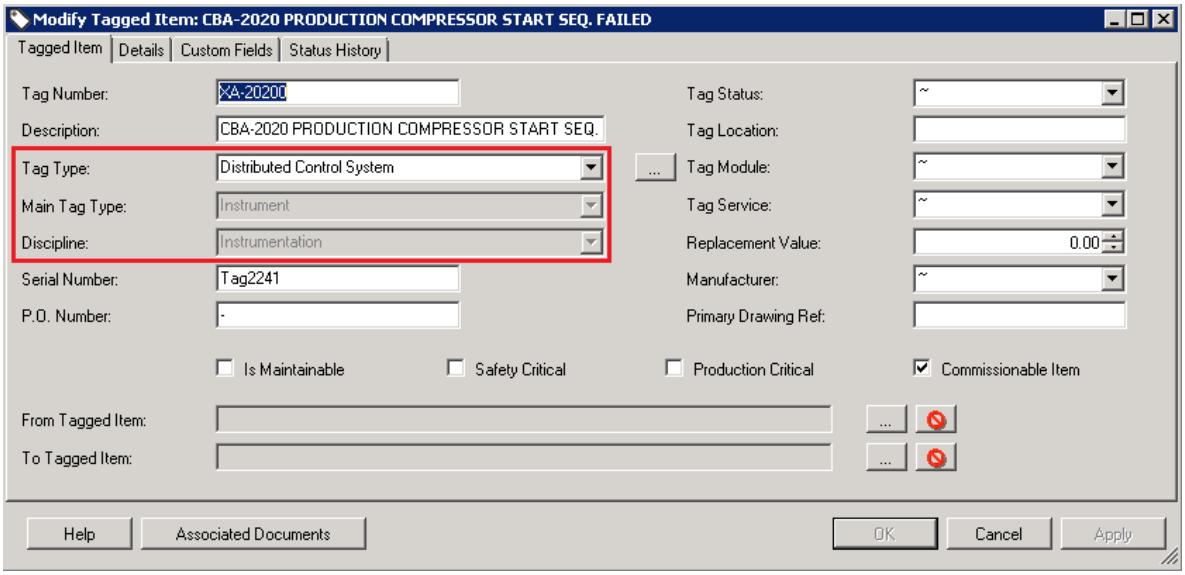


Lookup Table Maintenance: Tag Type

Falcon Application: ~ Lookup Table: Tag Type

Description	Tag Type Main	Discipline	Rule Count	In Test Packs	In Loop
Structural - Hull Tanks / Tanks	Structural - Hull Tanks / Tanks	Structural	0	No	No
Submersible	Pump	Mechanical	0	No	No
Surface Painting / Floors / Walls	Painting	Paint	0	No	No
System - Static Pre-Start Checks	System Checks	HVAC	0	No	No
System (Noise & Vibration Checks)	System Checks	HVAC	0	No	No
System / Area (Temperature / Humidity Checks)	System / Area Checks	HVAC	0	No	No
System Identification	Painting	Paint	0	No	No
System Logic Check / Function Test	Logic Checks	Fire	0	No	No
System Performance - Branch Duct Balancing	System Checks	HVAC	0	No	No
System Performance - Terminal Duct Balancing	System Checks	HVAC	0	No	No
System Performance Checks	System Checks	HVAC	0	No	No
Tank	Pressure Vessel / Tank	Mechanical	0	No	No
Teg Regeneration Unit	Teg Regeneration Unit	Mechanical	0	No	No

Within the Tag screen the Tag Type Main and Tag Type are clearly seen.

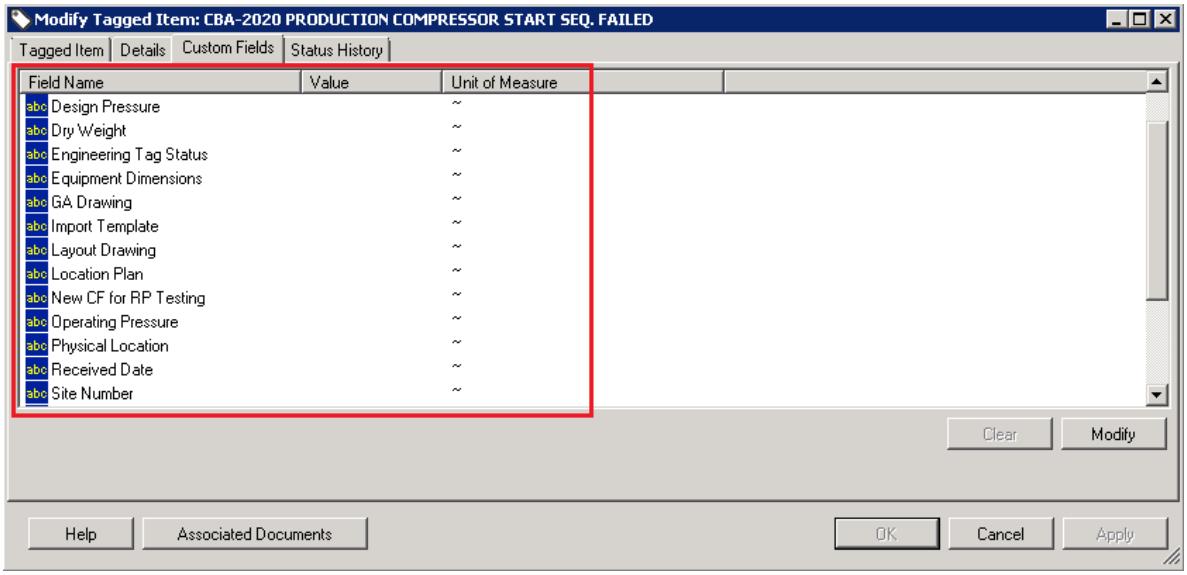


Modify Tagged Item: CBA-2020 PRODUCTION COMPRESSOR START SEQ. FAILED

Tagged Item | Details | Custom Fields | Status History

Tag Number: XA-20200
Description: CBA-2020 PRODUCTION COMPRESSOR START SEQ.
Tag Type: Distributed Control System
Main Tag Type: Instrument
Discipline: Instrumentation
Serial Number: Tag2241
P.O. Number: -
Tag Status: ~
Tag Location:
Tag Module: ~
Tag Service: ~
Replacement Value: 0.00
Manufacturer: ~
Primary Drawing Ref:
Is Maintainable | Safety Critical | Production Critical | Commissionable Item
From Tagged Item:
To Tagged Item:
Help | Associated Documents | OK | Cancel | Apply

For any specific Software Tag related attributes custom field can be created as required and captured using Launch.



Custom Fields once catpured can be included onto reports and can be used for filter in various key locations within Zenator:

- *Filtering within the ITR Wizard*
- *Filtering within the TLCB Wizard*
- *Filtering within the Bulk Management Tag screen*
- *Filtering within reports.*

1.8 Project Hierarchy

Provide a facility, section, system, sub-system, equipment and tag item hierachy

- A facility (the root of the hierarchy);
- A unit, attached to a facility;
- A system, attached to a section;
- A sub-system, attached to a system;
- Equipment, attached to a sub-system;
- A tag item, attached to a system, a sub-system or equipment.

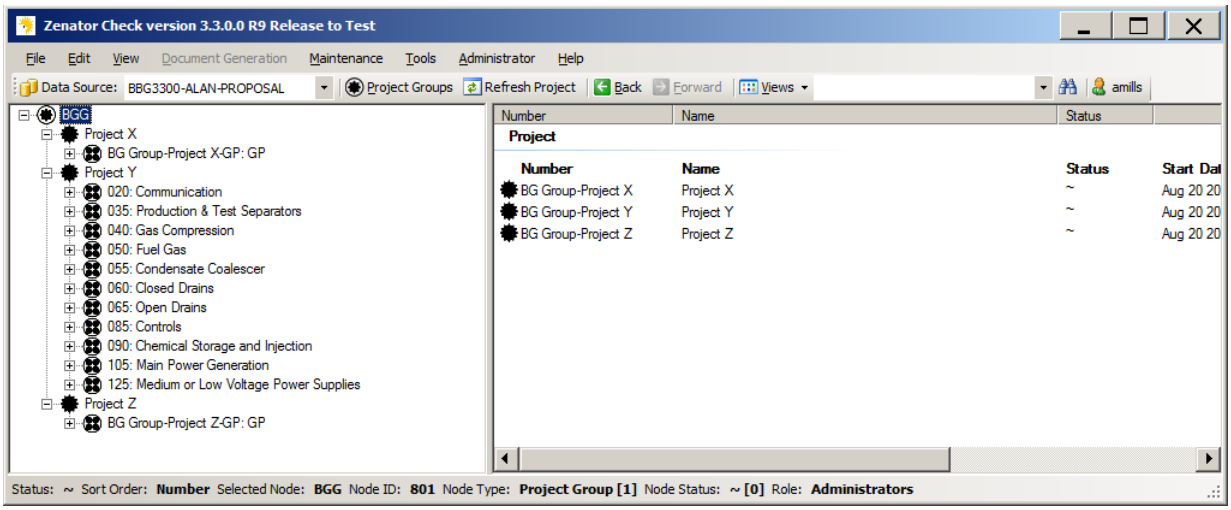
Also demonstrated the use of Areas within the Project Hierarchy.

In Zenator the naming convention of structural nodes that define the project hierarchy is;

- *Project (Facility)*
  - *System Group (Unit)*
    - *System*
      - *Sub System*
        - *Sub Sub System*
          - *Parent Tag (Equipment)*
            - *Child Tag*

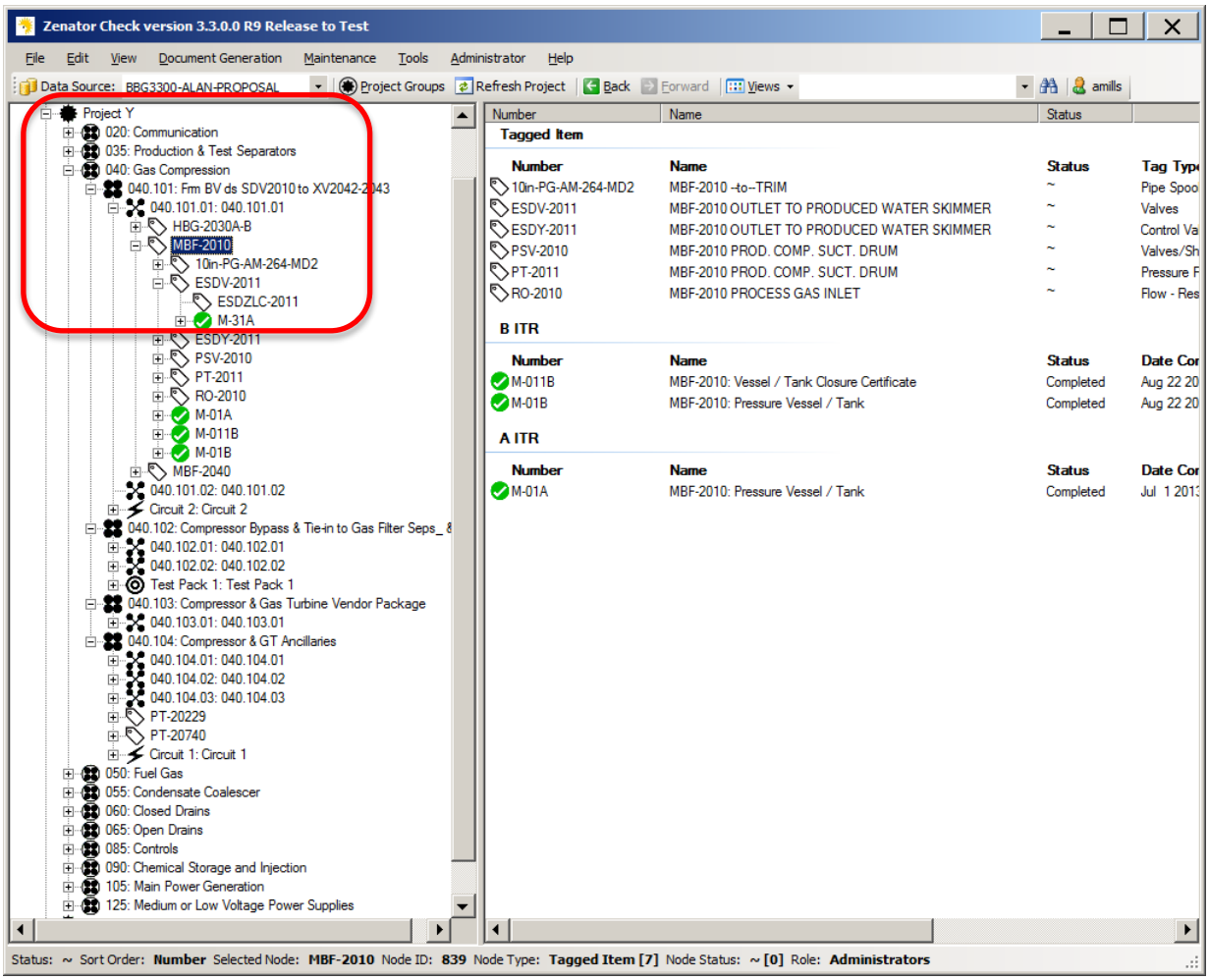
Note that in Zenator structure down to the System level is mandatory. A project can decide if there is a requirement to use Sub Systems or Sub Sub Systems. Tags can exist In Systems, Sub Systems or Sub Sub Systems. This is all controlled using the Project Node Validation Rules.

In this section are a Project Group (BGG) and three Projects, X, Y & Z, all populated in a single database. Optionally, each Project can be populated in its own database.



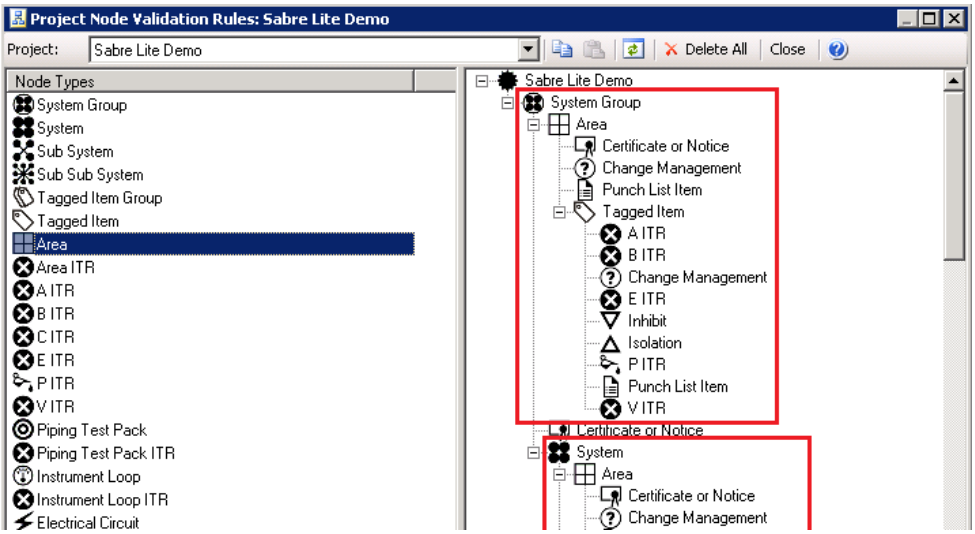
Project Y Hierarchy

Project > System Group >System > Sub System > Parent Tag> Child Tag >Grand Child Tag



Area Nodes

In Zenator an Area node can also be used in the project hierarchy. It can be added under System Groups, Systems, Sub Systems and Sub Sub Systems. The Project Node Validation Rules screen can be used to control exactly where an Area node can be used and what can be created under an Area.



1.9 Testing Verification (Static and Dynamic verification of the elements / sub-elements)

Document and record the calibration, testing and certification verification of the functional operability, Static and Dynamic verification of the elements / sub-elements within a system and facility.

Please read the response in conjunction with the responses at 1.7, 1.10 and 1.12.

It is one of the general purposes of Zenator to document, track and record all testing, calibration and certification through the Mechanical Completion, Static Commissioning and Dynamic Commissioning phases of every Sub System and System in the facility. All of the ITR templates we supply with Zenator relate to testing and many require calibration of project equipment cascading into certification.

1.10 Testing Verification (functional operability of the elements / sub-elements)

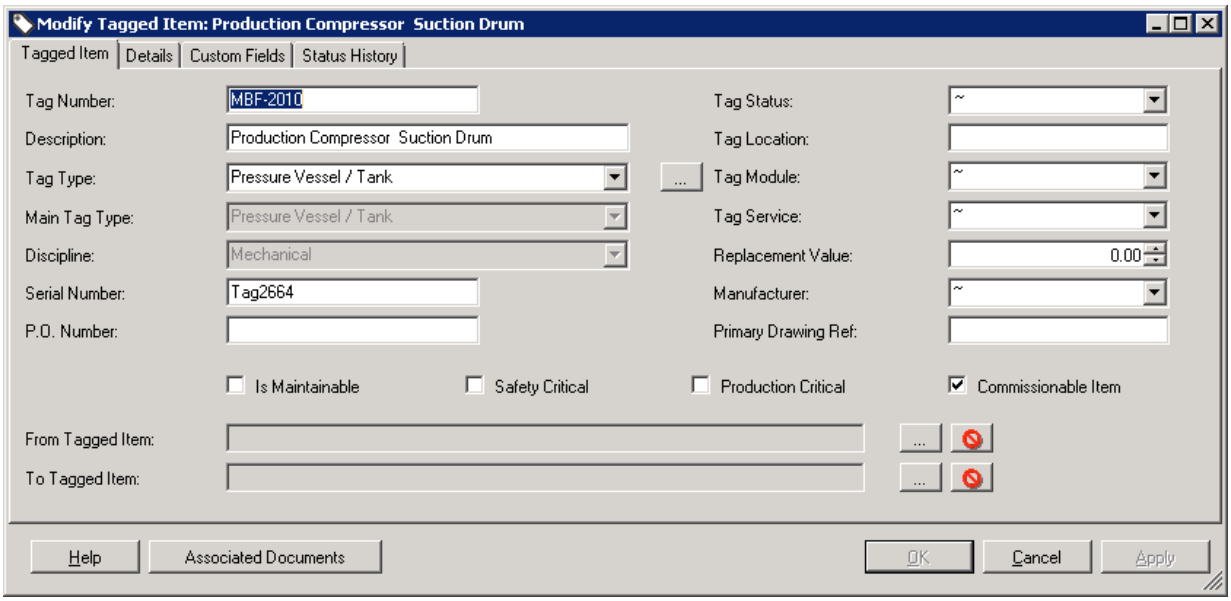
Document the verification of the functional operability of the elements / sub-elements within a system.

Please read the response in conjunction with the responses at 1.7, 1.11 & 1.12.

The requirement asks for evidence of how Zenator verifies the functional operability, which we interpret as the sequence of tests in dependent AITRs, progressing to dependent BITRs, to verify completion of Tagged Items (elements) within a Sub System or System. Notwithstanding it is the responsibility of the Commissioning Team to choose the actual A & B ITRs that are needed to complete all Mechanical Completion and Static Commissioning tests on the project and to prepare the Tag Type Matrix (TTM), in Zenator we have made these parts of the process much less complex. Zenator is supplied with 320 ITR templates across Disciplines, including Preservation, A & B checksheet templates. We have made defining and importing TTM very straightforward for the Commissioning Team. For ease of use, the TTM is usually completed externally to Zenator using the TTM Import template which is then populated in Zenator through Launch by a trained, authorised user from the Commissioning Team or a Power User. The TTM can be manually entered if required and is easy for authorised users to update or alter. Having defined the project's TTM the Commissioning Team will perform a Gap Analysis of the ITRs needed to complete all A & B ITRs on the project. We do not expect the ITR templates supplied with Zenator to fulfl all requirements on every project, but these will serve as a useful starter pack, to which the Commissioning Team can customise, amend and introduce new ITRs as needed.

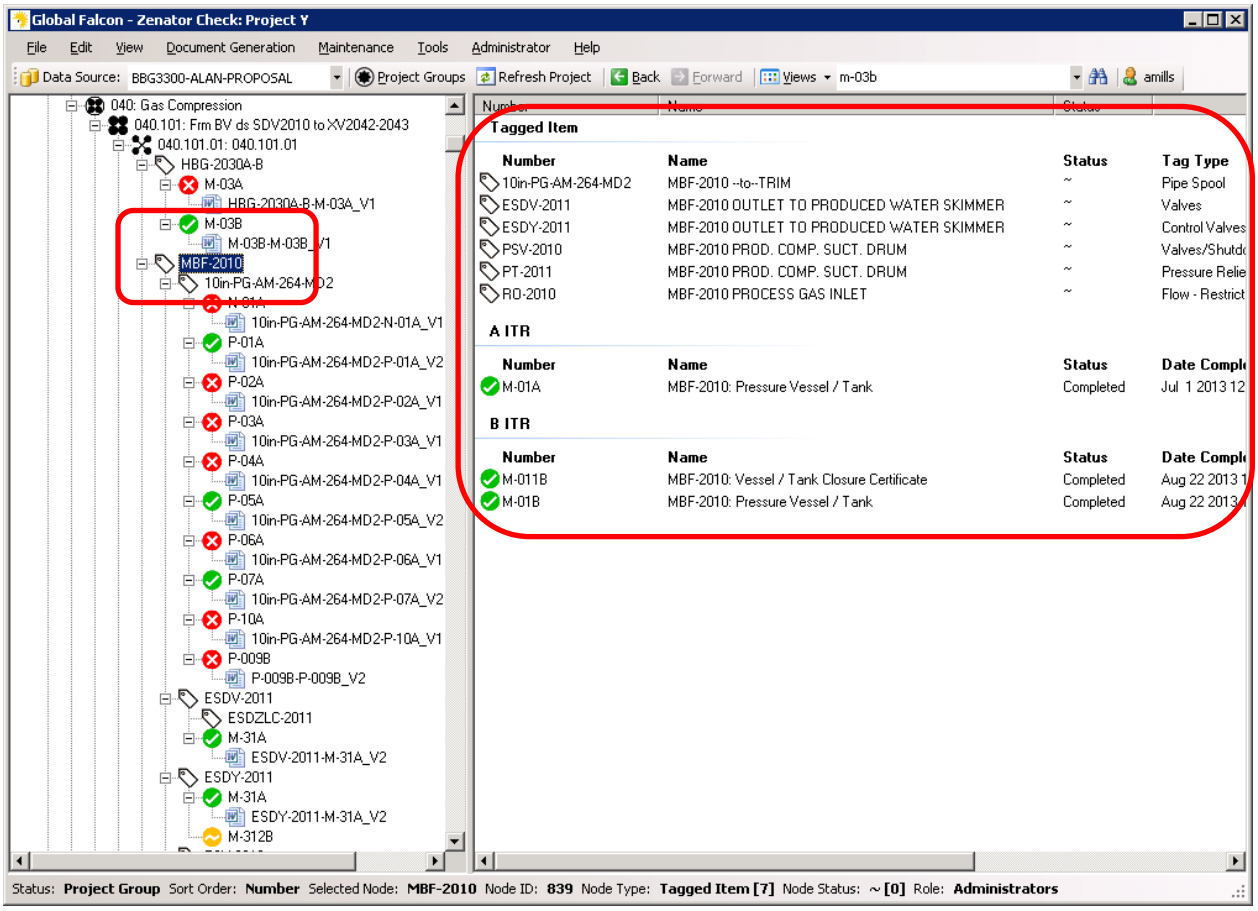
Verification of the testing carried out can be seen in the following ways. The example focuses on:

Tag MBF-2010, Production Compressor Suction Drum, in Sub System 040.101.01

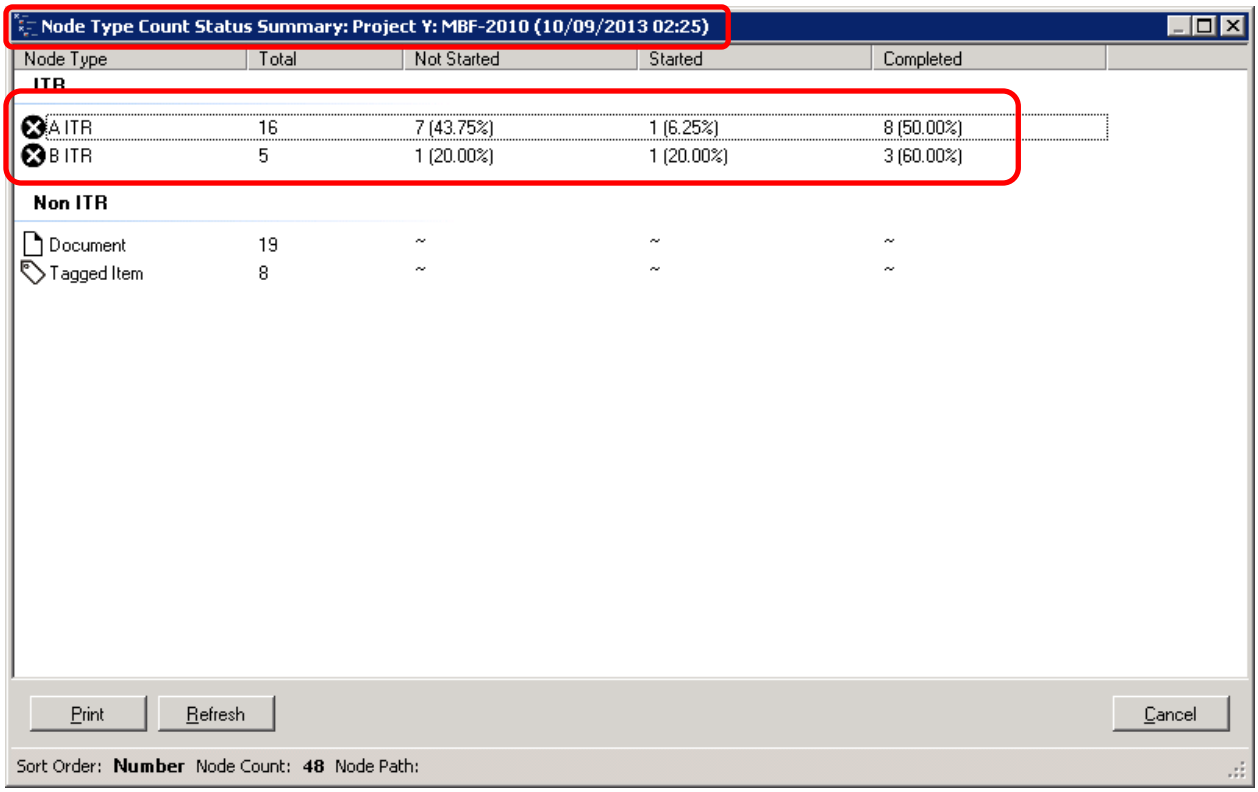


1. *Visually in the Project hierarchy, with traffic light node status*
2. *Numerically in the Node Count Status Summary*
3. *In Bulk Management to view and authorised users can add, amend, and delete*
4. *In Reports Plus where Summary Level Management reports and Granular Level Technical reports are availlable in Graphical, Pivot Table and Tabular formats.*

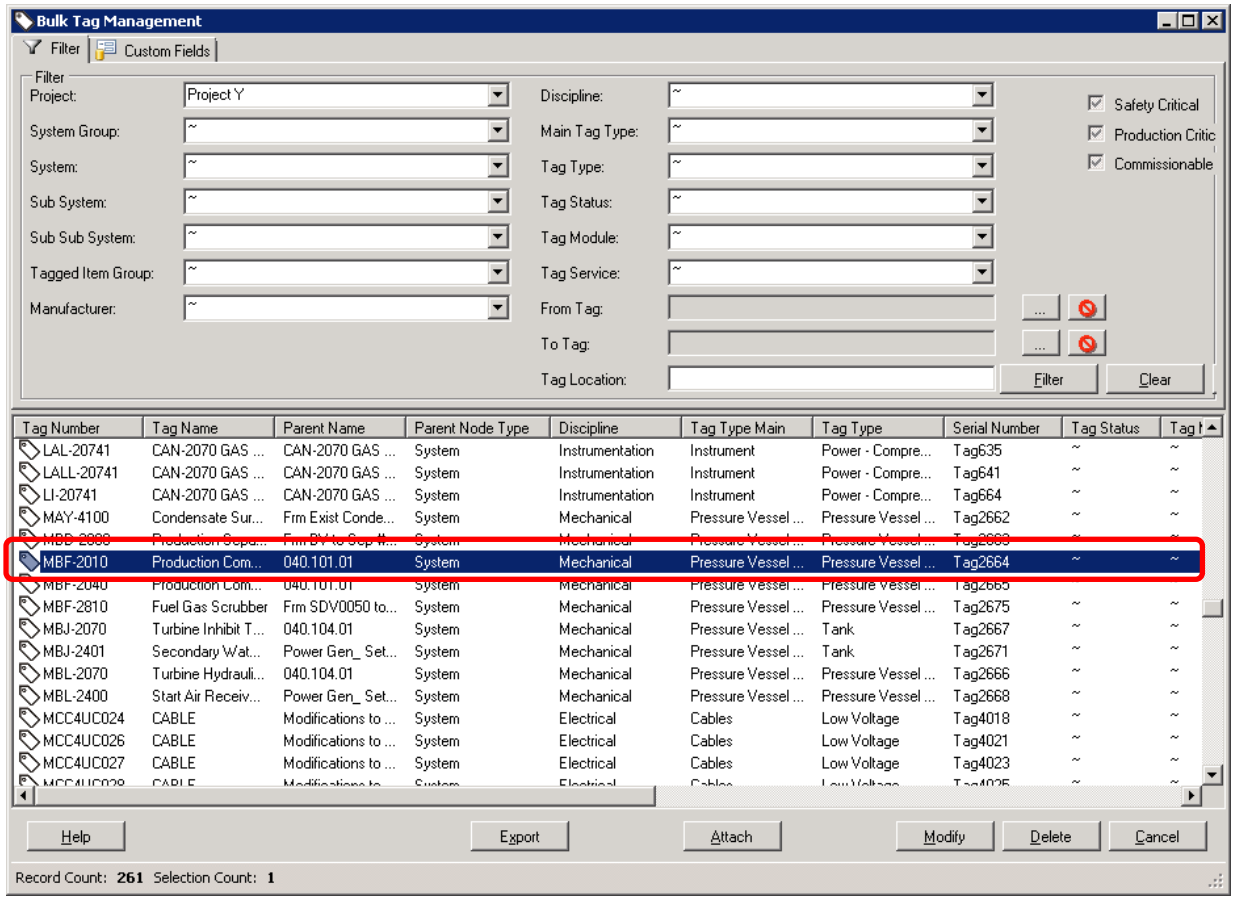
Visually in the Project hierarchy



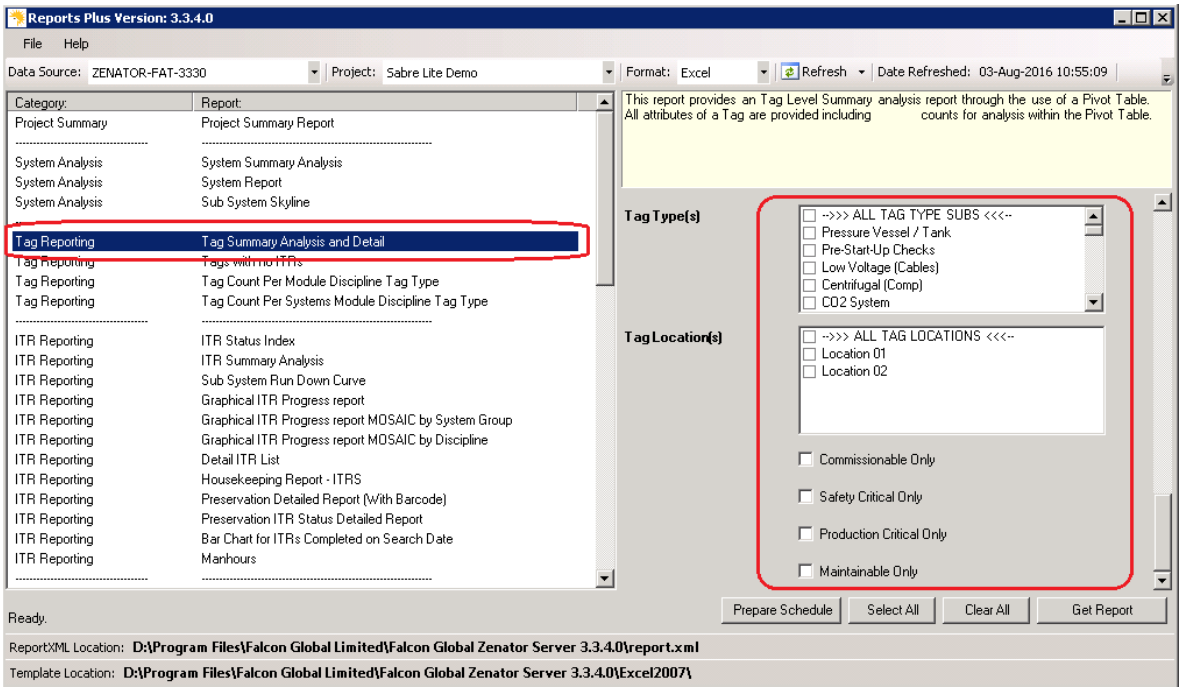
In the Node Count Status Summary



In Bulk Management



In Reports Plus



	G	H	I	J	K	L
1						
2	TagNo	TagName	TagTypeMain	TagTypeSub	Discipline	SerialNo
30	MBF-2010	Production Compressor Suction Drum	Pressure Vessel / Tank	Pressure Vessel / Tank	Mechanical	Tag2664

Housekeeping ITRs Summary

Parent Type	Tagged Item
Doc Type	(All)

System Group	System	Sub System	Sub Sub System	Parent No	Total	Not Started	%NotStarted	Started	%Started	Completed	%Completed
040-Gas Compression											
	040.101-Frm BV ds SDV2010 to XV2042-2043										
		040.101.01-040.101.01									
			(blank)								
				10in-PG-AM-264-MD2	10	7	0.7	0	0	3	0.3
				BDV-2044	1	0	0	1	1	0	0
				BDY-2044	2	0	0	1	0.5	1	0.5
				ESDV-2011	1	0	0	0	0	1	1
				ESDV-2040	1	1	1	0	0	0	0
				ESDV-2041	1	0	0	1	1	0	0
				ESDV-2043	1	0	0	0	0	1	1
				ESDY-2011	2	0	0	1	0.5	1	0.5
				ESDY-2040-A	2	1	0.5	0	0	1	0.5
				ESDY-2040-B	2	1	0.5	0	0	1	0.5
				ESDY-2040-C	2	1	0.5	0	0	1	0.5
				ESDY-2041	2	1	0.5	1	0.5	0	0
				ESDY-2043-A	2	1	0.5	1	0.5	0	0
				ESDY-2043-B	2	0	0	1	0.5	1	0.5
				HBG-2030A-B	2	1	0.5	0	0	1	0.5
				MBF-2010	3	0	0	0	0	3	1
				[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
				PSV-2010	2	0	0	0	0	2	1

Two examples of dependent ITRs supplied with Zenator

	Pre-Commissioning: Heater		M-03B Page 1 of 1
Unique ID:		Item/Tag No.	HBG-2080A-B
Project Name:	BG Group-Project Y	Sub-System No.	

Data Sheet			
Equipment Description	Production Separator # 3 Inlet Cooler		
Sub-System Description	035.101		
Location:		Module Detail:	
Drawing Reference:		Date Printed:	10-Sep-13

No	Description of Check / Action to be made	Results	Initial / Sign	Punch list item No.
1	Confirm that the Mechanical Completion ITR form **M-03A** has been completed and Punch list and Construction checklist if any has been completed and no damage has occurred since mechanical completion.			
2	Confirm that all Preservation measures have been removed.			
3	a) Confirm that any external Insulation has been applied to specification and is undamaged. b) For Heaters with Refractory lining ensure this has been / is dried out to manufacturer's specification before operational use.			
4	Ensure all valves associated with the unit have their correctly designed actuator or manual operator installed and that they are free to move. Confirm Valve Tagging is complete.			
5	Check that Valve interlocks are installed (if applicable) and the system operates as designed. Ensure keys are safely located.			
6	Ensure manufacturer's documentation is readily available and correct for installed equipment and is ready for transfer to Operations Department as part of Turnover Acceptance.			
7	***In conjunction with instrument personnel, check the functional operation and record performance of the following:***			
	a) All Valves & Control devices (indicate tag No's on Test Report)			
	b) All High and Low Temperature and Flow Alarms and Shutdowns functions (indicate tag No's on Test Report)			
8	Following successful completion of all above checks, carry out a final Punchlist for the installed equipment, and roll-up all outstanding items into one composite list for Turnover Commissioning Package Acceptance.			
9	Update latest issue of design drawings for "As Built" Information.			

	Mechanical Completion: Valves		M-31A Page 1 of 1
Unique ID:	ESDV-2001-M-31A_V1	Item/Tag No.	ESDV-2001
Project Name:	Project Y	Sub-System No.	
Data Sheet			
Equipment Description	ESDV-2001		
Sub-System Description			
Location:		Module Detail:	~
Drawing Reference:		Date Printed:	10-Sep-13

No.	Description of Check / Action to be made	Results	Initial / Sign	Punch list item No.
1	Confirm that Valve nameplate complies with Data Sheet and nameplate securely attached			
2	Confirm valve location & orientation is correct to detail drawings			
3	Check and confirm Installation and bolting arrangement is in accordance with required specification drawing and manufacturers instructions.			
4	Check access for operation is acceptable and there is sufficient clearance for maintenance removal etc.			
5	Confirm that inlet and outlet piping to valve mating flanges are in parallel and angular alignment with the correct gaskets installed. Complete ITR **M-27A**. Ensure that on tightening bolts no imposed stress is applied to valve.			
6	Check all PSVs installed, undamaged and seals intact – complete ITR form **M-28A** for PSVs			
7	Confirm that valve lubrication is completed to the required specification (Record Type / details of valve lubricant in Remarks below)			
8	Ensure that handwheel, lever or geared actuator is fitted and that valve can be operated without undue strain across complete operating range.			
9	Confirm that valve actuator is installed satisfactory and that any interlock mechanisms associated are fitted correctly. Ensure interlock keys are safely stored.			

1.11 Activity Controls (Stage Gates)

Document and provide a system based prerequisite (e.g. the ability to check whether a certain operation, such as pressurisation, can be performed) when equipment /sub-system/system/facility calibration, testing & certification has been completed and is ready for commissioning through the introduction of process / commissioning fluids or power up of equipment. The toolset shall recognise the pre-requisites for entry and completion of Stage gates such as a system is ready for pre-commissioning.

Examples shown here relate to:

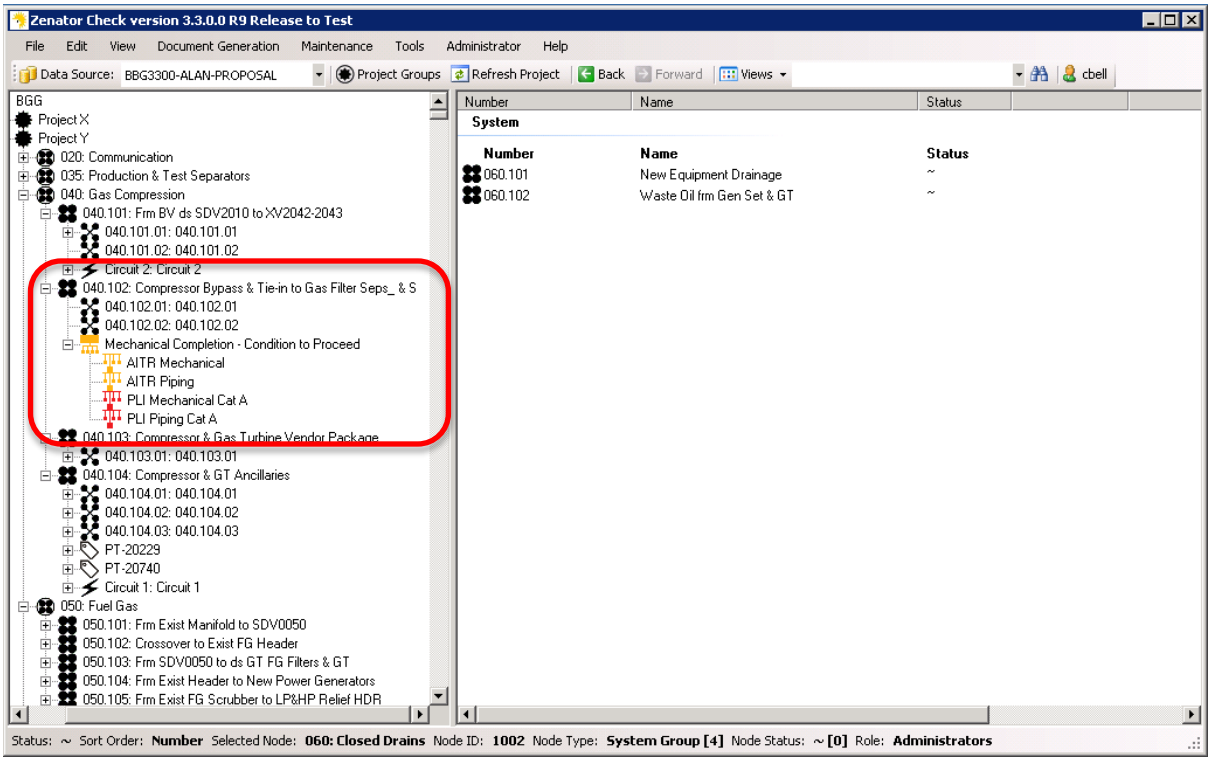
Stage Gate Controls

- *Using Activity functions in Zenator Route to Control Stage Gates*
- *Enabling the monitoring of Status of subordinate activities to achieve:*
  - *Mechanical Completion, such as Discipline A ITRs, PLI Cat A*
  - *Ready for Commissioning, such as Discipline B ITRs, PLI Cat B*

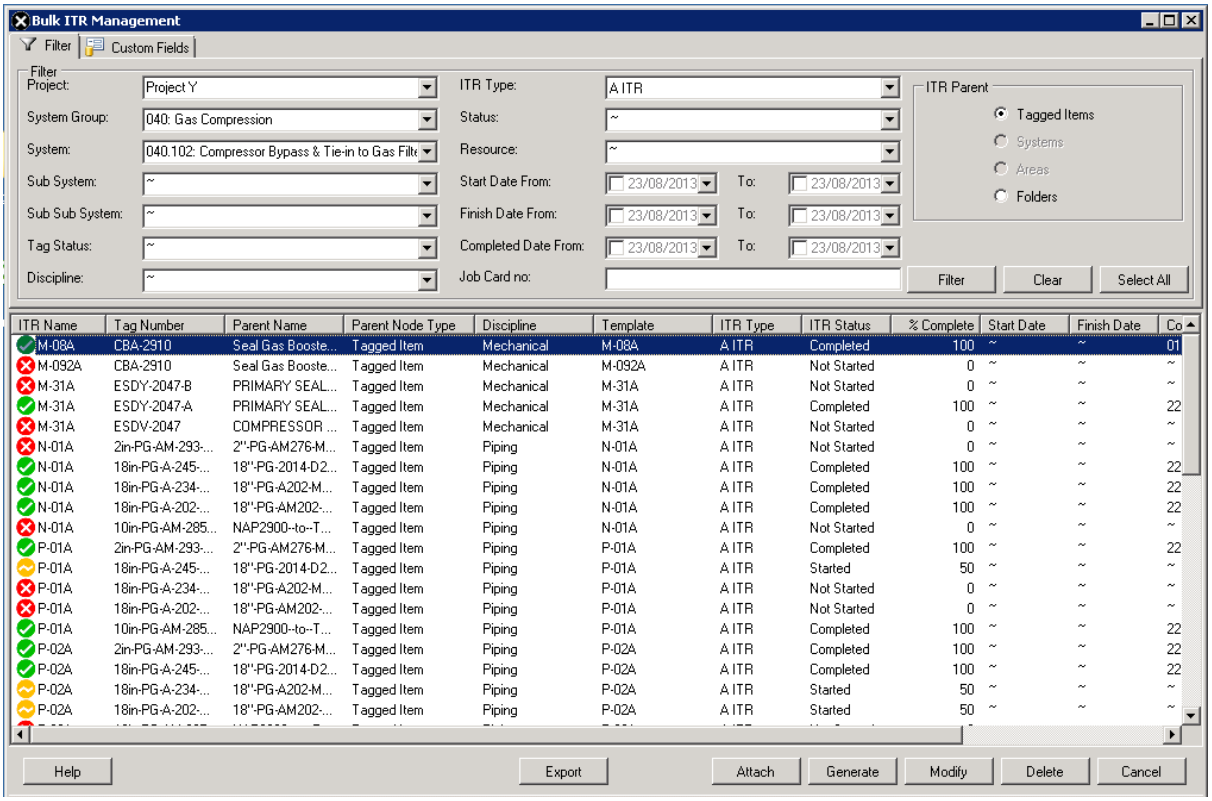
Example of a System-wide test

- *Adding a Sample Commissioning Procedure to a System*
- *Fuel Gas Commissioning Procedure rendered compatible with Zenator*

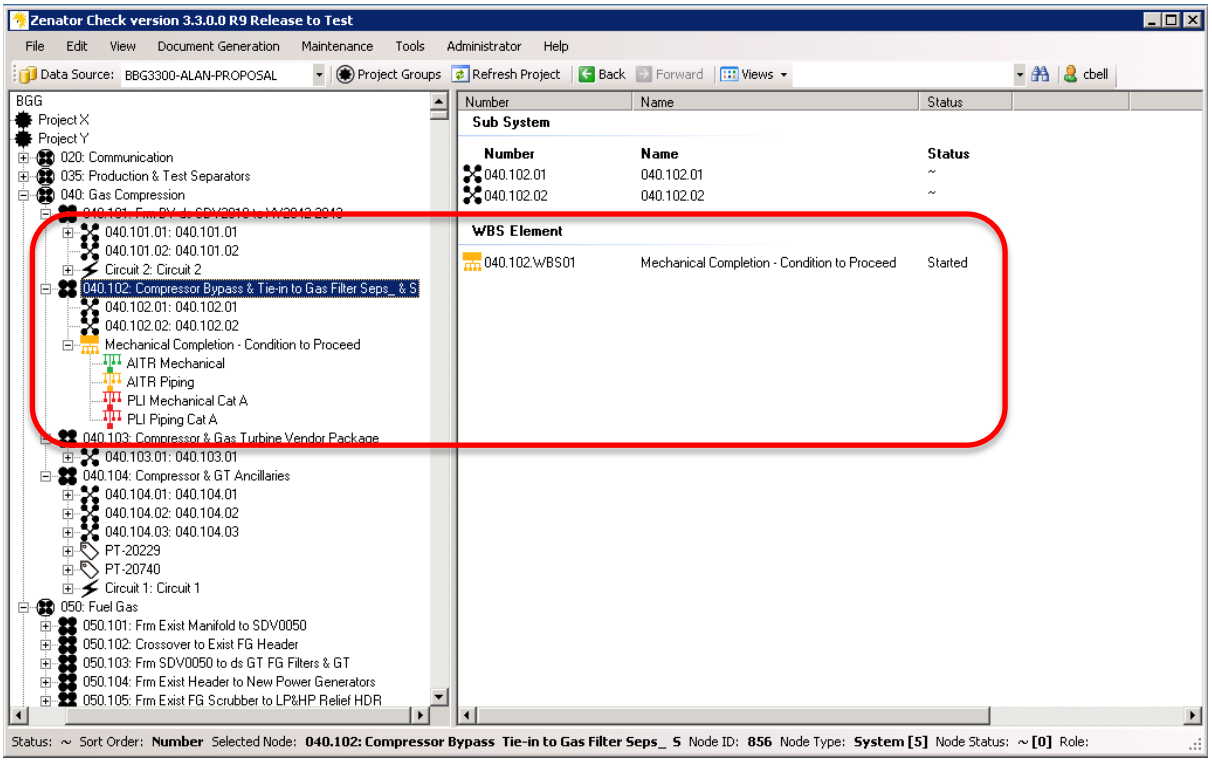
Using WBS Activities in System 040.102 to Control Stage Gates – Early Monitoring



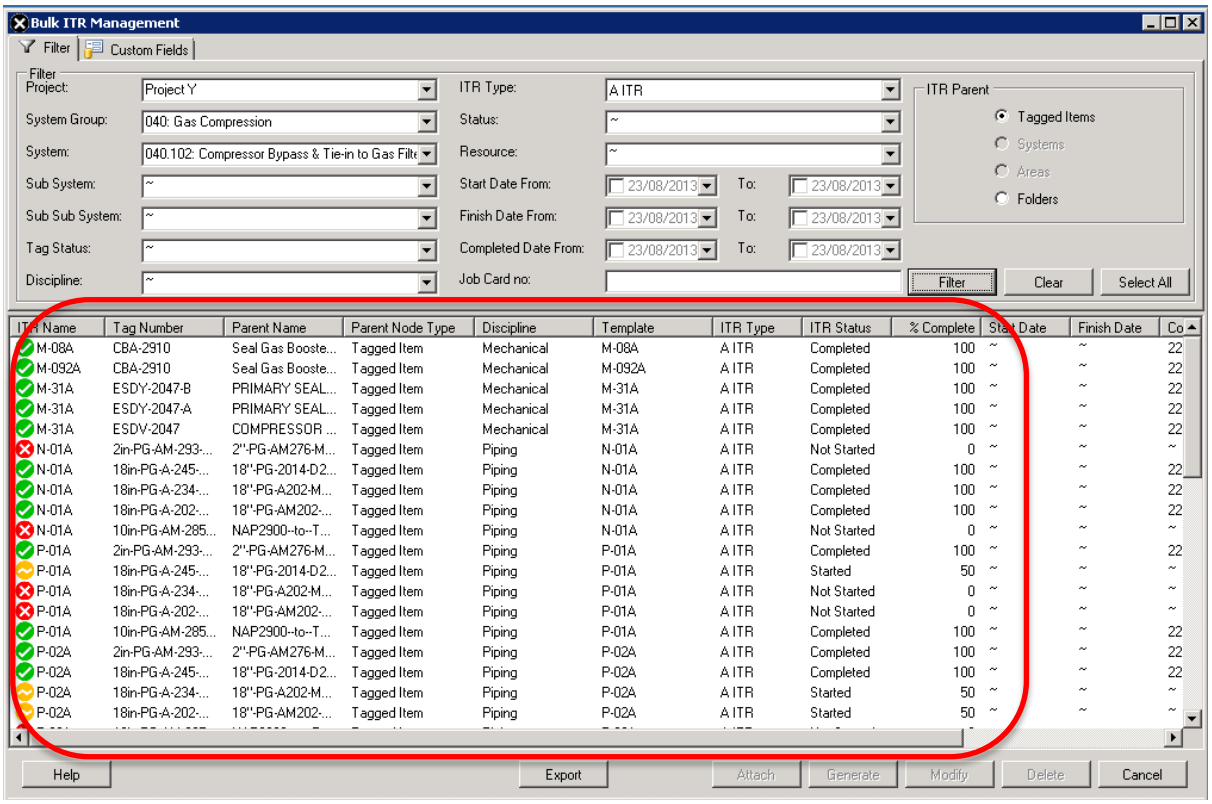
Monitor AITR Status in System 040.102 Using Bulk Management Screen



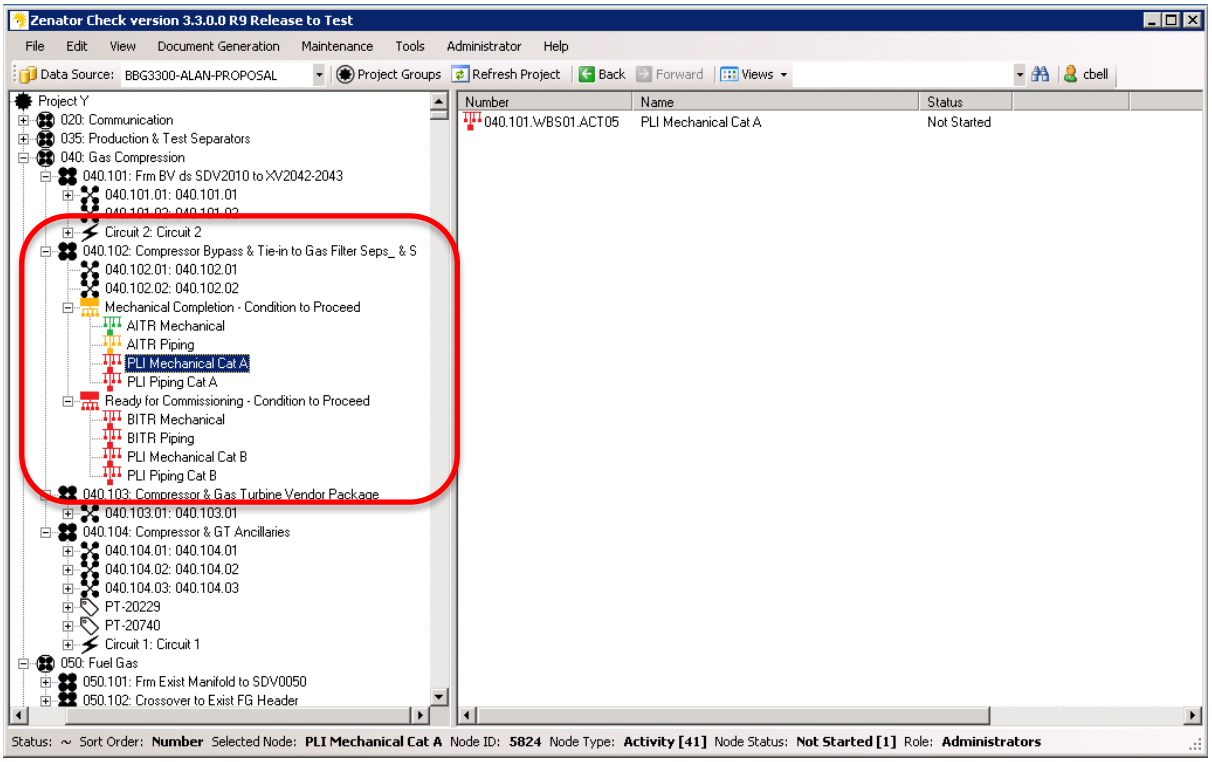
Using WBS Activities as Stage Gates – System 040.102 Nearing Mechanical Completion



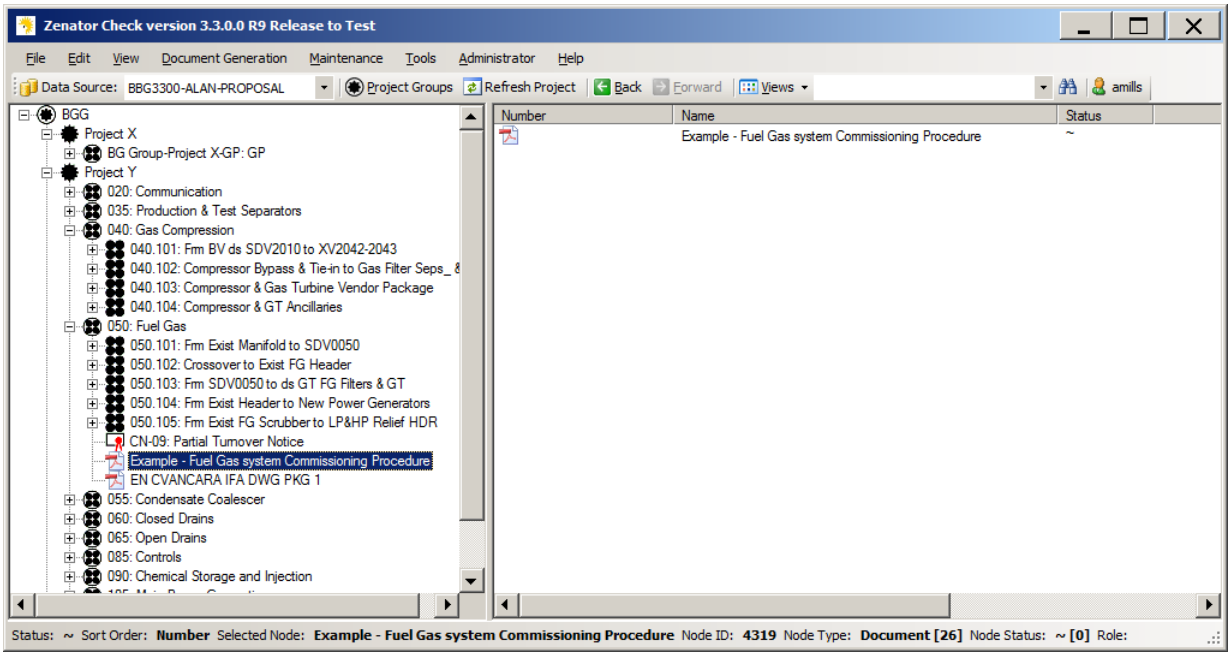
Progressing AITR Status in System 040.102 - Bulk Management Screen

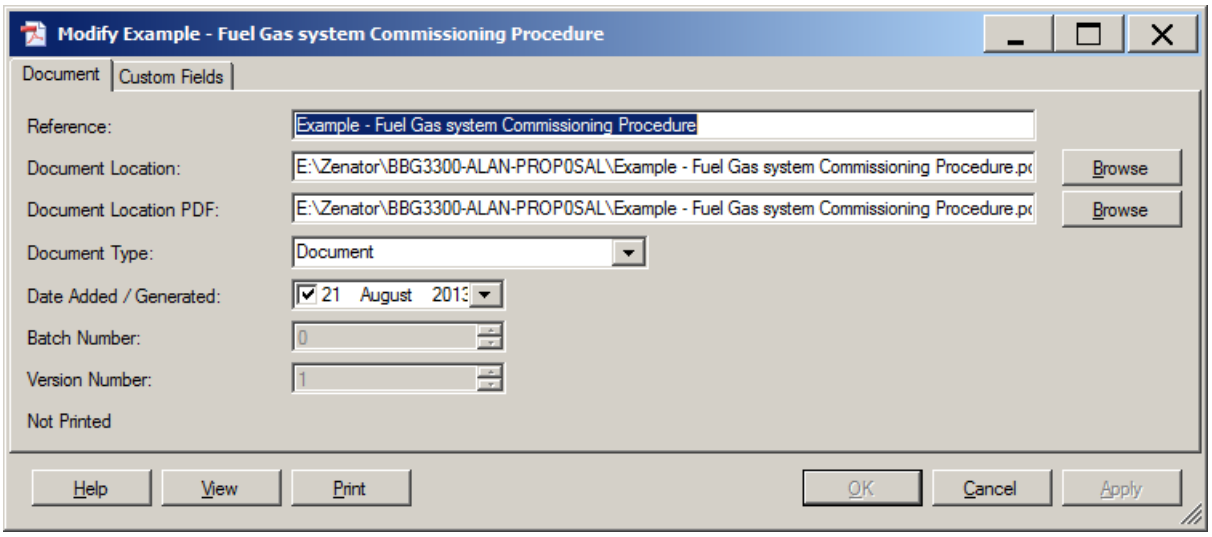


Activity Stage Gates – System 040.102 – Close to Mechanical Completion



Fuel Gas Commissioning Procedure rendered compatible with Zenator





Document Title: Fuel Gas

Project Name:
Commissioning Procedure

	Reviewed & Approved	Date
Originator		
Approver		
Other (As Required)		

Revision Record

Revision	Description	Date	By	Checked	Approved
A	Issued for review (with Holds)				

Table of Contents

1.0 INTRODUCTION

The CPP (Central Processing Platform) is a normally manned offshore installation. The platform has facilities for up to 12 gas production wells. Depending on well pressure, the production wells are designated as LP or HP & are routed to either the HP or LP production manifolds. The well fluids are then separated and the gas routed to the export compressor. LP wells are routed to the booster compressor which raises the gas pressure to HOLD barg. The gas is routed to the HP system and subsequently the 1st stage export compressor suction. The export compressor has 2 stages and compresses the gas to 125 barg for export. Downstream of the export gas compressor the gas is passed through the tri-ethylene glycol (TEG) contactor resulting in a dew point of -8°C. The gas is then routed to the export header which includes a fiscal metering system prior to export into the 16" riser and pipeline. The export line ties in at the B/10 tie in point on the A6-F3 pipeline.

Any liquids recovered in the separators (expected to be water not condensate) is likely to contain sand. The liquid and sand is sent to a de-sanding package that consists of a hydro-cyclone and sand accumulator. The sand is separated and ultimately removed from the platform in tote tanks. The liquid is routed to the produced water degasser.
Liquids dropping out in the vent header, compressor suction scrubbers, TEG contactor bottom de-sanding package, fuel gas treatment and export compressor fuel gas filter are routed directly to the produced water degasser.
The produced water degasser is common to the LP and HP vent headers and allows gas vapours to be released to the LP vent stack. The produced water is treated in the produced water skimming tank where the water is disposed of overboard. Any condensate recovered is skimmed from the water, collected and ultimately removed from the platform by tote tank.

This procedure details the steps to be taken to commission the Fuel Gas System

This system consists of the following major equipment items:

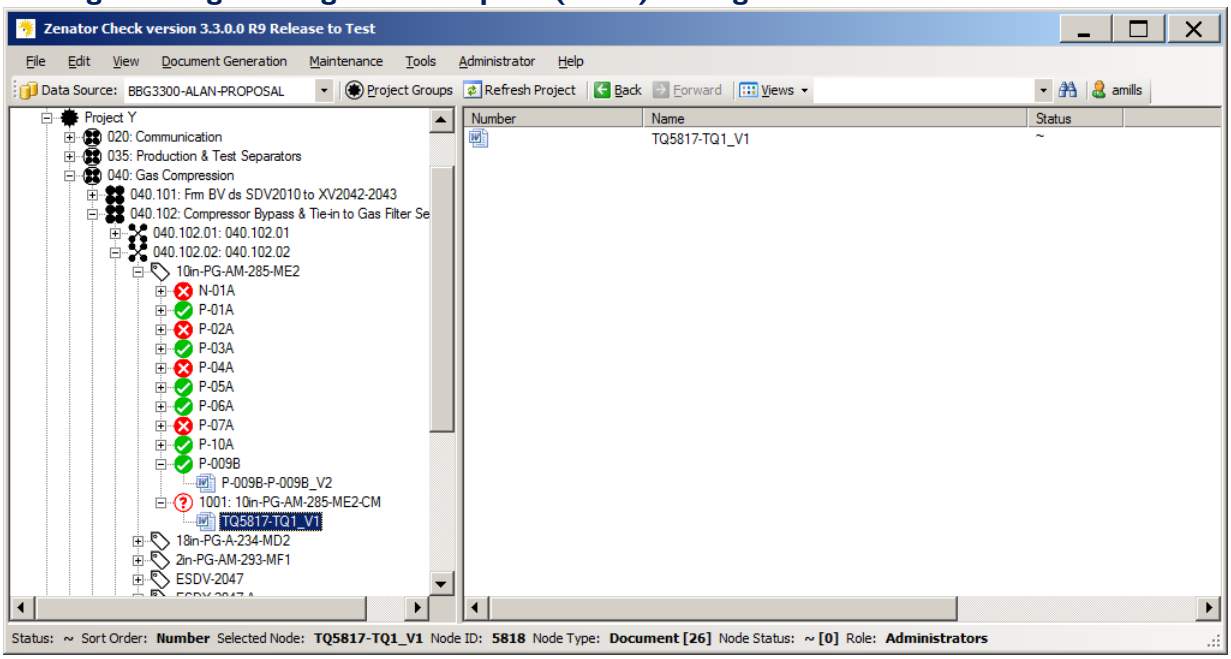
1.12 Activity Tracking (Change Management, ITR Statuses & Punch List Items)

Enable the OEMs, EPCs and/or subcontractors to document their calibration, test and certification (including FATs, SATs, String Testing, Integration testing) activities across the full equipment lifecycle of design, development, manufacture and installation and commissioning activities against Equipment, Sub-System and systems as part of their development and manufacturing activities..

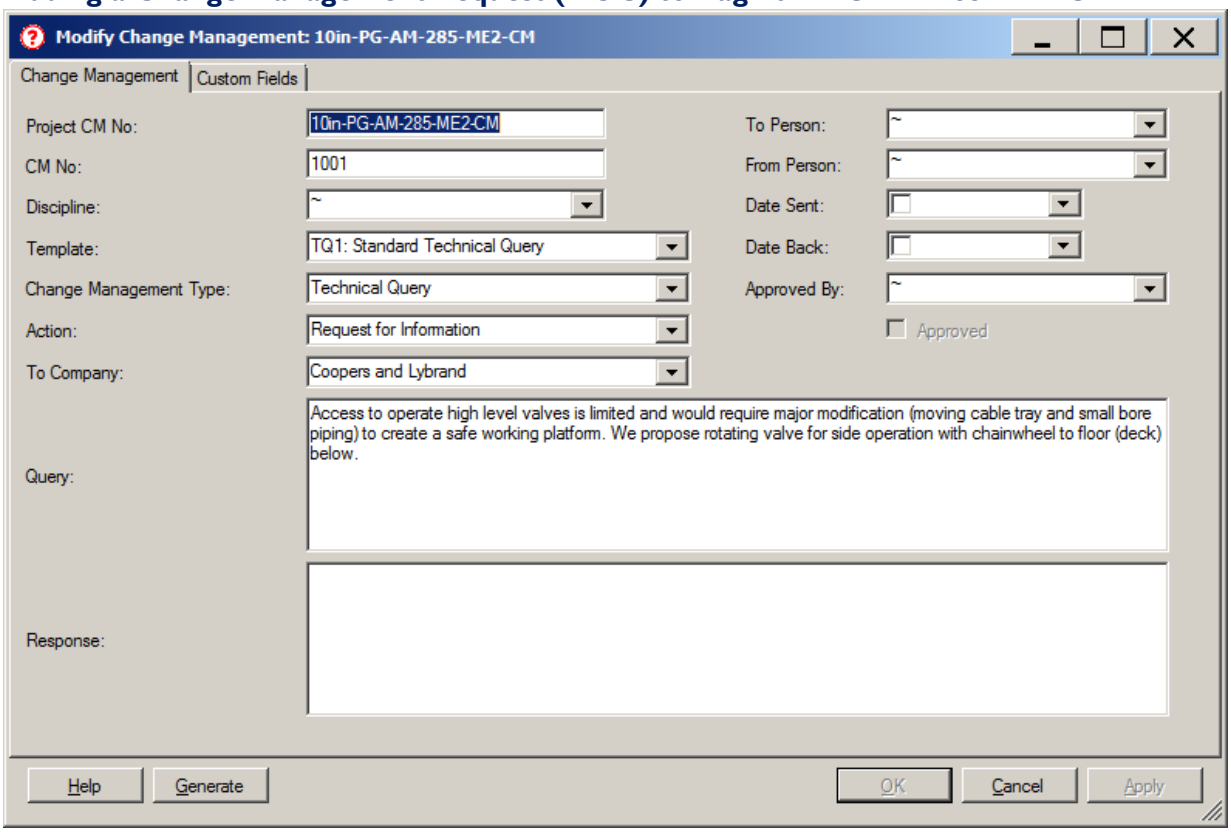
Examples shown here relate to:

- *Adding a Change Management Request to a Tag and subsequent Reporting*
- *Recording Completed ITRs on Tag and subsequent Reporting*
- *Adding Punch List Items by Walkdown Capture and Manually, with Reporting*

Adding a Change Management Request (MOC) to Tag 10in-PG-AM-285-ME2-CM

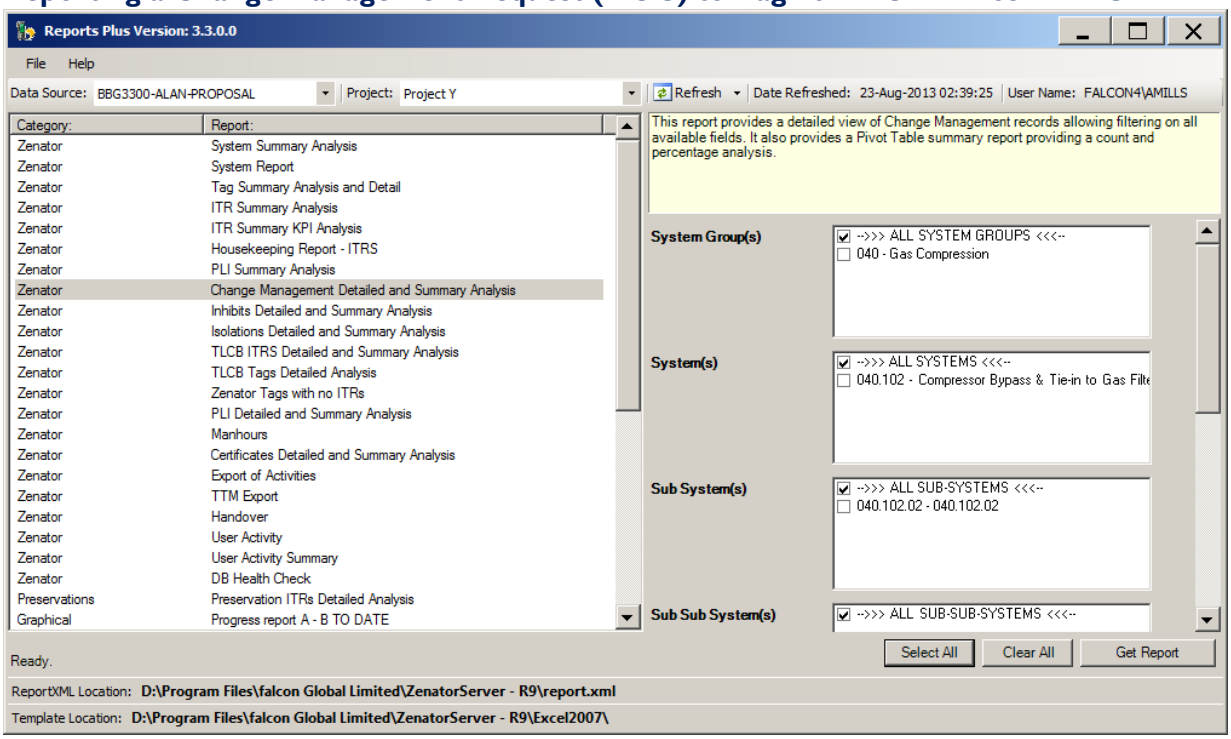


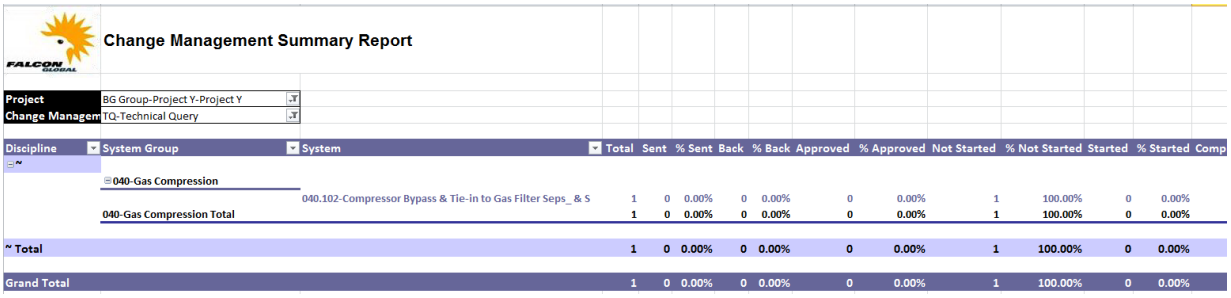
Adding a Change Management Request (MOC) to Tag 10in-PG-AM-285-ME2-CM



	Technical Query	TQNo:1000/1000
Project:	BGG - BG Group-Project Y -	
To Person:	Coopers and Lybrand	Email:
To Company:	Coopers and Lybrand	Date Sent:
From:		Email:
System/Sub System:	040.102.02-	
Tag No:	10in-PG-AM-285-ME2-NAP2900--to--TRIM	
Query:	Access to operate high level valves is limited and would require major modification (moving cable tray and small bore piping) to create a safe working platform. We propose rotating valve for side operation with chainwheel to floor (deck) below.	
Response: Please provide a written response in the box on the right and return to sender		

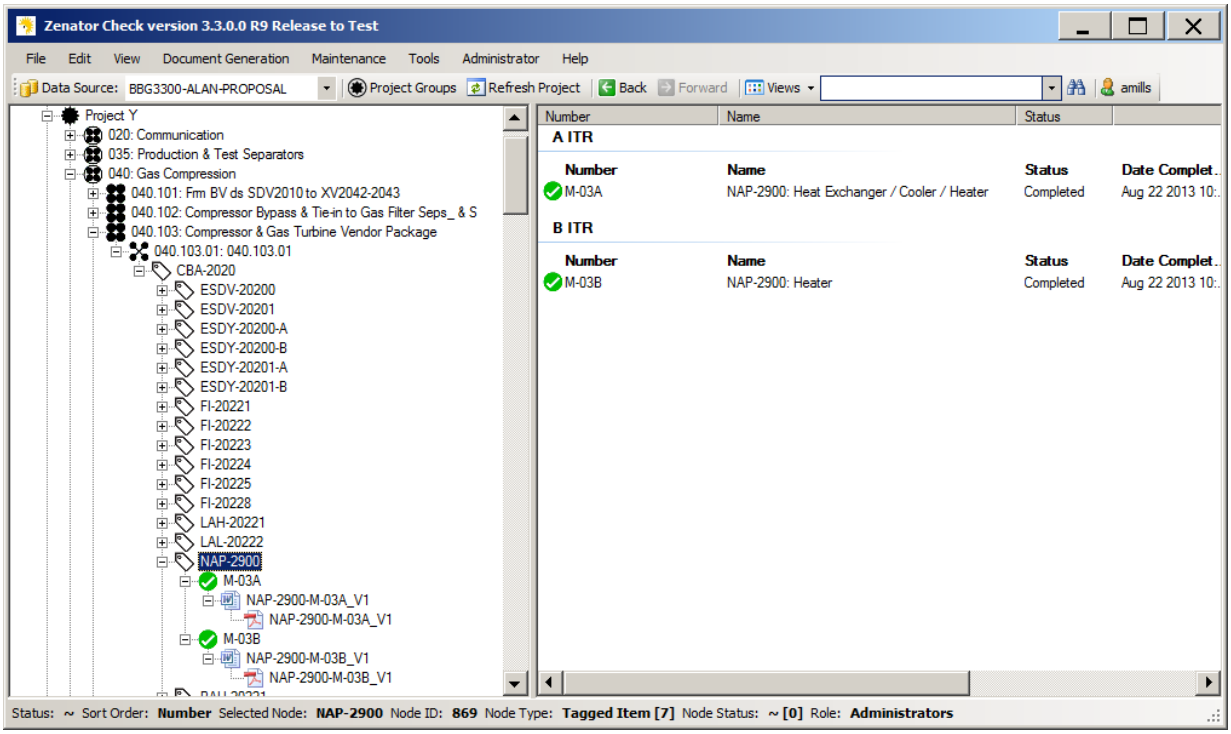
Reporting a Change Management Request (MOC) to Tag 10in-PG-AM-285-ME2-CM



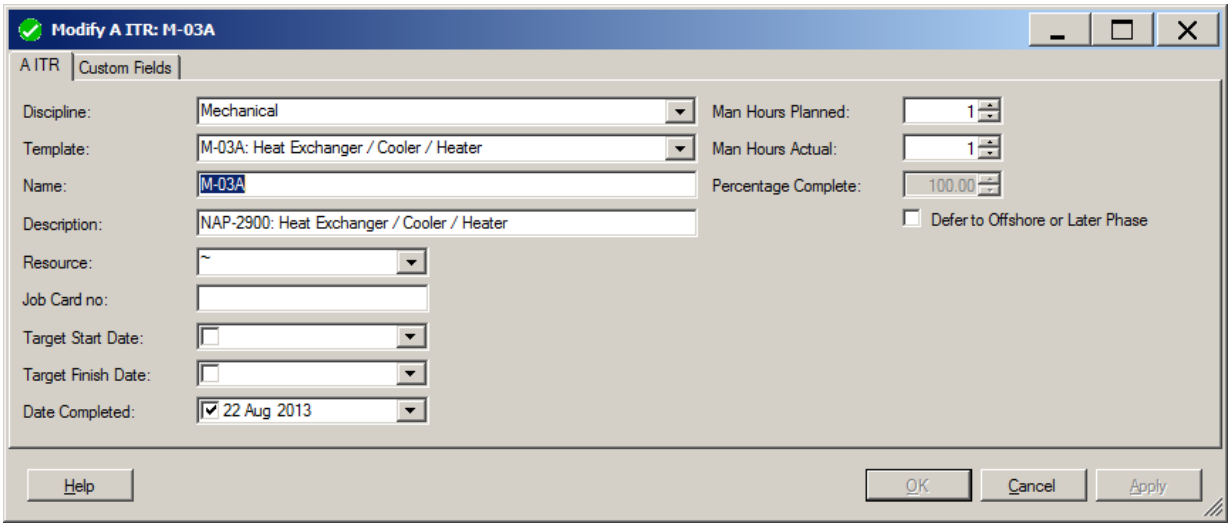


Sub System	Tag	Change Management N	Status	Disciplin	Change Management Type	Action	To Company	To Person	From Person	Date Sent
040.102.02-040.102.02	10in-PG-AM-285-ME2	1000	Not Started	~	TQ-Technical Query	Request for Information	Coopers and Lybrand	~	~	~

Recording Completed ITRs – Examples on Tag NAP-2900



Completed AITR M-03A on Tag NAP-2900



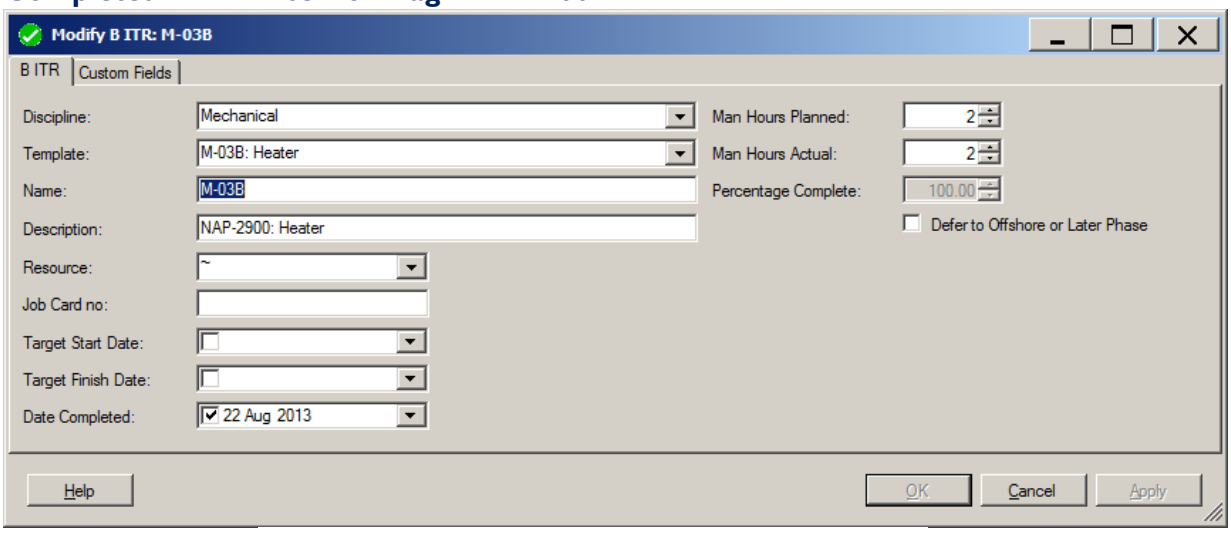
	Mechanical Completion: Heat Exchanger / Cooler / Heater		M-03A Page 1 of 2
Unique ID:	NAP-2900-M-03A_V1	Item/Tag No.	NAP-2900
Project Name:	Project Y	Sub-System No.	040.103Compressor & Gas Turbine Vendor Package
Data Sheet			
Equipment Description	NAP-2900		
Sub-System Description	040.103.01		
Location:		Module Detail:	~
Drawing Reference		Date Printed:	22-Aug-13

No.	Description of Check / Action to be made	Results	Initial / Signature	Punch list Item No.
1	Check Equipment and Nameplate comply with Data Sheet			
2	Confirm Nameplate installed correctly			
3	Installation and Holding Down in accordance with drawings and Manufacturers Instructions.			
4	Check Exchanger is level in accordance with Manufacturers specification.			
5	Check that Sliding feet are free & plate spray covers installed.			
6	Bolting and gasket materials correct. Bolts torque to specification.			
7	For plate exchangers, check end plate parallelism and plate compression bolt torque is correct as per vendor's manual.			
8	Spare nozzles blanked off in accordance with specification.			
9	Heater fittings, Trims, Platforms and access ladders are complete			
10	Main piping / Vent / Drain connections complete and supported correctly.			
11	Tubesheet and Tube Internals clean and undamaged			
12	Shell side and Tube externals clean and undamaged			
13	Adequate space for removal of tubes and maintenance.			
14	All valves and Instrumentation visible and accessible			
15	Equipment Release Note signed and All Punchlist Items cleared			
16	Earthing boss / Strap fitted.			
17	Exchanger Undamaged and External Painting / Insulation complete.			
18	Accessibility for Maintenance is acceptable			
19	Check all PSVs installed, undamaged and seals intact – complete ITR form **M-28A** for PSVs			

Remarks / Comments :

	Completed By	Approved By	Accepted By	ITR Input to Data Base
Company				
Signature				
Print Name				

Completed AITR M-03B on Tag NAP-2900



Pre-Commissioning: Heater

M-03B Page 1 of 1

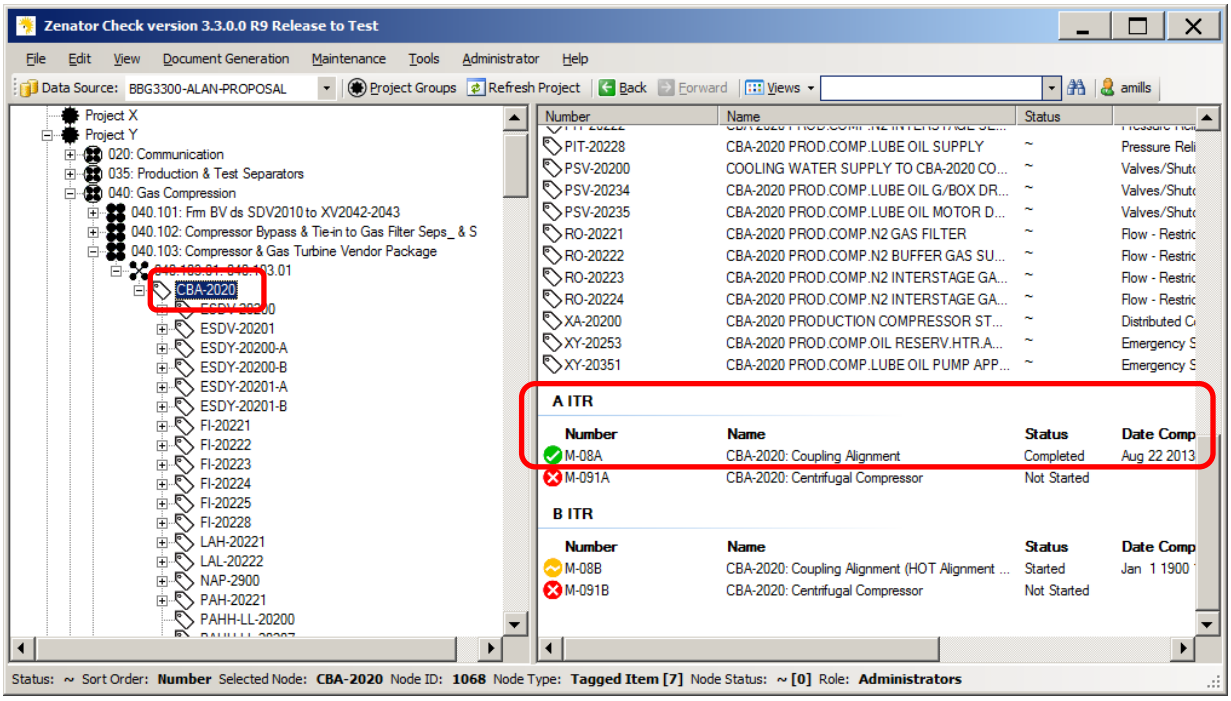
Unique ID:		Item/Tag No.	NAP-2900
Project Name:	BG Group-Project Y	Sub-System No.	
Data Sheet			
Equipment Description	Seal Gas Trim Heater for CBA-2020		
Sub-System Description	040.103 040.103.01		
Location:		Module Detail:	
Drawing Reference:		Date Printed:	22-Aug-13

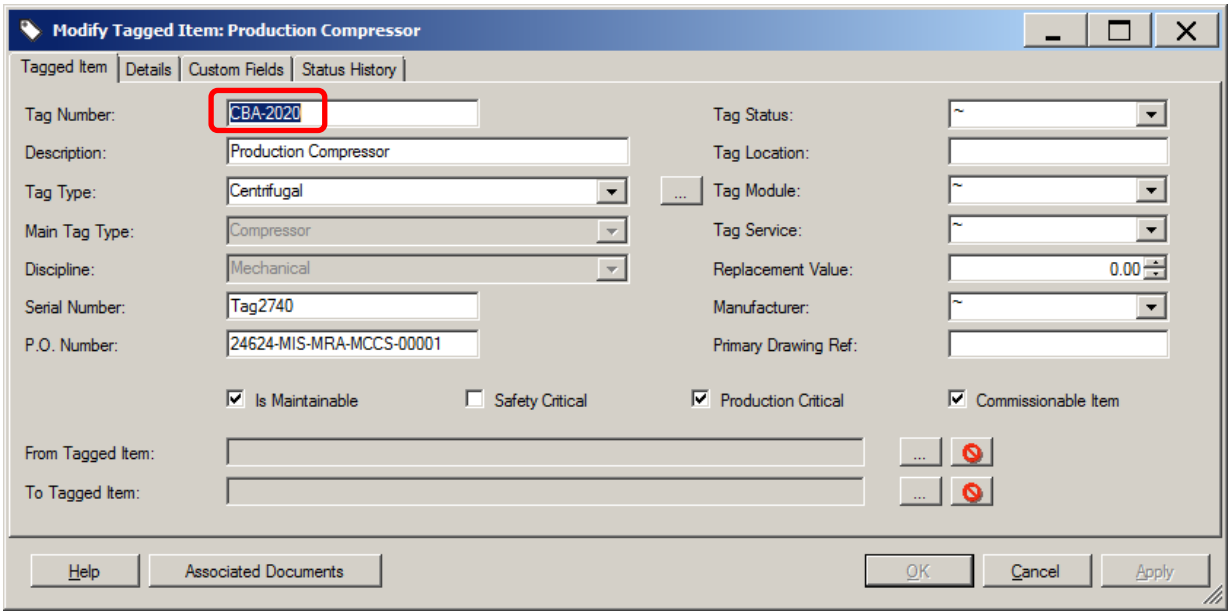
No	Description of Check / Action to be made	Results	Initial / Signature	Punch list item No.
1	Confirm that the Mechanical Completion ITR form **M-03A** has been completed and Punch list and Construction checklist if any has been completed and no damage has occurred since mechanical completion.			
2	Confirm that all Preservation measures have been removed.			
3	a) Confirm that any external insulation has been applied to specification and is undamaged. b) For Heaters with Refractory lining ensure this has been / is dried out to manufacturer's specification before operational use.			
4	Ensure all valves associated with the unit have their correctly designed actuator or manual operator installed and that they are free to move. Confirm Valve Tagging is complete.			
5	Check that Valve interlocks are installed (if applicable) and the system operates as designed. Ensure keys are safely located.			
6	Ensure manufacturer's documentation is readily available and correct for installed equipment and is ready for transfer to Operations Department as part of Turnover Acceptance.			
7	***In conjunction with instrument personnel, check the functional operation and record performance of the following:***			
	a) All Valves & Control devices (indicate tag No's on Test Report)			
	b) All High and Low Temperature and Flow Alarms and Shutdowns functions (indicate tag No's on Test Report)			
8	Following successful completion of all above checks, carry out a final Punchlist for the installed equipment, and roll-up all outstanding items into one composite list for Turnover Commissioning Package Acceptance.			
9	Update latest issue of design drawings for "As Built" Information.			

Remarks / Comments :

	Completed By	Approved By	Accepted By	ITR Input to Data Base
Company				
Signature				
Print Name				
Date of signing				

Recording Completed AITR – Example M-08A on Tag CBA-2020





	Mechanical Completion: Coupling Alignment		M-08A Page 1 of 6
Unique ID:	CBA-2020-M-08A_V1	Item/Tag No.	CBA-2020
Project Name:	Project Y	Sub-System No.	040.103.01
Data Sheet			
Equipment Description	CBA-2020		
Sub-System Description	040.103.01		
Location:		Module Detail:	~
Drawing Reference		Date Printed:	22-Aug-13

No.	Items to be Checked	Results	Initial / Signature	Punch list Item No.
1	Check manufacturer's figures for coupling alignment. Record specified cold offsets below.			
2	Check pipework is complete and correct to the latest rev. drawing.			
3	Check that flange alignment is complete.			
4	Loosen off all the pipework to the driven equipment.			
5	Check coupling spacer, bolts and guard are in good condition. Identify and store in a secure place.			
6	Check and record below free length of coupling spacer, and distance between the coupling hub faces (DBFF).			
7	Carry out "soft foot" check.			
8	Check radial concentricity of each half coupling - ref to Fig. 1 below sh 2 **Record clock readings on sheet 4, section 1.1** *Note, if alignments are completed using Rotoline / Optiline device or similar, attach the reading sheet to this form.*			
9	Check axial alignments – ref to Fig. 2 below, sheet 2. **Record readings on sheet 4, section 1.2**			
10	Check radial concentricity of flanges relative to each other – ref to Fig. 3, sheet 2 **Record readings on sheet 4, section 1.3.**			
11	Tighten up all pipework and re-check items as for 8, 9 & 10 above however record results in the relevant sections 2.1, 2.2 & 2.3 on sheet 6 NOTE Any differences in values recorded between Flanges Loose to Flanges Tight MUST be investigated as driven unit process connections may have become stressed by pipework mis-alignment.			
12	Punch list raised. Coupling spacer free length:.....mm D.B.F.F.:.....mm			
13	Record Vendor specified cold offsets if any			

NOTE: In the event that a proprietary system, such as Rotoline or Optiline electronic alignment unit is used to carry out the alignment checks, then the standard report sheets generated by these proprietary systems are acceptable and should be attached as record of alignment to this M-08A form.

In this case ignore pages 2, 3, 4, 5 but sign-off acceptance must be completed on sheet 6 of this form M-08A.

Continued on ITR M-08A sheet 2 of 6

	Mechanical Completion: Coupling Alignment		M-08A Page 2 of 6
Unique ID:	CBA-2020-M-08A_V1	Item/Tag No.	CBA-2020
Project Name:	Project Y	Sub-System No.	040.103.01

Fig. 2 Radial Concentricity Check

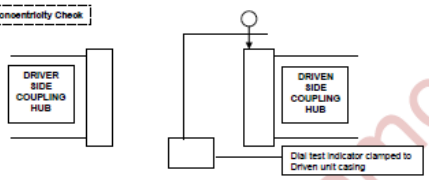


Fig. 2 Axial Alignment Check

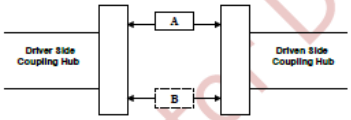
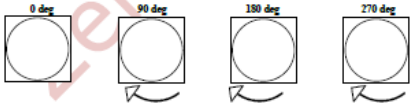


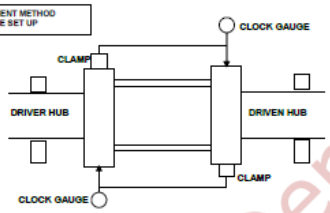
Fig 3 FOR ABOVE TAKE READINGS AT FOLLOWING RADIAL POSITIONS:



Continued on ITR M-08A sheet 3 of 6

	Mechanical Completion: Coupling Alignment		M-08A Page 3 of 6
Unique ID:	CBA-2020-M-08A_V1	Item/Tag No.	CBA-2020
Project Name:	Project Y	Sub-System No.	040.103.01

REVERSE ALIGNMENT METHOD CLOCK GAUGE SET UP

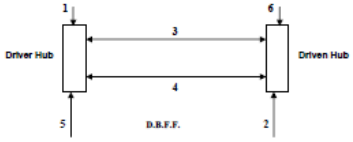


Confirm the Method of alignment to be used: **Face & Periphery or Reverse Alignment.** (Delete as applicable)

Confirm the direction reading looking from either: **Driver to Driven or Driven to Driver.** (Delete as applicable)

Confirm the Pipework state for the alignment checks: **Tight or Loose.** (Delete as applicable)

Note Clock Gauge locations for different types of reading are as detailed below:



(D.B.F.F. Refers to 'Distance between Flange Faces')

Continued on ITR M-08A sheet 4 of 6

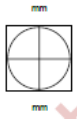
	Mechanical Completion: Coupling Alignment		M-08A Page 4 of 6
Unique ID:	CBA-2020-M-08A_V1	Item/Tag No.	CBA-2020
Project Name:	Project Y	Sub-System No.	040.103.01

1. **RECORD OF ALIGNMENT WITH PIPEWORK CONNECTIONS LOOSE:**

Section 1.1 — **Radial concentricity of each half coupling to its own shaft.** (Use this for both face & periphery & reverse alignment).

Gauge position 1 (see sheet 3) **Gauge position 2 (see sheet 3)**

Section 1.2 — **Coupling gap measurement Face to face (axial).** (Use this method ONLY for face and periphery method).



Use Clock gauges set in positions 3 & 4 (see sheet 3)

Section 1.3 — **Radial concentricity of coupling flanges to each other.** (Use for both face & periphery and reverse alignment)

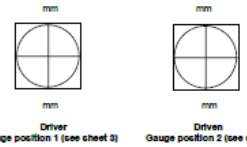
Gauge position 5 (see sheet 3) **Gauge position 6 (see sheet 3)**

Continued on ITR M08A sheet 5 of 6

	Mechanical Completion: Coupling Alignment		M-08A Page 5 of 6
Unique ID:	CBA-2020-M-08A_V1	Item/Tag No.	CBA-2020
Project Name:	Project Y	Sub-System No.	040.103.01

2. RECORD OF ALIGNMENT WITH PIPEWORK CONNECTIONS TIGHT:

Section 2.1	Radial concentricity of each half coupling to its own shaft. (Use this for both face & periphery & reverse alignment).



Driver
Gauge position 1 (see sheet 3)

Driven
Gauge position 2 (see sheet 3)

Section 2.2	Coupling gap measurement Face to face (axial). (Use this method ONLY for face and periphery method).

Clock gauges positions 3 & 4 (see sheet 3)

Section 2.3	Radial concentricity of coupling flanges to each other. (Use for both face & periphery and reverse alignment)

Driver
Clock Gauge position 5 (see sheet 3)

Driven
Clock Gauge position 6 (see sheet 3)

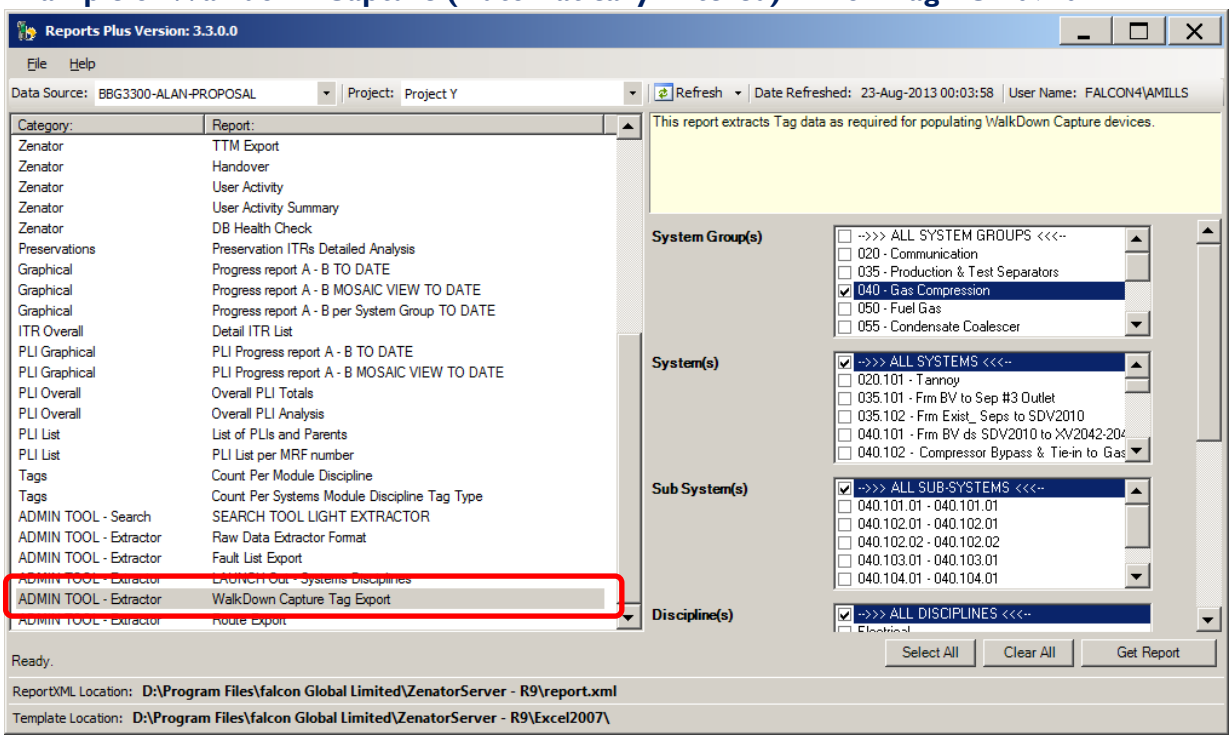
Continued on ITR M-08A sheet 6 of 6

Remarks / Comments :

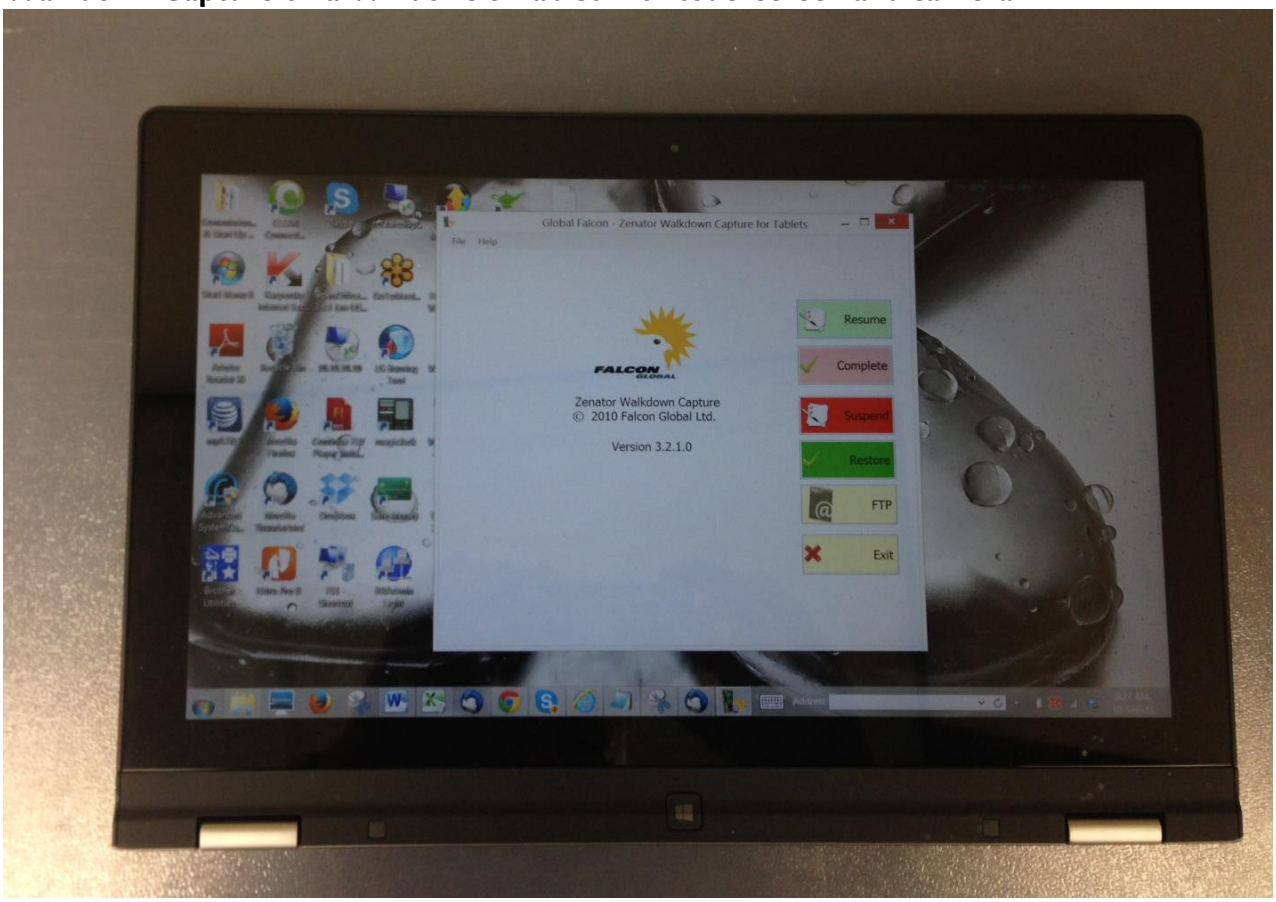
	Mechanical Completion: Coupling Alignment		M-08A Page 6 of 6
Unique ID:	CBA-2020-M-08A_V1	Item/Tag No.	CBA-2020
Project Name:	Project Y	Sub-System No.	040.103.01

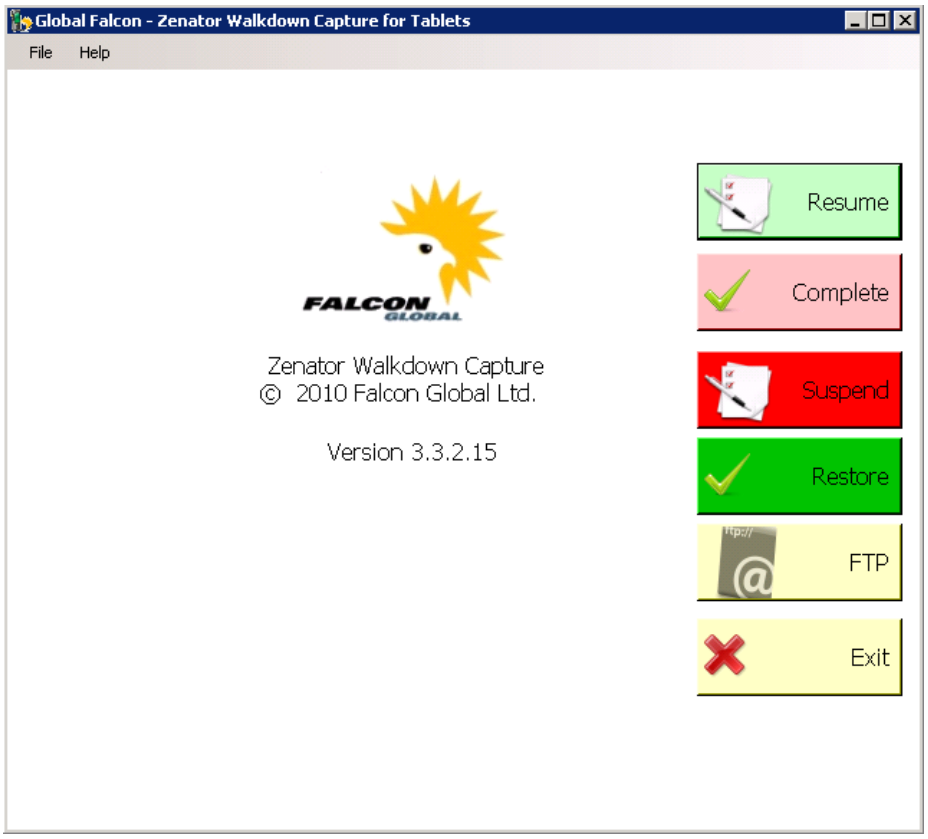
	Completed By	Approved By	Accepted By	ITR Input to Data Base
Company				
Signature				
Print Name				
Date of signing				

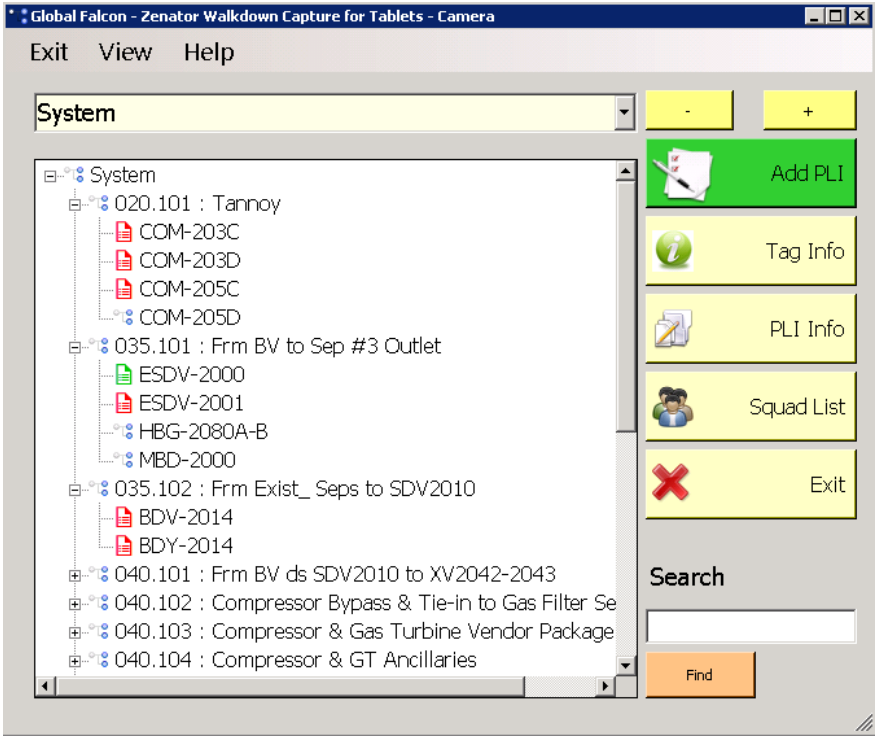
Example of Walkdown Capture (Automatically Entered) PLI on Tag FC-20740-B

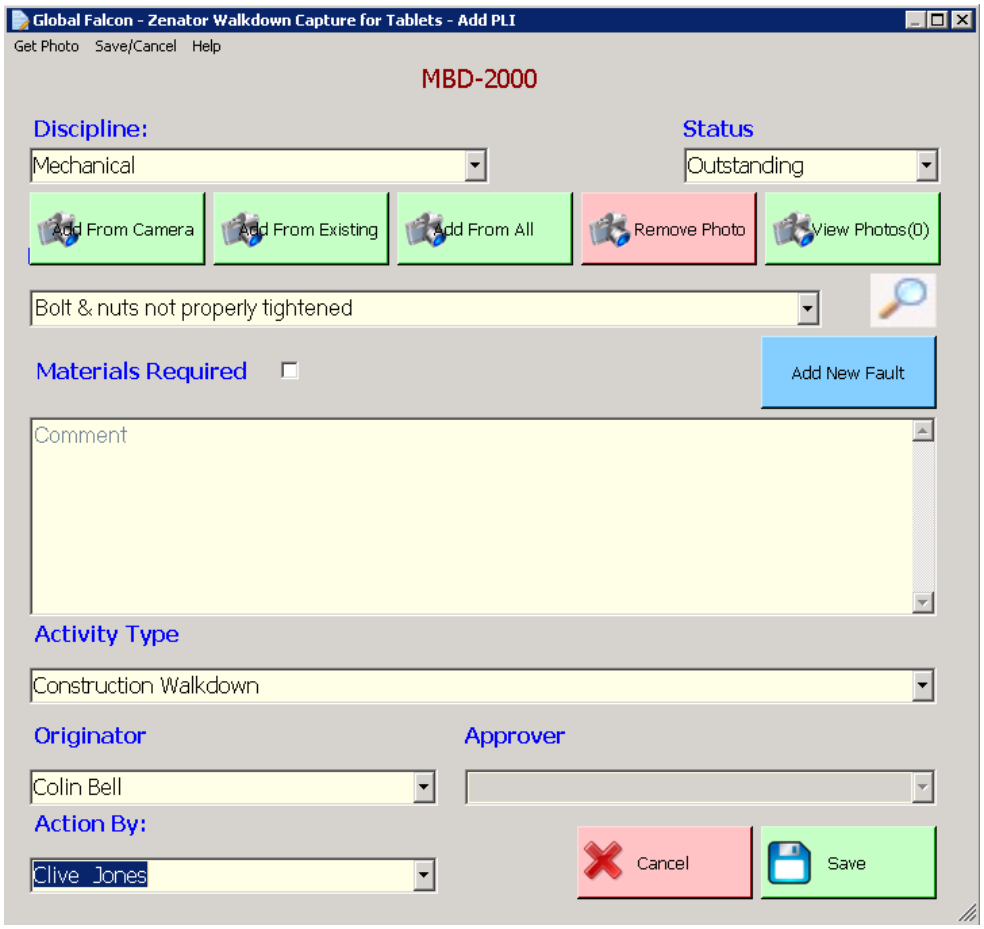


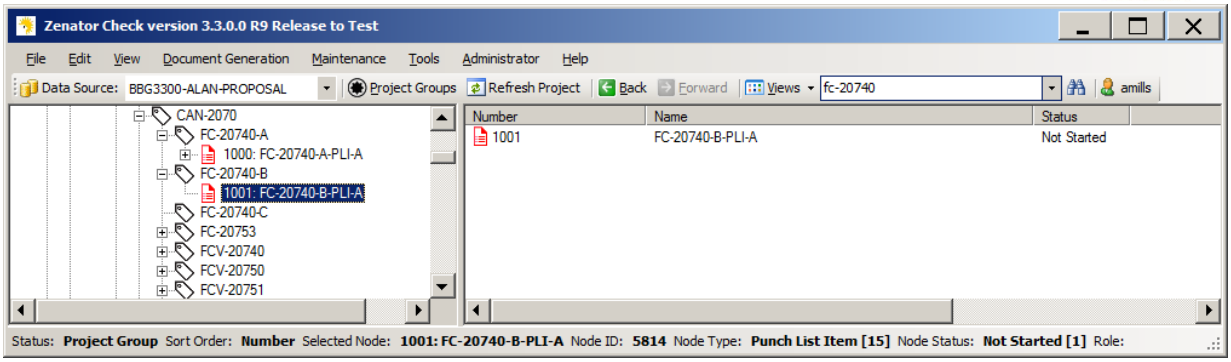
Walkdown Capture on a Windows 8 Tablet with touchscreen and camera

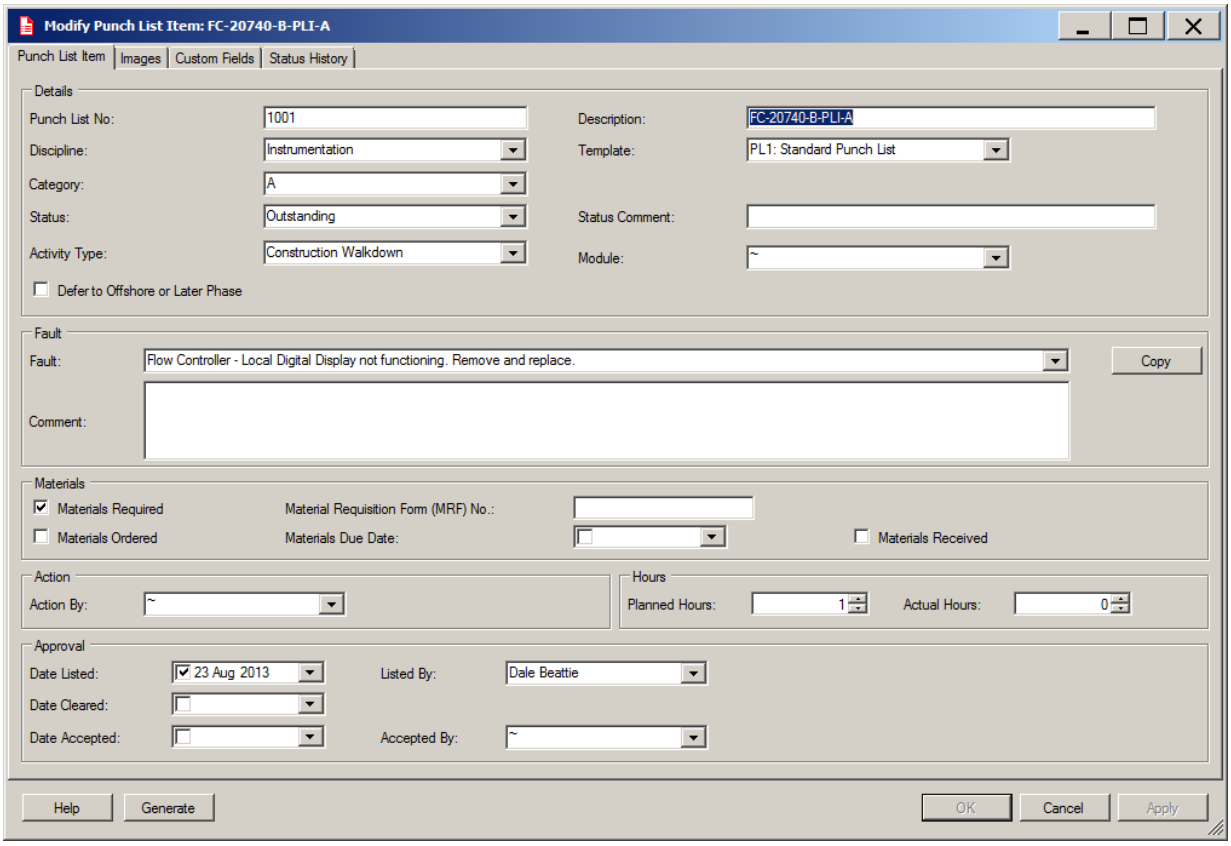


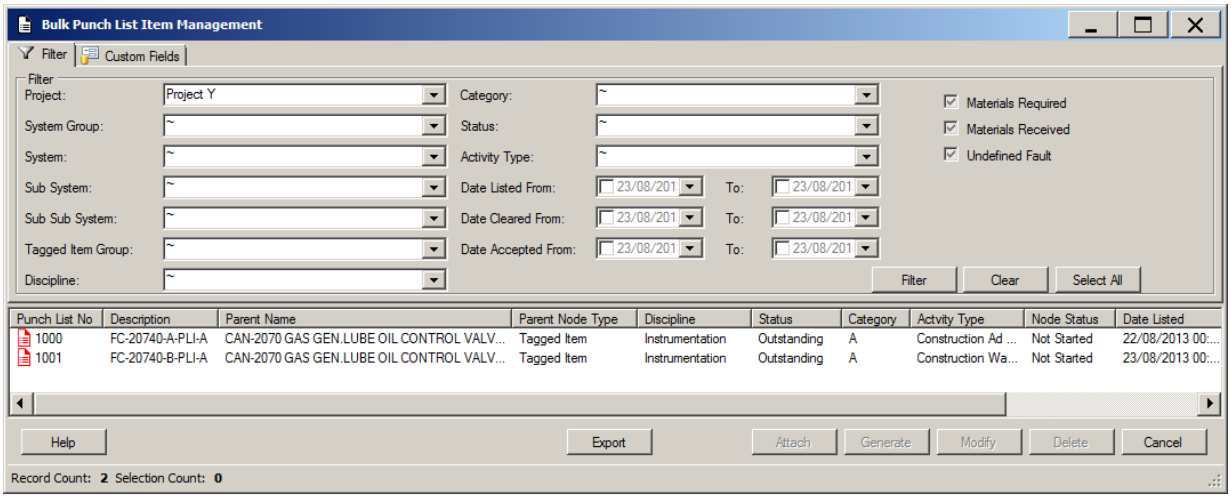



Global Falcon - Zenator Walkdown Capture for Tablets - Camera
Exit
View
Help
System
-
+
System
020.101 : Tannoy
COM-203C
COM-203D
COM-205C
COM-205D
035.101 : Frm BV to Sep #3 Outlet
ESDV-2000
ESDV-2001
HBG-2080A-B
MBD-2000
035.102 : Frm Exist_ Seps to SDV2010
BDV-2014
BDY-2014
040.101 : Frm BV ds SDV2010 to XV2042-2043
040.102 : Compressor Bypass & Tie-in to Gas Filter Se
040.103 : Compressor & Gas Turbine Vendor Package
040.104 : Compressor & GT Ancillaries
Add PLI
Tag Info
PLI Info
Squad List
Exit
Search
Find


Global Falcon - Zenator Walkdown Capture for Tablets - Add PLI
Get Photo
Save/Cancel
Help
MBD-2000
Discipline:
Mechanical
Status
Outstanding
Add From Camera
Add From Existing
Add From All
Remove Photo
View Photos(0)
Bolt & nuts not properly tightened
Materials Required
Add New Fault
Comment
Activity Type
Construction Walkdown
Originator
Colin Bell
Approver
Action By:
Clive Jones
Cancel
Save


Zenator Check version 3.3.0.0 R9 Release to Test
File Edit View Document Generation Maintenance Tools Administrator Help
Data Source: BBG3300-ALAN-PROPOSAL
Project Groups Refresh Project Back Forward Views fc-20740 amills
CAN-2070
FC-20740-A
1000: FC-20740-A-PLI-A
FC-20740-B
1001: FC-20740-B-PLI-A
FC-20740-C
FC-20753
FCV-20740
FCV-20750
FCV-20751
Number Name Status
1001 FC-20740-B-PLI-A Not Started
Status: Project Group Sort Order: Number Selected Node: 1001: FC-20740-B-PLI-A Node ID: 5814 Node Type: Punch List Item [15] Node Status: Not Started [1] Role:


Modify Punch List Item: FC-20740-B-PLI-A
Punch List Item Images Custom Fields Status History
Details
Punch List No: 1001
Description: FC-20740-B-PLI-A
Discipline: Instrumentation
Template: PL1: Standard Punch List
Category: A
Status: Outstanding
Status Comment:
Activity Type: Construction Walkdown
Module: ~
Defer to Offshore or Later Phase
Fault
Fault: Flow Controller - Local Digital Display not functioning. Remove and replace.
Copy
Comment:
Materials
Materials Required
Material Requisition Form (MRF) No.:
Materials Ordered
Materials Due Date:
Materials Received
Action
Action By: ~
Hours
Planned Hours: 1
Actual Hours: 0
Approval
Date Listed: 23 Aug 2013
Listed By: Dale Beattie
Date Cleared:
Date Accepted:
Accepted By: ~
Help Generate OK Cancel Apply


Bulk Punch List Item Management
Filter Custom Fields
Filter
Project: Project Y
Category: ~
Materials Required
System Group: ~
Status: ~
Materials Received
System: ~
Activity Type: ~
Undefined Fault
Sub System: ~
Date Listed From: 23/08/201
To: 23/08/201
Sub Sub System: ~
Date Cleared From: 23/08/201
To: 23/08/201
Tagged Item Group: ~
Date Accepted From: 23/08/201
To: 23/08/201
Discipline: ~
Filter Clear Select All
Punch List No Description Parent Name Parent Node Type Discipline Status Category Actvity Type Node Status Date Listed
1000 FC-20740-A-PLI-A CAN-2070 GAS GEN.LUBE OIL CONTROL VALV... Tagged Item Instrumentation Outstanding A Construction Ad ... Not Started 22/08/2013 00:...
1001 FC-20740-B-PLI-A CAN-2070 GAS GEN.LUBE OIL CONTROL VALV... Tagged Item Instrumentation Outstanding A Construction Wa... Not Started 23/08/2013 00:...
Help Export Attach Generate Modify Delete Cancel
Record Count: 2 Selection Count: 0

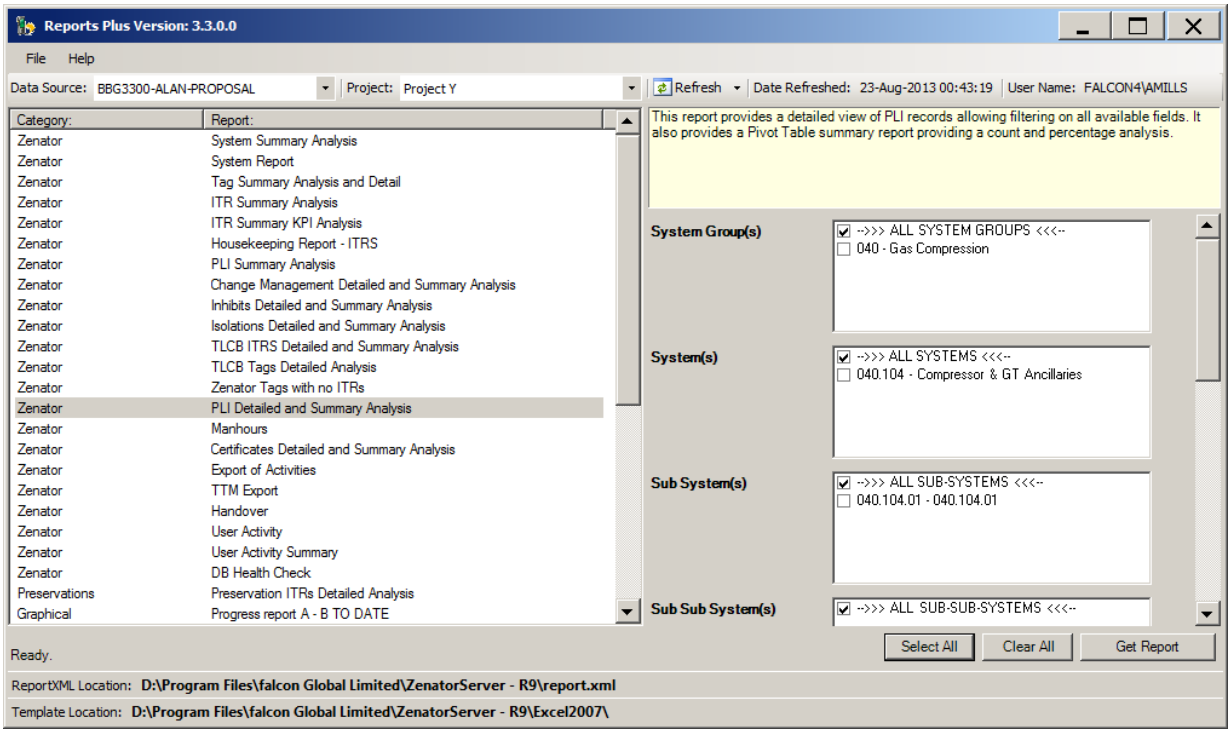
Report of Outstanding Punch List Items

PLI Analysis Summary Report

Project Group	BGG
Project Name	Project Y
Status	Outstanding
Category	A

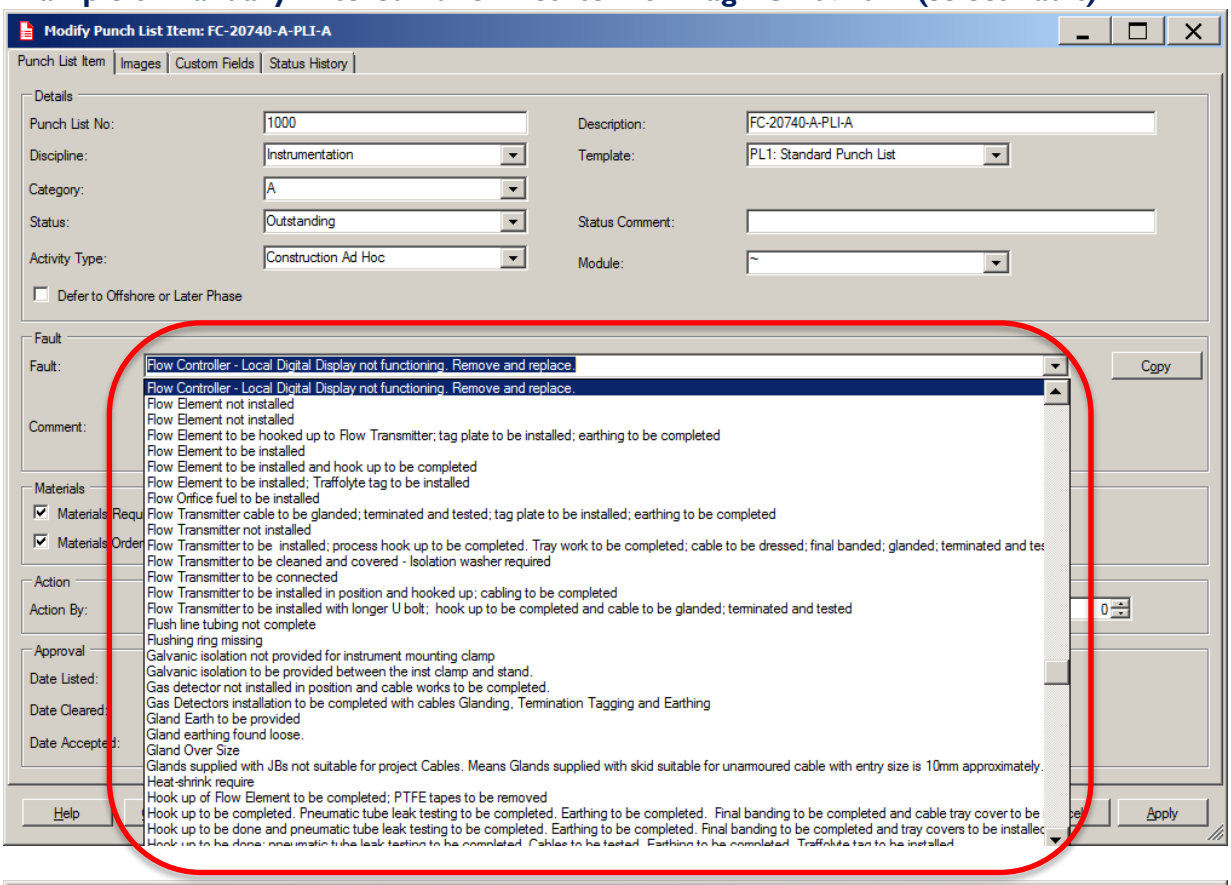
System Group	System	Sub System	Total	Deferred	Materials Required	Materials Ordered	Materials Received	Approved	Approved %	Action By	Action By %	Cleared	Cleared %
040-Gas Compression													
	040.104-Compressor & GT Ancillaries												
		040.104.01-040.104.01	2	0	2	1	0	0	0.00%	1	50.00%	0	0.00%
	040.104-Compressor & GT Ancillaries Total		2	0	2	1	0	0	0.00%	1	50.00%	0	0.00%
040-Gas Compression Total			2	0	2	1	0	0	0.00%	1	50.00%	0	0.00%
Grand Total			2	0	2	1	0	0	0.00%	1	50.00%	0	0.00%

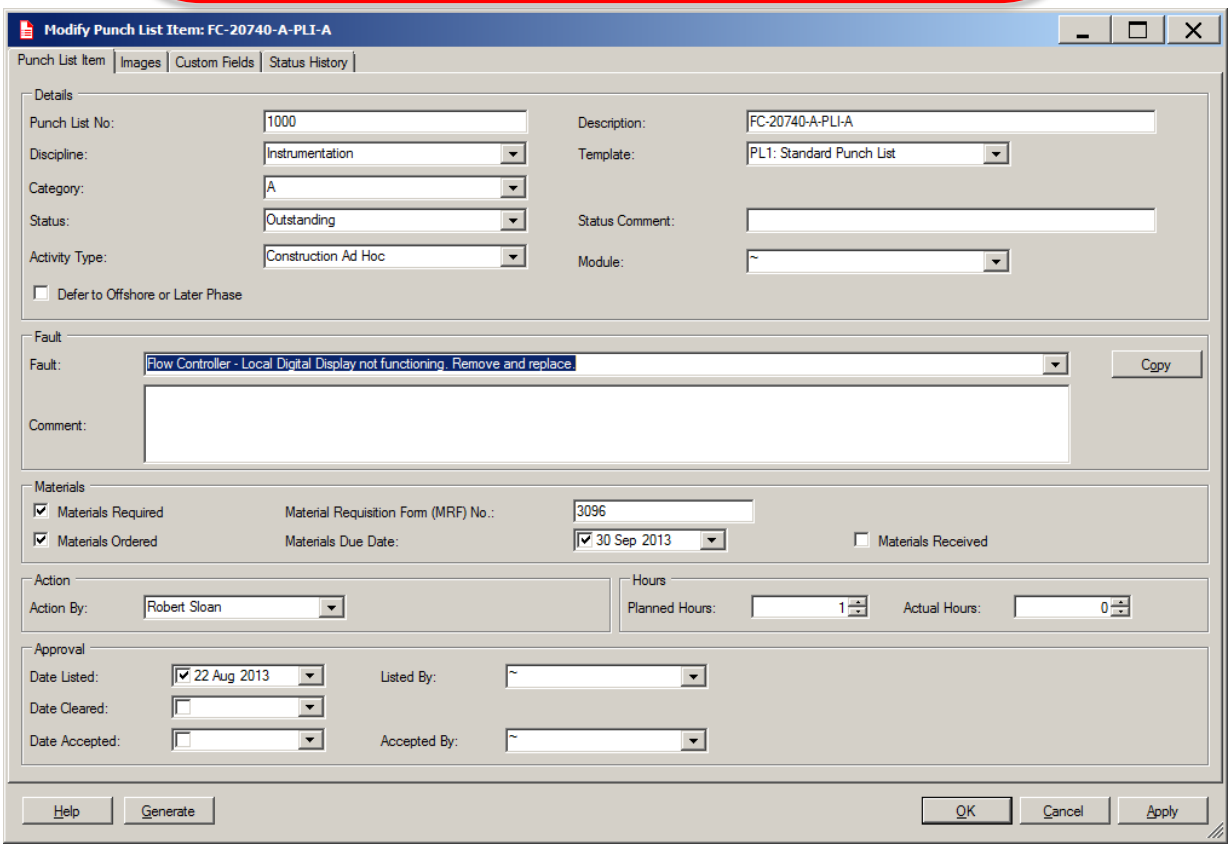
Project Group	Project Nam	System Group	System	Sub System	Categor	ActivityType	Status	Discipline	Module	Area	Planned	ActualH	TotalPL	Progress
BGG	Project Y	040-Gas Compression	040.104-Compressor & GT Ancillaries	040.104.01-040.104.01	A	Construction Ad Hoc	Outstanding	Instrumentation	~		1	0	1	0
BGG	Project Y	040-Gas Compression	040.104-Compressor & GT Ancillaries	040.104.01-040.104.01	A	Construction Walkdown	Outstanding	Instrumentation	~		1	0	1	0

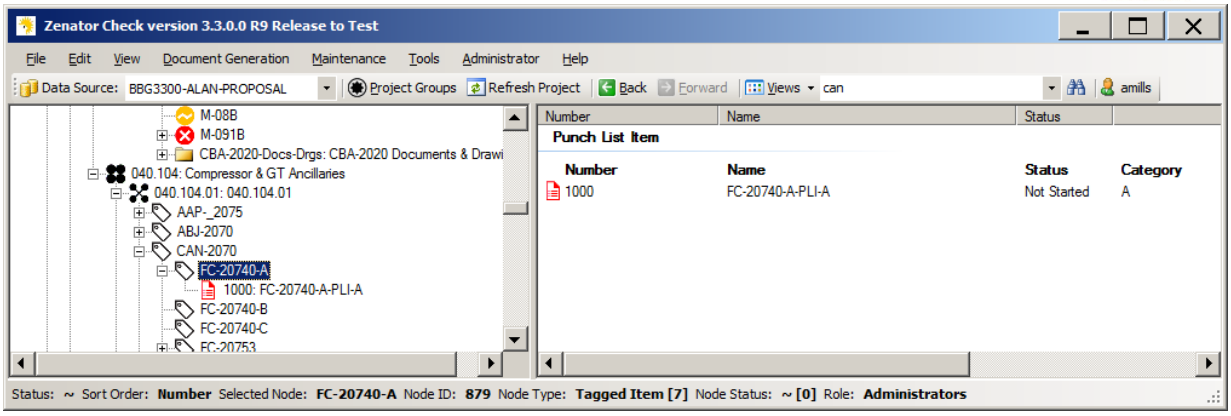


Sub System	PLI N	Description	Categor	Discipline	Module	Status	Activity Type	Listed Da	Fault Code	Fault Description
040.104.01-040.104.01	1000	FC-20740-A-PLI-A	A	Instrumentation	~	Not Started	Construction Ad Hoc	22-Aug-13	Fault1439	Flow Element not installed
040.104.01-040.104.01	1001	FC-20740-B-PLI-A	A	Instrumentation	~	Not Started	Construction Walkdown	23-Aug-13	Fault2235	Flow Controller - Local Digital Display not functioning. Remove and replace.

Example of Manually Entered Punch List Item on Tag FC-20740-A (select Fault)







PUNCH LIST ITEM

Page 1 of 1

Punch List Item No:	1000	**Date Listed:**	22/08/2013 00:00:00
Originator:	~	**Category:**	A
Project:	BGG - Project Y		
System/Sub System:	040.104 Compressor & GT Ancillaries-040.104.01 040.104.01		
Tag No:	FC-20740-A-CAN-2070 GAS GEN.LUBE OIL CONTROL VALVE EXCITATION		
Discipline:	~	**Material Required:**	Yes
MRF Number:	3096		
Activity Type:	Construction Ad Hoc	**Area/Module:**	~
Description:	FC-20740-A-PLI-A		
Comments:			

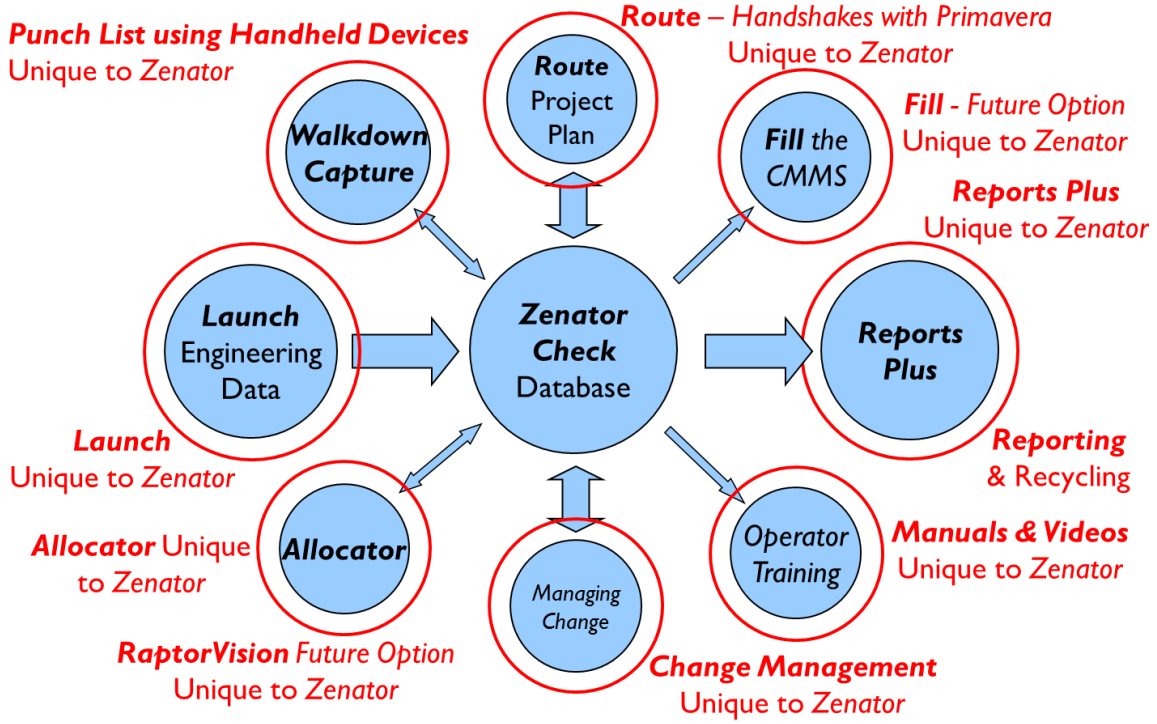
	COMPLETED BY	APPROVED BY	ACCEPTED BY	
COMPANY				
SIGNATURE				
PRINT NAME				
DATE				

1.13 Handover to Operations

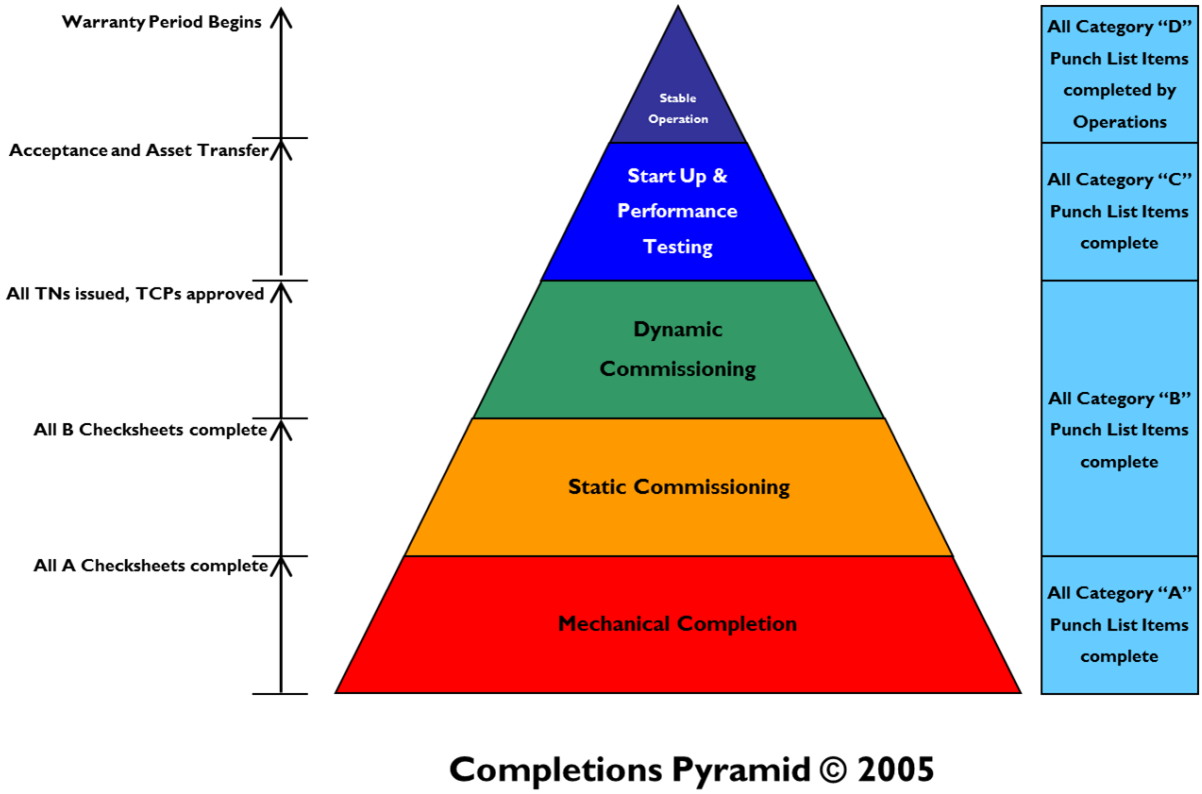
Provide a single common platform and process for the verification of the integrity and operability of equipment prior to Project to Asset Transfer (pre-commissioning and commissioning).

Zenator Systems are designed to be the sole point of reference from front end engineering design (FEED), Detailed Design, Procurement and Construction, through the Completions and Commissioning activities, until the final Handover has been made to the ultimate end-user, Operations.
This avoids the need for multiple third parties to be involved in the construction of a facility and negates the need for your Cmmissioning Managers to rely upon any other tool than Zenator, bringing standardisation and consistency to the progressive systems completion process.

Diagram showing Zenator Systems



Zenator Completions Pyramid

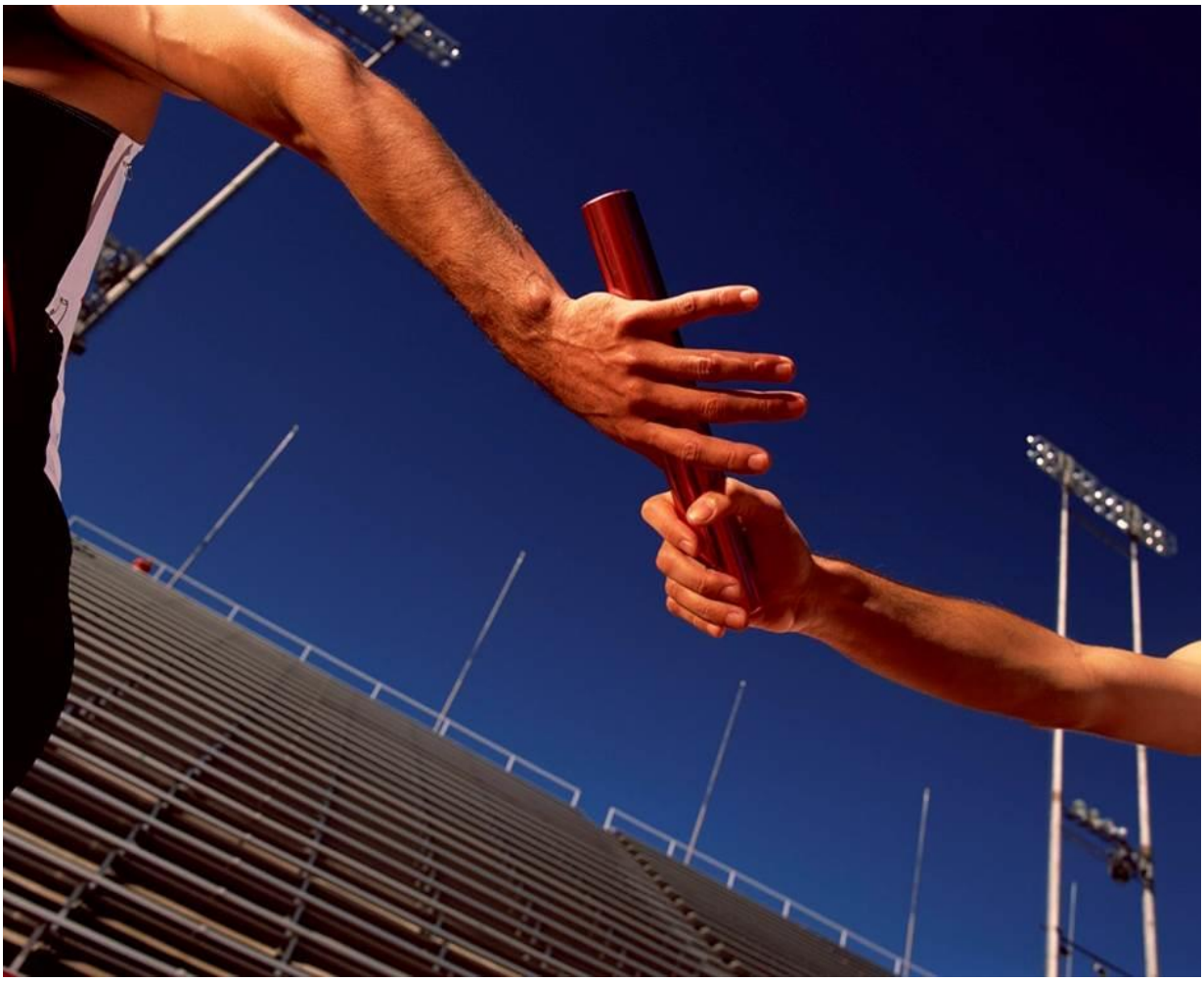


Completions Pyramid © 2005

The Completions Pyramid

*The methodology underpinning Zenator Systems is that of **Progressive Systems Completion**. To similar degrees it is followed by all major Operators in the Oil & Gas Sector of the Energy Industry. To represent a single System in a project deploying Progressive Systems Completion Methodology (PSCM), since 2005 we have developed the Completions Pyramid. Today, we translate each Operator's PSCM model into a Completions Pyramid and normally do so during the first user training workshop (UTW). The default PCSM in Zenator is as shown below. Zenator is fully configurable to any Operator's PSCM.*

The Safe and Timely Baton Exchange – Zenator in a Photo



1.14 System Numbering

Be able to cross relate systems, sub-systems and equipment heirachy between engineering, commissioning and operations.

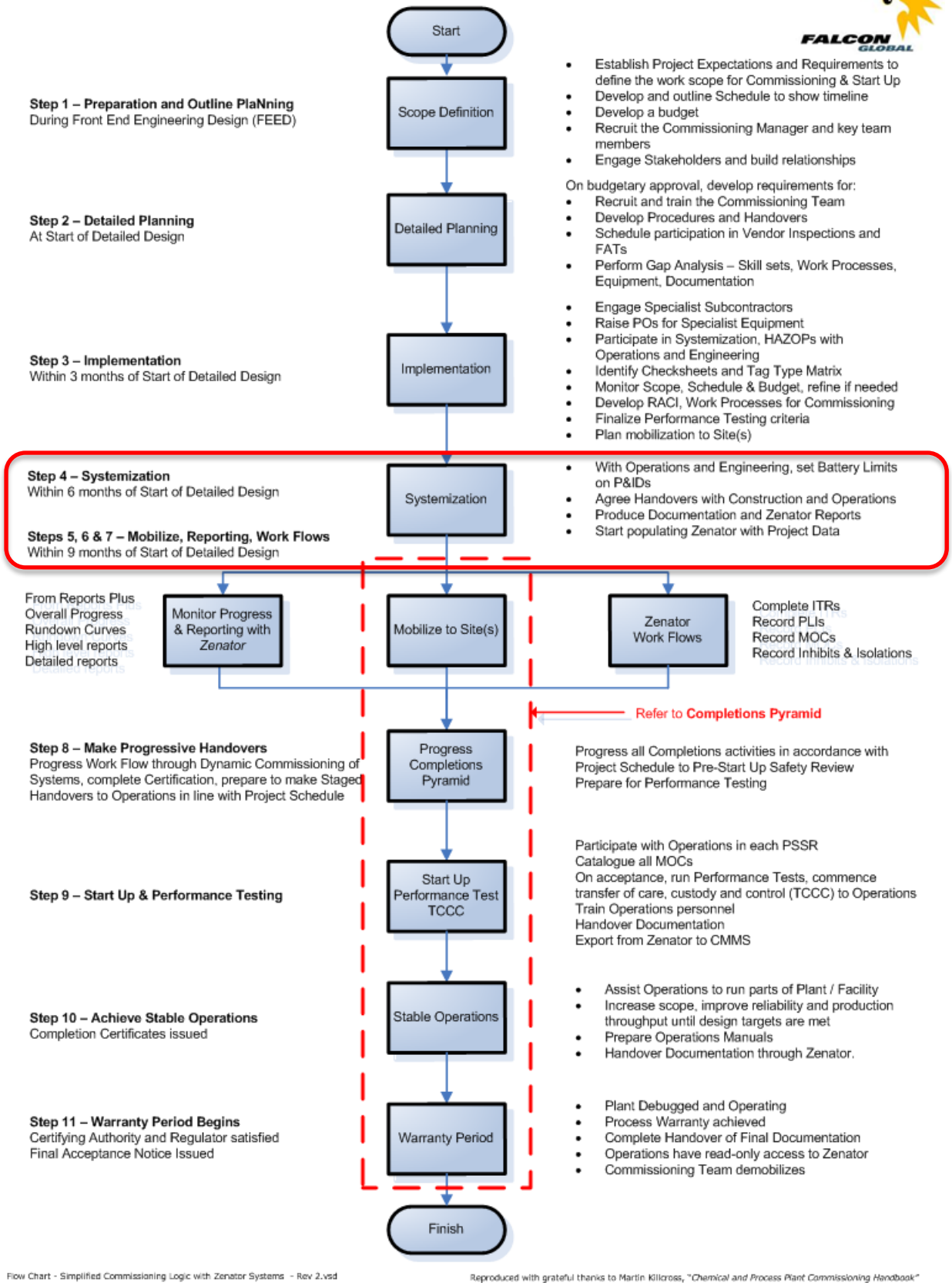
*In response to this requirement, refer to the "**Simplified Commissioning Logic**" overleaf, specifically Steps 1 to 4 and on the following page, "**Implementation and Operation of Zenator Systems**", specifically Steps 4 to 7.*

In the early stages of the project lifecycle, from FEED to Detailed Design, there is an absolute need for Engineering to be actively involved with System Numbering, Tag Numbering and to produce all their Deliverables, for every Discipline (including Electrical) with this information populated. Of course, in the earliest stages while the design is not mature, the Systems List and Numbers will not be complete, but it will mature and develop.

The Commissioning Manager and his team will use the information as it becomes available to develop a Commissioning Plan for the project, to develop an understanding requirements, set budgets, recruit team members, and to Step 4, to commence the Systemisation process.

Any outage or delay at this stage will have a knock-on effect on the project schedule; it will affect the implementation of Zenator on the project and prevents Commissioning from making an effective start. Later, as the Systemisation exercise is completed by Commissioning, creating Sub Systems etc, the need is for the Commissioning Team to feed this information back to Engineering. Further on, as As Builts are produced, these are also fed back to Engineering so that the Deliverables are updated with the As-Commissioned condition. This will form vital information to be handed over to Operations as they take over care, custody and control (TCCC) of the facility.

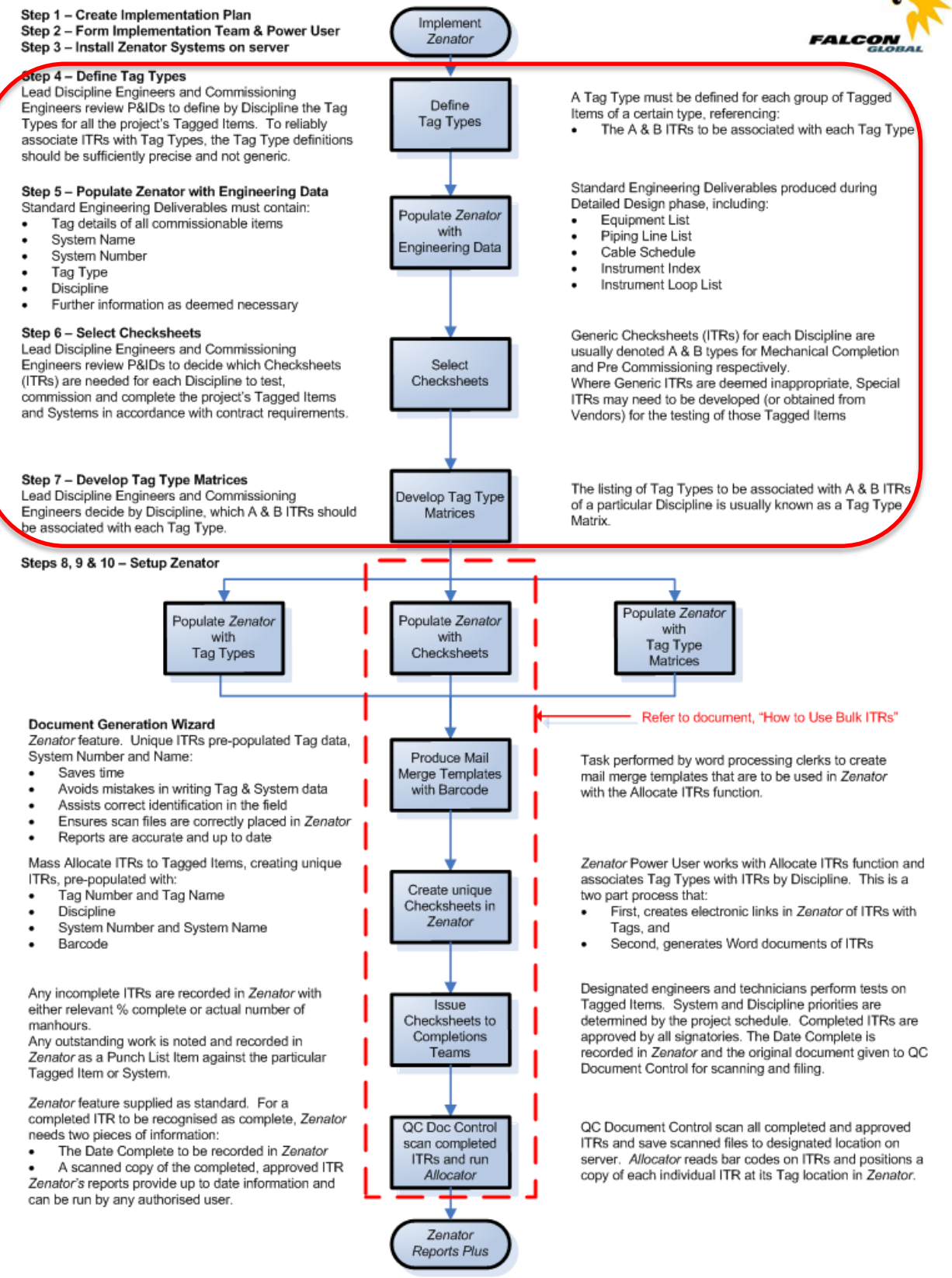
A Simplified Commissioning Logic with *Zenator Systems*



Flow Chart - Simplified Commissioning Logic with Zenator Systems - Rev 2.vsd

Reproduced with grateful thanks to Martin Killcross, *"Chemical and Process Plant Commissioning Handbook"*

Step by Step Implementation and Operation of *Zenator Systems*



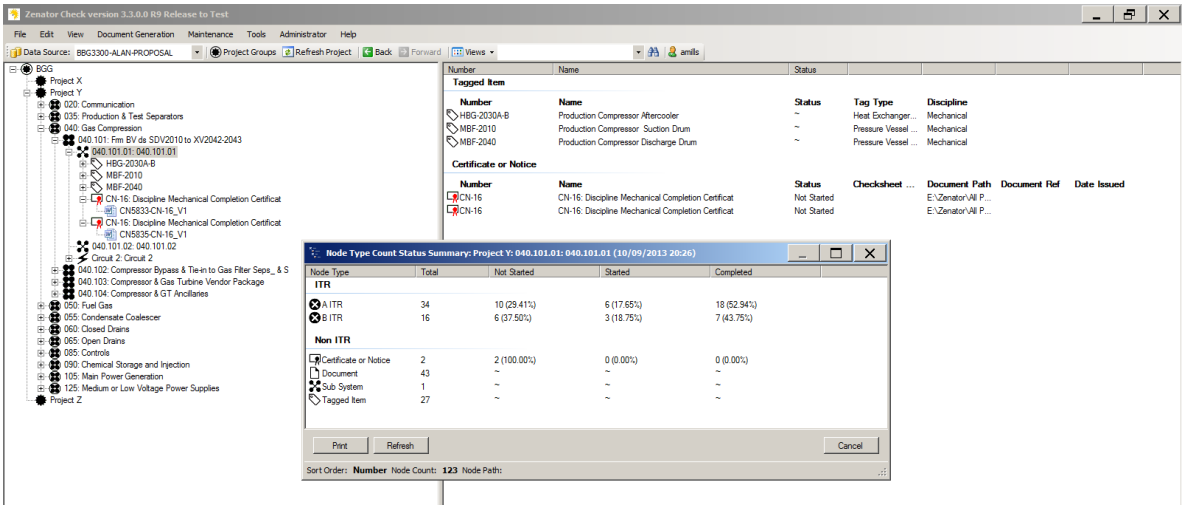
Flow Chart - Implementation and Operation of Zenator Systems - 20130927.vsd

1.15 Verification of Readiness

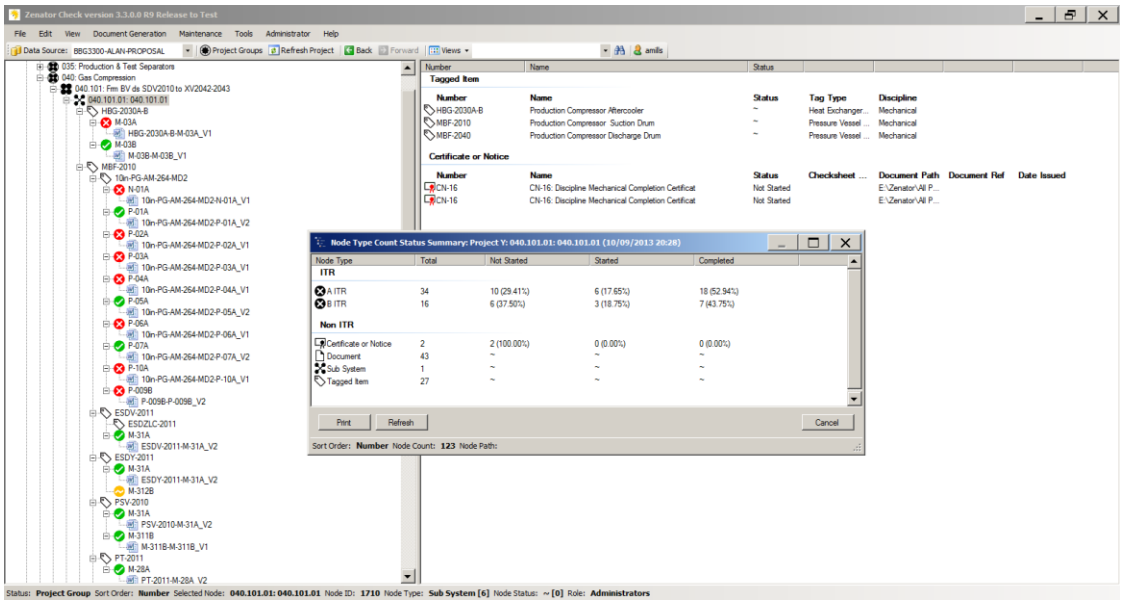
Document and record the calibration, testing and certification verification of the functional operability, Static and Dynamic verification of the elements within a Verification of Readiness (VoR) process. The elements within a VoR process will contain a subset of the items within the Facility/System/Sub-system/equipment/tag item product tree organised into a separate, functional path and associated Product sub-set and VoR product structure.

Refer to 1.11, the Completions Pyramid at 1.13, also 1.7 and 1.15.
We deduce the WBS traffic light controls described in 1.11 are an example of the VoR process described here. Zenator is designed to provide the information needed by engineers and management, particlarly the Commissioning Manager and his team, to decide on a particular course of action. When to proceed, when not to proceed. The WBS traffic light controls are an example of such information, from which the Commissioning Manager can decide whether to proceed to the next Stage.

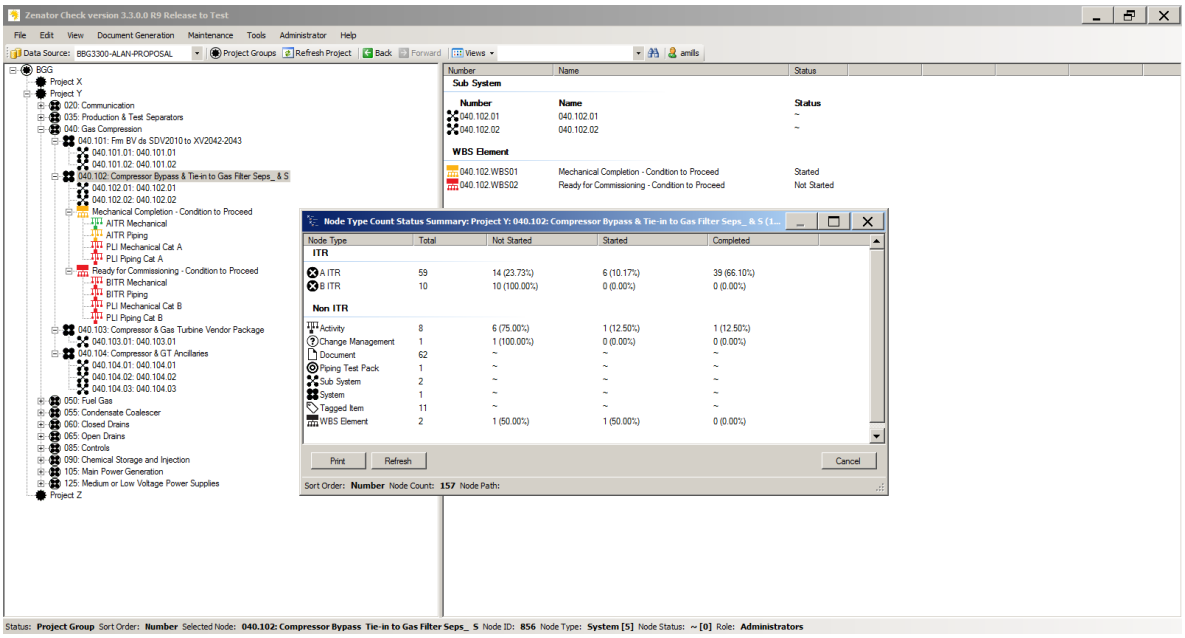
Condensed view of Sub System 040.101.01 and Node Type Count Status Summary



Expanded view of Sub System 040.101.01 and Node Type Count Status Summary



Condensed view of Sub System 040.102.01 and Node Type Count Status Summary



Example of Discipline Mechanical Completion Certificate on Sub System 040.101

Certificates and Notices

Mechanical Completion Certificate

CN-16 Page 1 of 1

Date:	10-Sep-13
Unique ID:	
Project No/Location:	BG Group-Project Y -
Project Description:	BGG - Project Y

■ Discipline □ Sub-System □ System

System:	040.101	Hold Point:	

This certificate acknowledges that, except as set forth below, all work for this package is mechanically complete as of the above date and the package is ready to begin commissioning activities. Upon acceptance and sign-off of this certificate, this package will be under the supervision of Commissioning.

All following items must be verified and checked off; any exceptions must be documented below:

- ☐ All components comprising this discipline, sub-system, or system have been erected or assembled in full accordance with design and vendor drawings.
- ☐ All necessary factory acceptance testing has been completed and documented.
- ☐ Any applicable Vendor Release Notices for this discipline, sub-system, or system have been issued by the EPC Contractor.
- ☐ This certificate is accompanied by all documentation as agreed upon for this project (including redlines).
- ☐ All "A" Checksheets and "A" punchlist items are complete.
- ☐ All remaining punchlist items have been categorized and entered.
- ☐ An appropriate care and custody transfer process has been approved and implemented.
- ☐ All preservation activities as called for in TCP documentation have been completed.

Summary of remaining items to be completed as follows:

- ☐ A plan has been made and approved to complete any remaining items noted above.

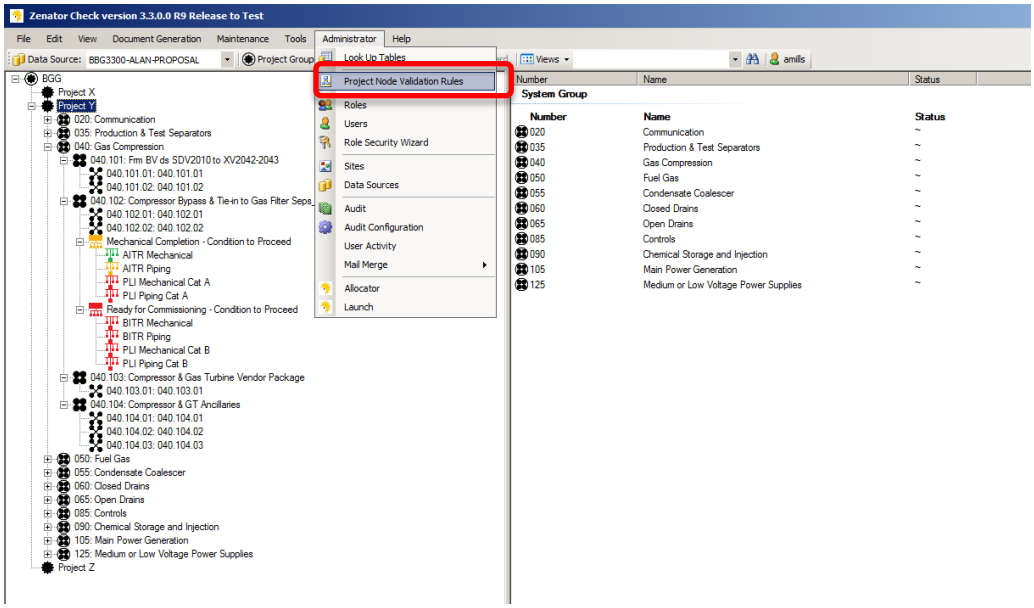
1.16 Data Reuse

Enable commissioning data against Equipment, Sub-systems and Systems gathered on a project to be reused in another project. Be able to use data for benchmarking and other project preparation.

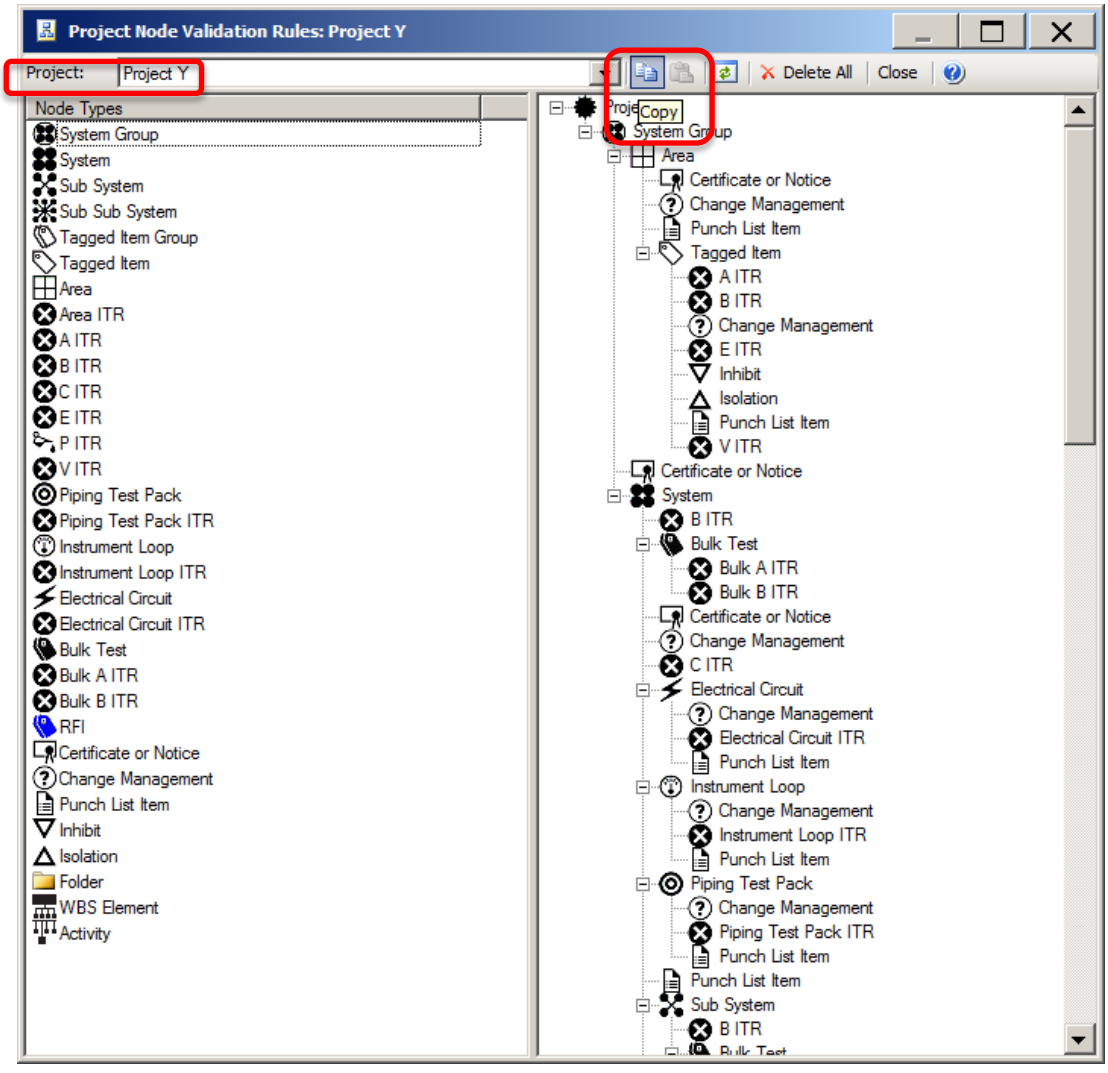
Some of the most useful information for a project to provide and make available to other projects are:

- *the Rules structure in Zenator*
- *the Tag Type Matrix (TTM)*
- *any new or customised ITRs*
- *the Commissioning Procedures (CITRs)*
- *any new or customised Certificate or Notices*
- *the Fault Codes developed for Punch Listing and using with Walkdown Capture*
- *the WBS coding for Primavera and Zenator*
- *KPI reports on*
    - *Quantity of PLIs*
    - *PLIs per Discipline*
    - *Manhours per Discipline to complete each PLI*
    - *Contractor Performance*
        - *Manhours per Discipline*
        - *Manhours per ITR per Discipline*
        - *Failure Rates*
    - *Specialist Contractor Performance*
        - *Leak Testing, Steam Blowing, Pipeline Pigging, Chemical Cleaning, Hot Oil Flushing*

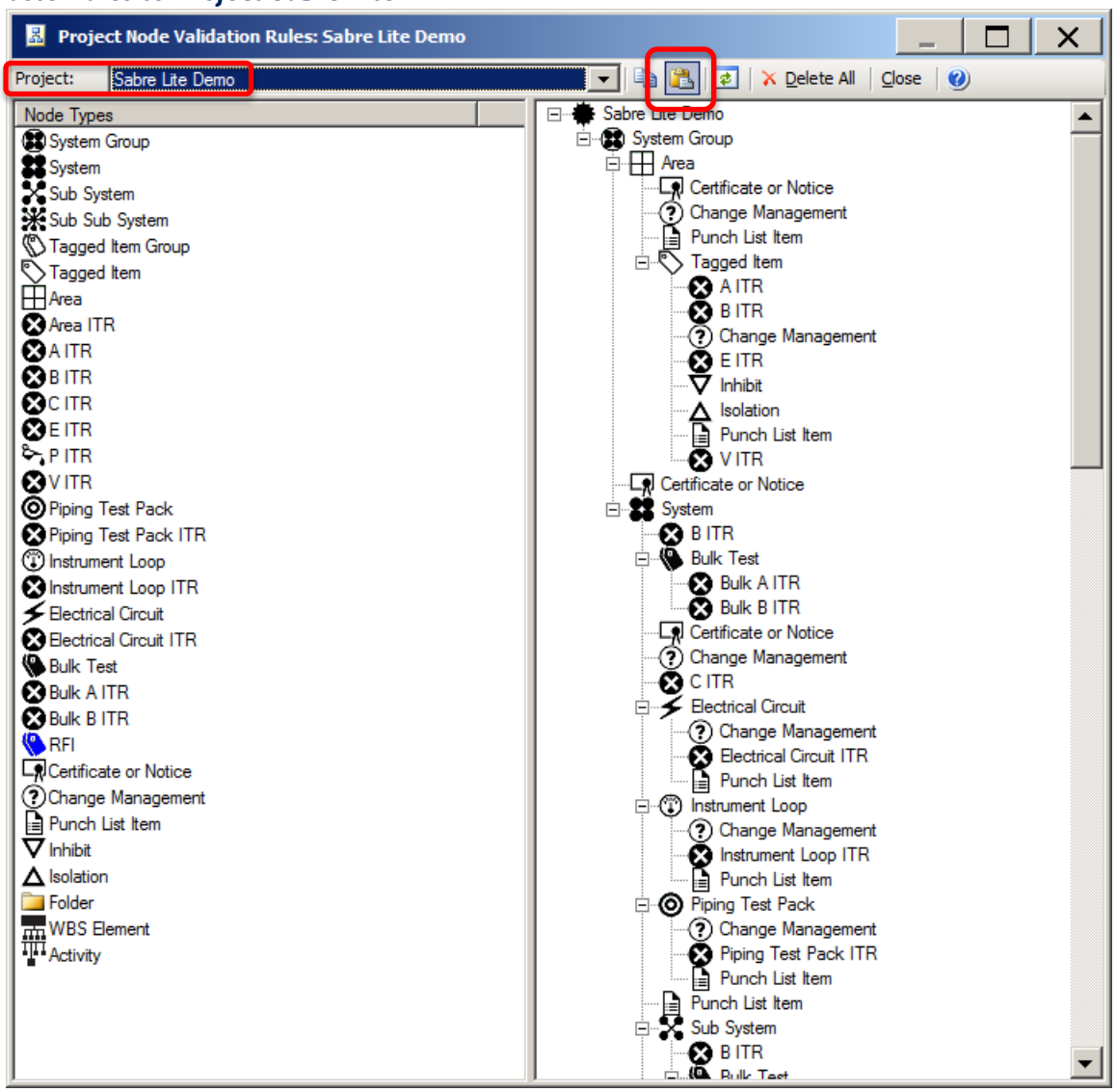
Rules structure in Zenator



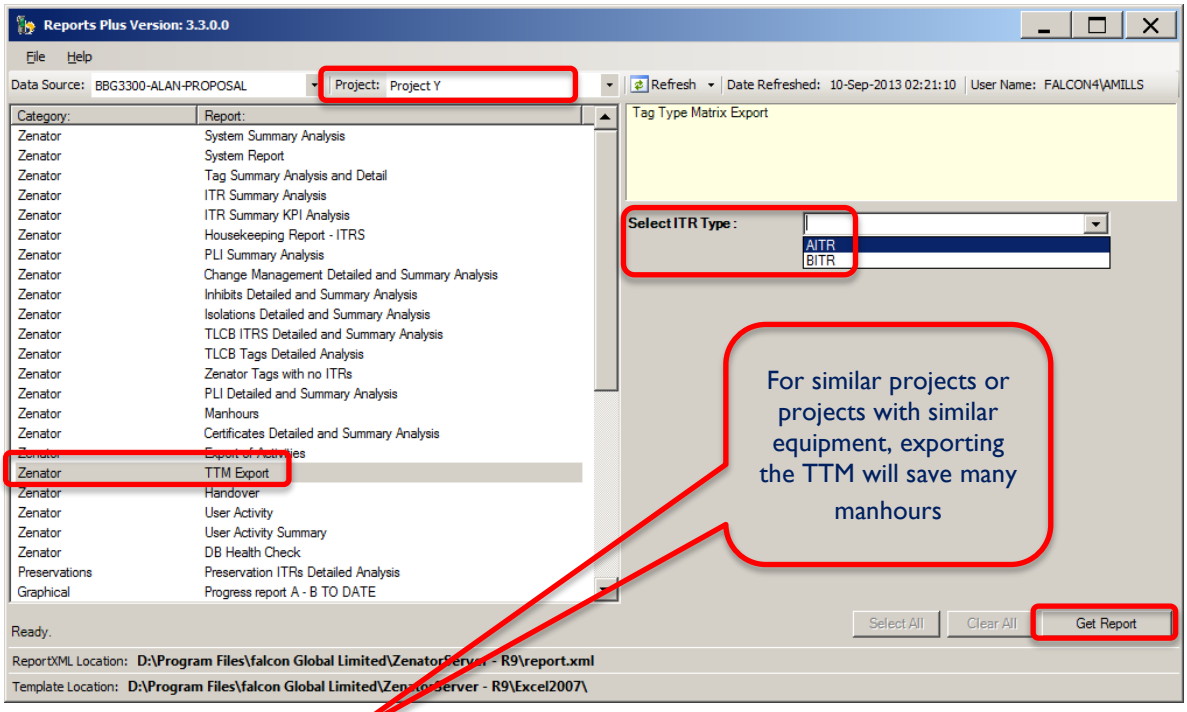
Copy Rules from Project Y



Paste Rules to Project Sabre Lite

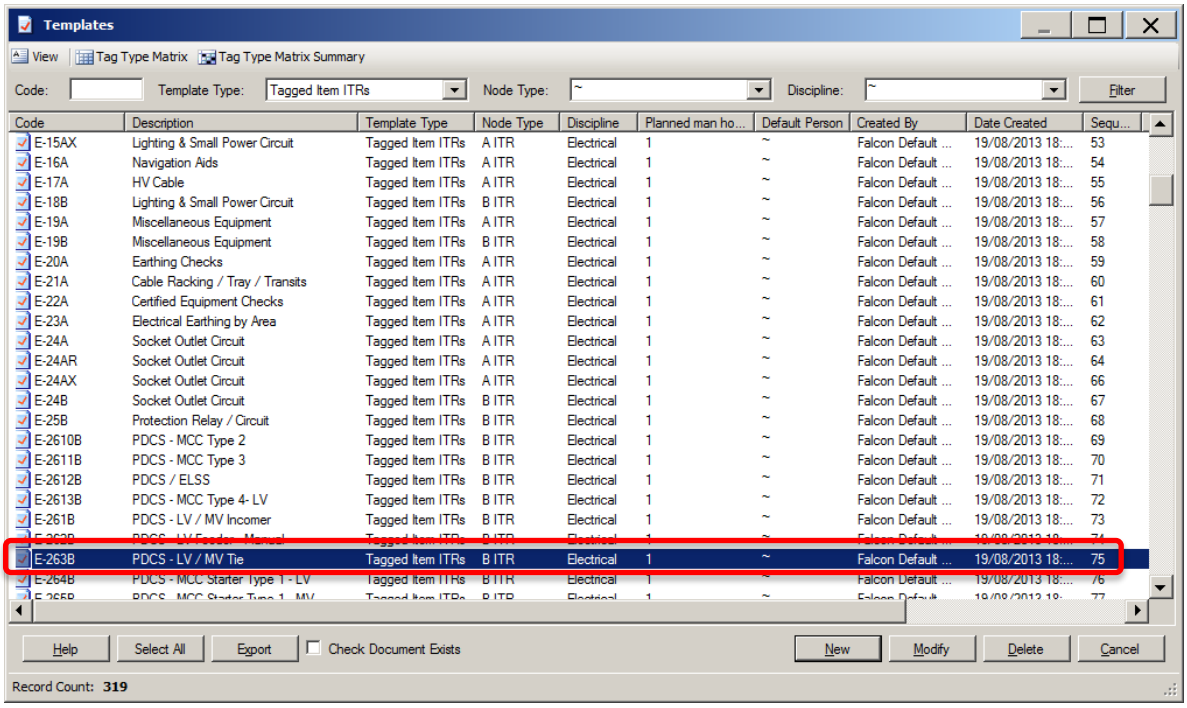


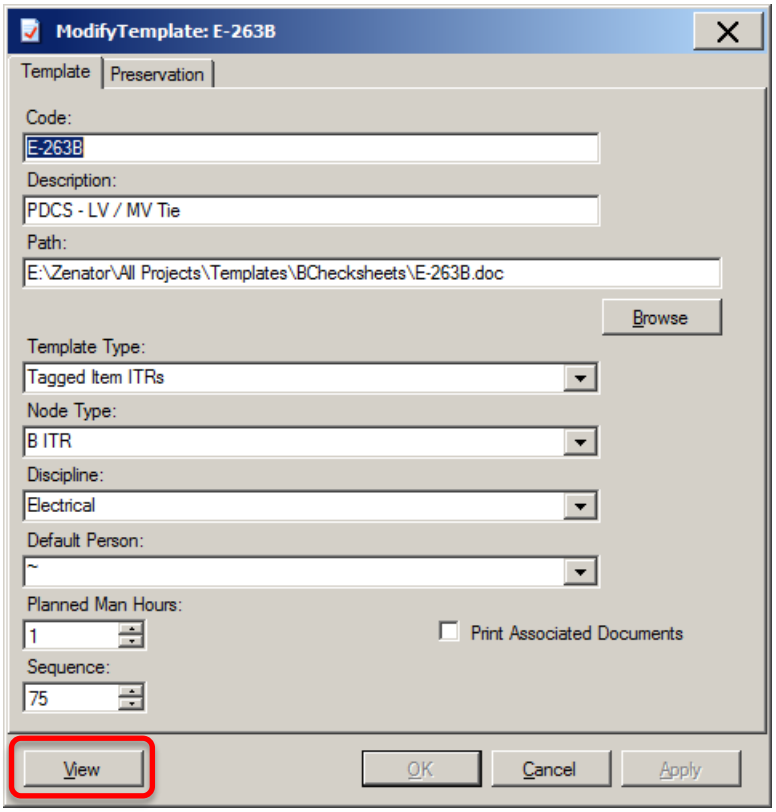
Tag Type Matrix (TTM)



	A		C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF
1	**Project Name**	Project Y																														
2	**Project Number**	BG Group-Project Y																														
3	**ITR Type**	AITR																														
4																																
5	**Tag Type Main**	**Tag Type**	**Discipline**	**E-01AX**	**E-11A**	**I-022A**	**I-02A**	**I-03A**	**I-04A**	**M-01A**	**M-02A**	**M-03A**	**M-05A**	**M-08A**	**M-091A**	**M-092A**	**M-09A**	**M-13A**	**M-16A**	**M-19A**	**M-25A**	**M-28A**	**M-31A**	**N-01A**	**P-01A**	**P-02A**	**P-03A**	**P-04A**	**P-05A**	**P-06A**	**P-07A**	**P-10A**
6	Cables	Instruments	Electrical	Y																												
7	Compressor	Centrifugal	Mechanical											Y	Y																	
8	Compressor	Instrument Air	Mechanical											Y			Y															
9	Compressor	Reciprocating	Mechanical											Y		Y																
10	Compressor	RECIPROCATING COMPRESSOR	Mechanical											Y		Y																
11	Equipment	Cabin and Room Equipment	Mechanical																		Y											
12	Equipment	CO2 System	Mechanical																		Y											
13	Equipment	Exhaust Silencer	Mechanical																		Y											
14	Equipment	Nitrogen Charge Kit	Mechanical																		Y											
15	Equipment	Nitrogen Generator	Mechanical																	Y												
16	Equipment	Seal Pressure Enhancer	Mechanical																		Y											
17	Equipment	Thyristor Control	Mechanical																		Y											
18	Equipment	Turbine Wash Unit	Mechanical																		Y											
19	Generator / Alternator - Mechanical	Gas Turbine (including GT Generator)	Mechanical										Y	Y				Y	Y													
20	Heat Exchanger	Heat Exchanger / Heater / Cooler	Mechanical									Y																				
21	Instrument	Analyser	Instrumentation				Y	Y																								
22	Instrument	CONTROLLER	Instrumentation				Y	Y																								
23	Instrument	Flow - Restriction Orifice	Instrumentation			Y	Y																									
24	Instrument	Flow - Rotameter Indicator	Instrumentation				Y	Y																								
25	Instrument	Power - Compressor Unit Control Panel	Instrumentation					Y	Y																							
26	Instrument	SWITCH	Instrumentation				Y	Y																								
27	Instrument	Valve - Control	Instrumentation				Y	Y																								
28	Panels	Marshalling Cabinet	Electrical		Y																											
29	Piping	Pipe Spool	Piping																					Y	Y	Y	Y	Y	Y	Y	Y	

New or Customized ITRs



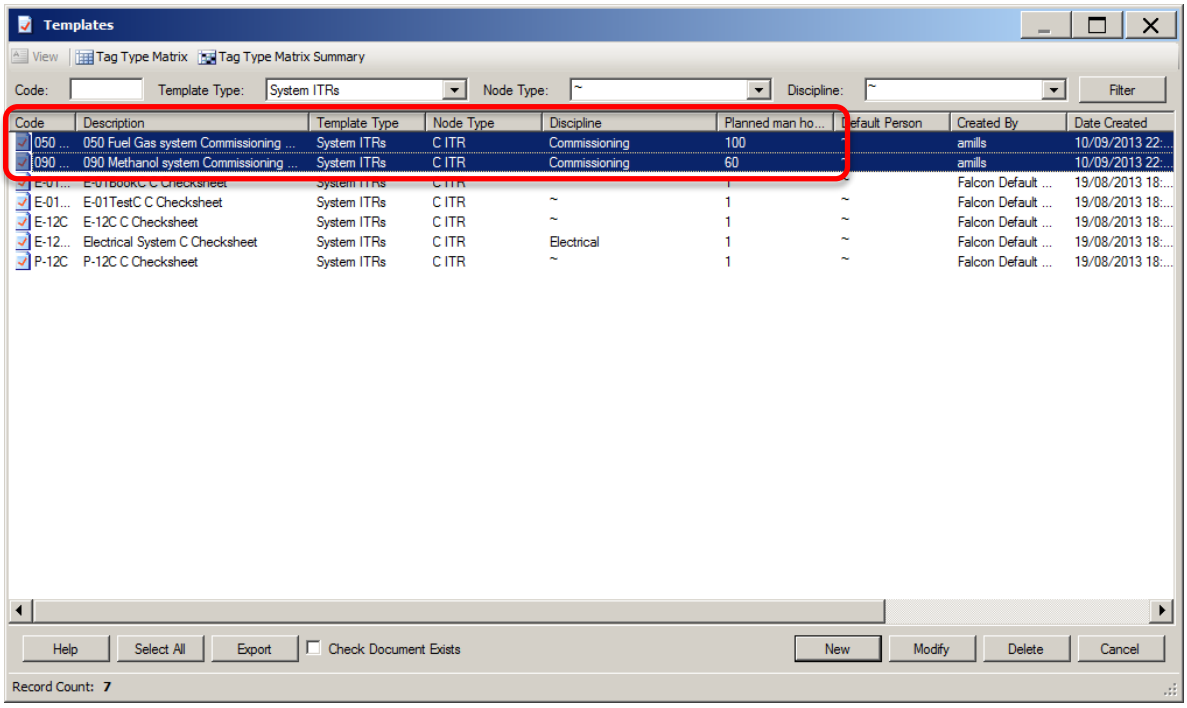


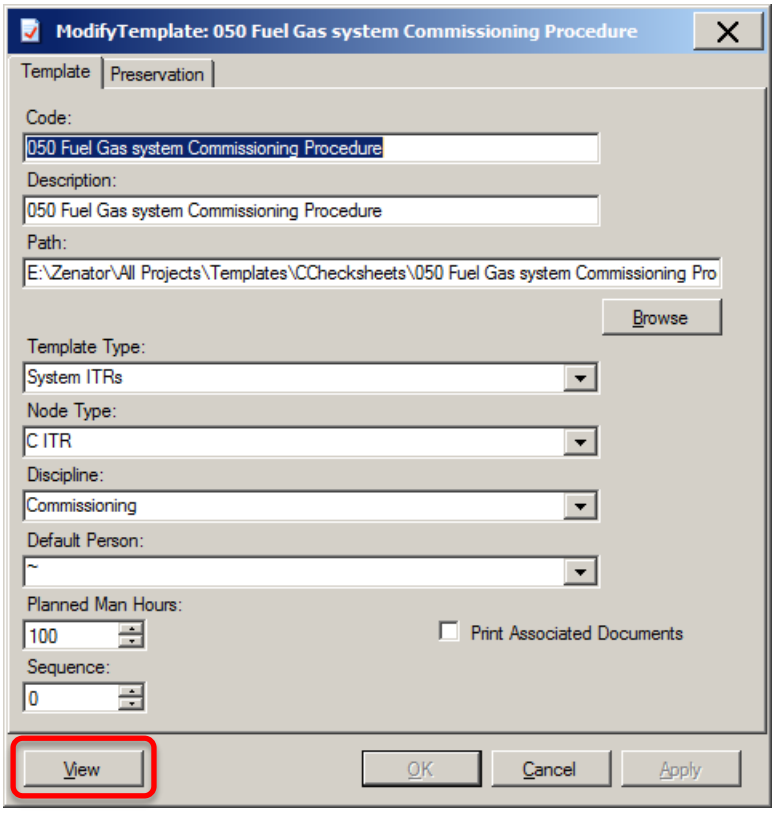
	Pre-Commissioning: PDCS/ELSS (LV / MV Tie)		E-263B Page 1 of 1
Unique ID:	strDocumentPathAndFileChecksheet	Item / Tag No.	TagNo
Project Name:	ProjectNumber	Sub-System No.	

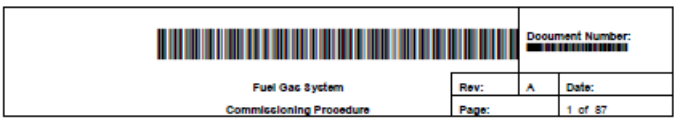
Data Sheet			
Equipment Description	TagName		
Sub-System Description	SystemNumber SubSystemNumber		
Location:		Module Detail:	Module
Drawing Reference:	PrimaryPandIDRef	Date Printed:	10-Sep-13

No.	Verify the following functions		Results	Initial / Signature	Punch list item No.
	PDCS Control Signal Description	**Signal Type**			
1	Start				
2	Stop				
3	Start Low				
4	Stop Low				
5	Start High				
6	Stop High				
7	Run				
8	Run Low				
9	Run High				
10	Open	DI			
11	Closed				
12	Available	DI			
13	Fault	DI			
14	Alarm				
15	Automatic Mode				
16	Volt				
17	kW				
18	kVAR				
19	Amps				
20	Spinning ReservekW				
	PCS Control Signal Description	**Signal Type**			
21	Start				
22	Stop				
23	Status	SDI			
24	Available	SDI			
25	Automatic Mode				
26	kW				
27	Amps				

Commissioning Procedures (CITRs)







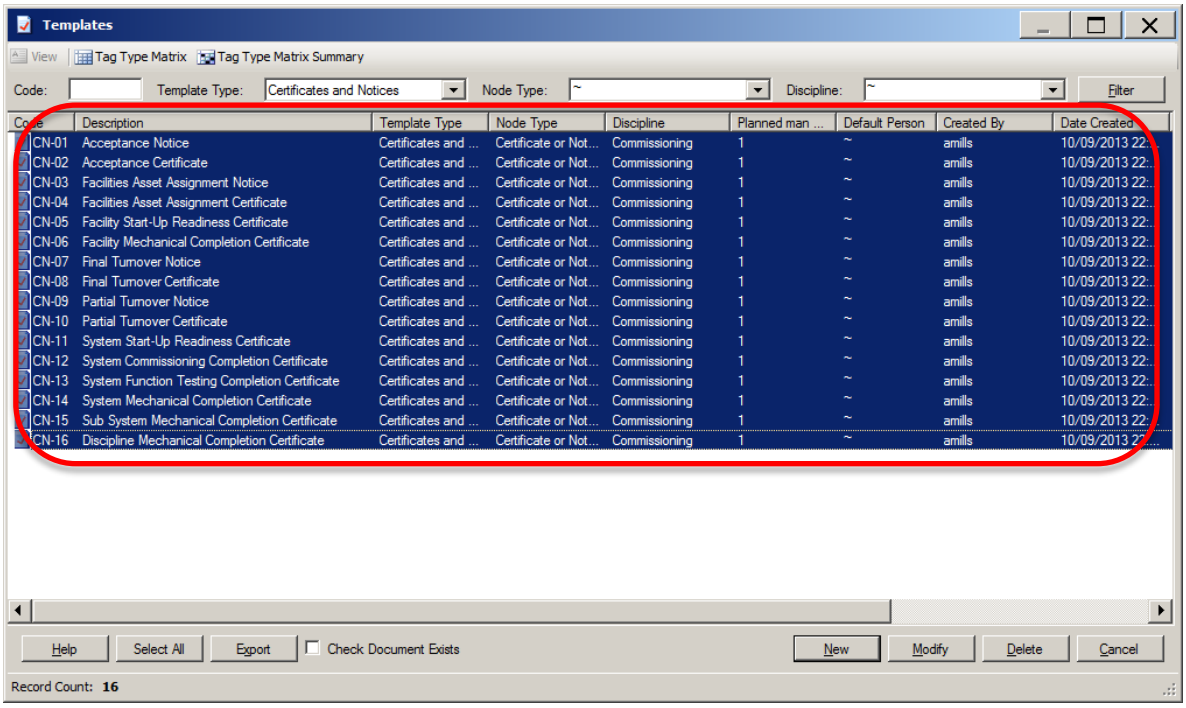
Document Title: Fuel Gas

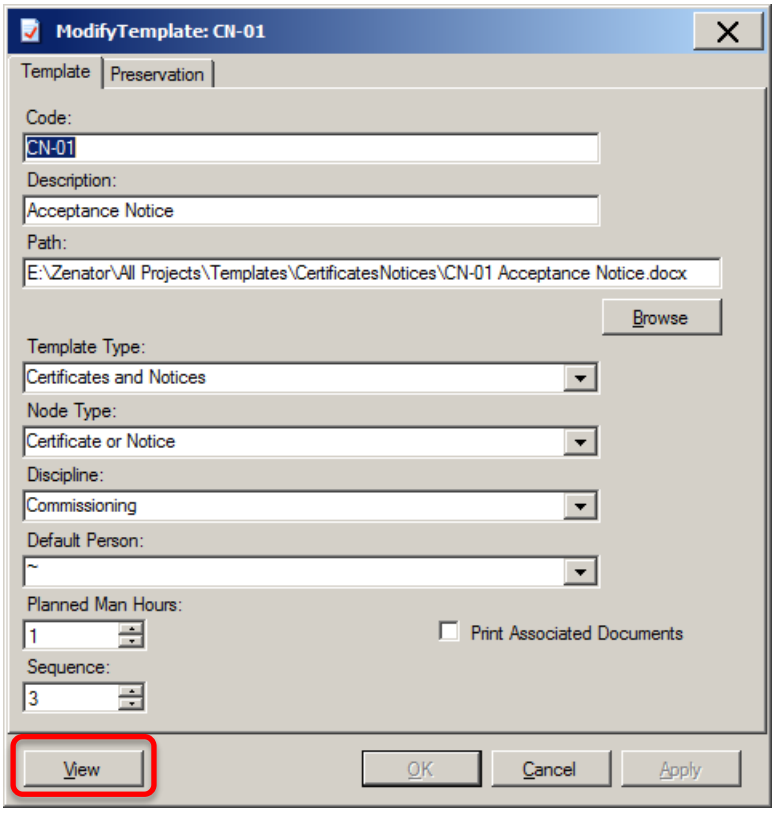
Project Name:
Commissioning Procedure

	Reviewed & Approved	Date
Originator		
Approver		
Other (As Required)		

Revision Record					
Revision	Description	Date	By	Checked	Approved
A	Issued for review (with Holds)				

New or Customized Certificate or Notices





Certificates and Notices		
	Acceptance Notice «Barcode Item»	CN-01 Page 1 of 1
Date:	10-Sep-13	
Unique ID:	«strDocumentRef»	
Project No/Location:	«strProjectNumber»	
Project Description:	«strProjectGroupName» - «strProjectName»	

This notice acknowledges COMPANY's agreement that, as of the date above:

- The Facility's capability to operate successfully at the conditions specified in JOB SPECIFICATION has been demonstrated **through performance testing and/or other means identified by COMPANY.**
- CONTRACTOR has corrected known deficiencies, or a written agreement has been made between COMPANY and CONTRACTOR for the correction of known deficiencies.
- CONTRACTOR has furnished to COMPANY equipment, materials, and documents required under CONTRACT, except for those documents specified in the CONTRACT.

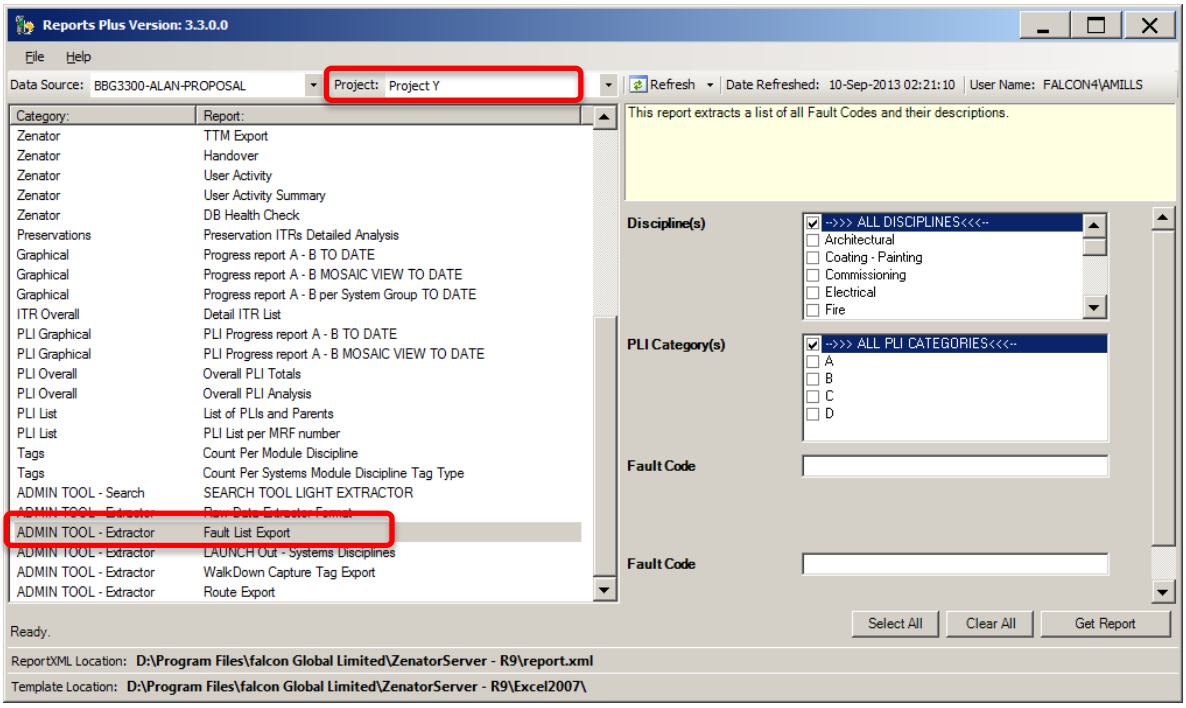
Summary of project deliverables that are excluded from Acceptance:

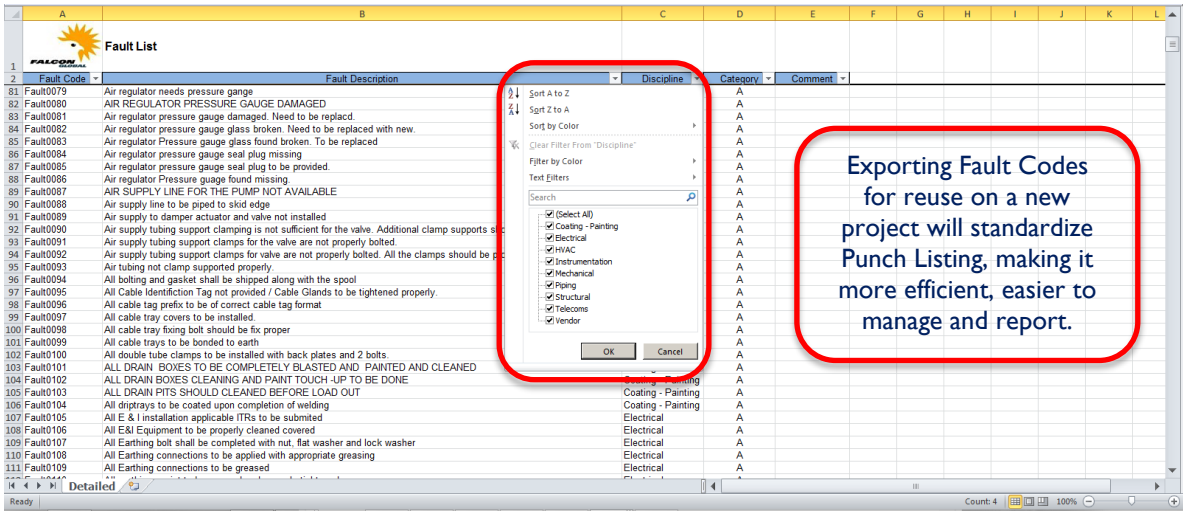
Approved by:

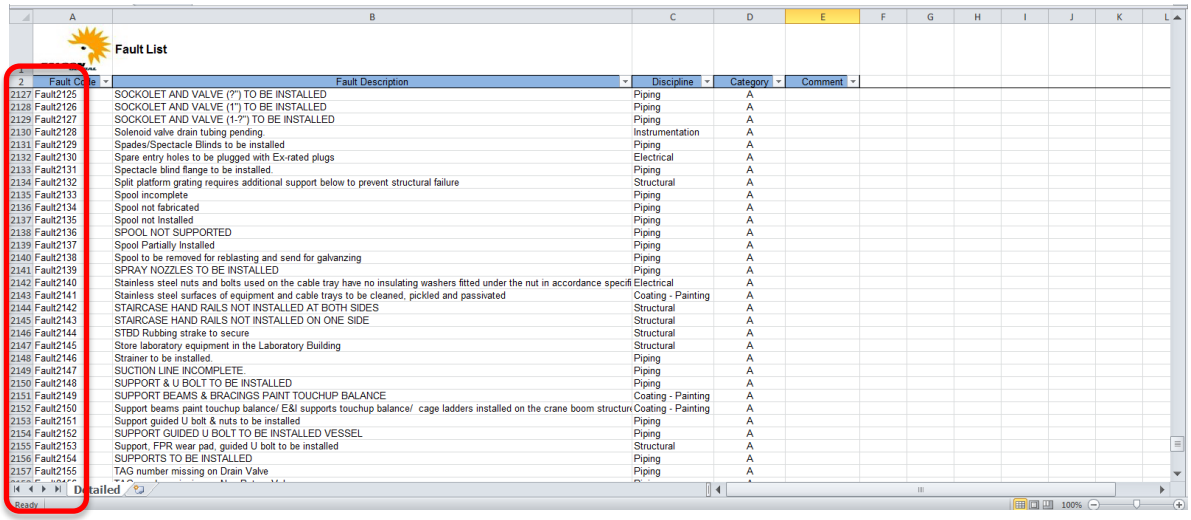
COMPANY – Project Manager _____ Date _____

COMPANY – Projects Vice President _____ Date _____

Fault Codes for Punch Listing with Walkdown Capture

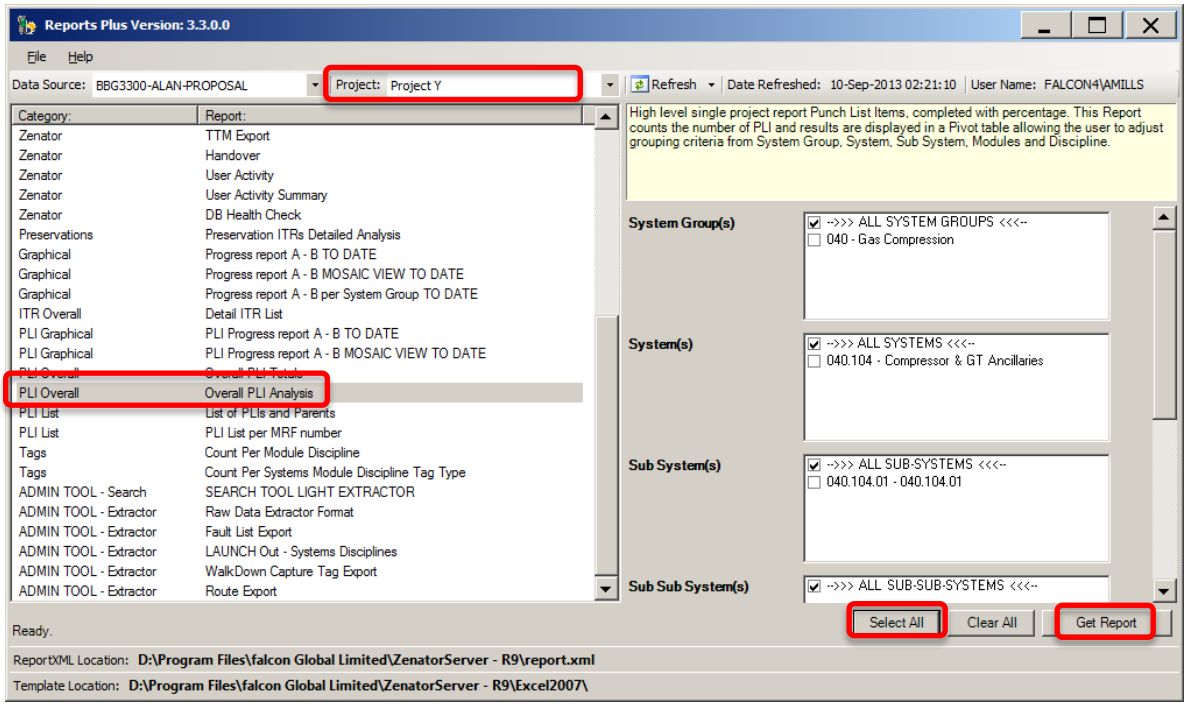


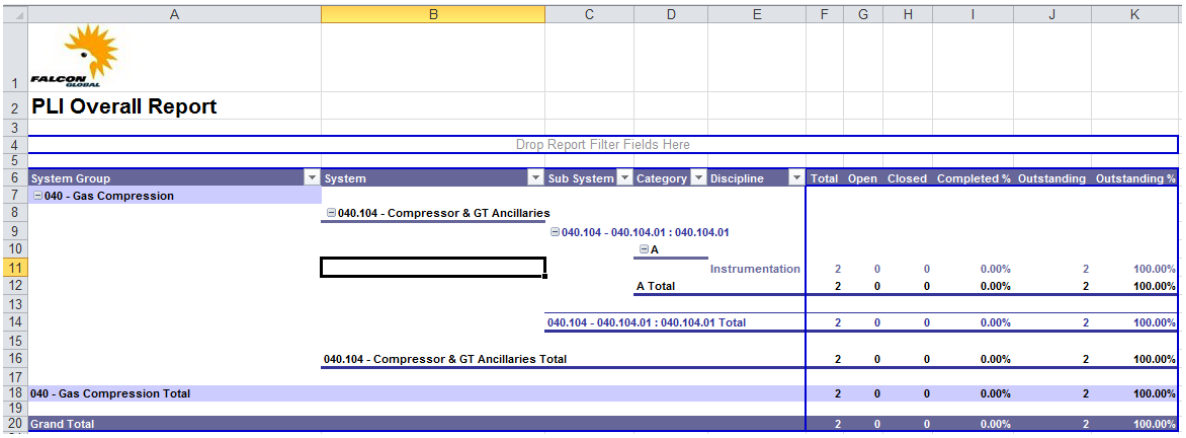


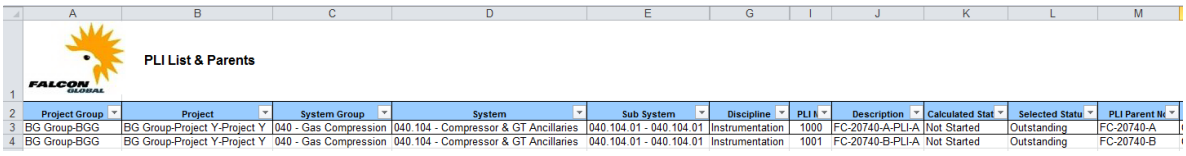


KPI reports on

Quantity of PLIs







Also, further KPI reports can be obtained regarding PLIs per Discipline

Manhours per Discipline to complete each PLI

Contractor Performance

- *Manhours per Discipline*
- *Manhours per ITR per Discipline*
- *Failure Rates*

Specialist Contractor Performance

- *Leak Testing, Steam Blowing, Pipeline Pigging, Chemical Cleaning, Hot Oil Flushing*

1.17 Tag to Tag Relationships

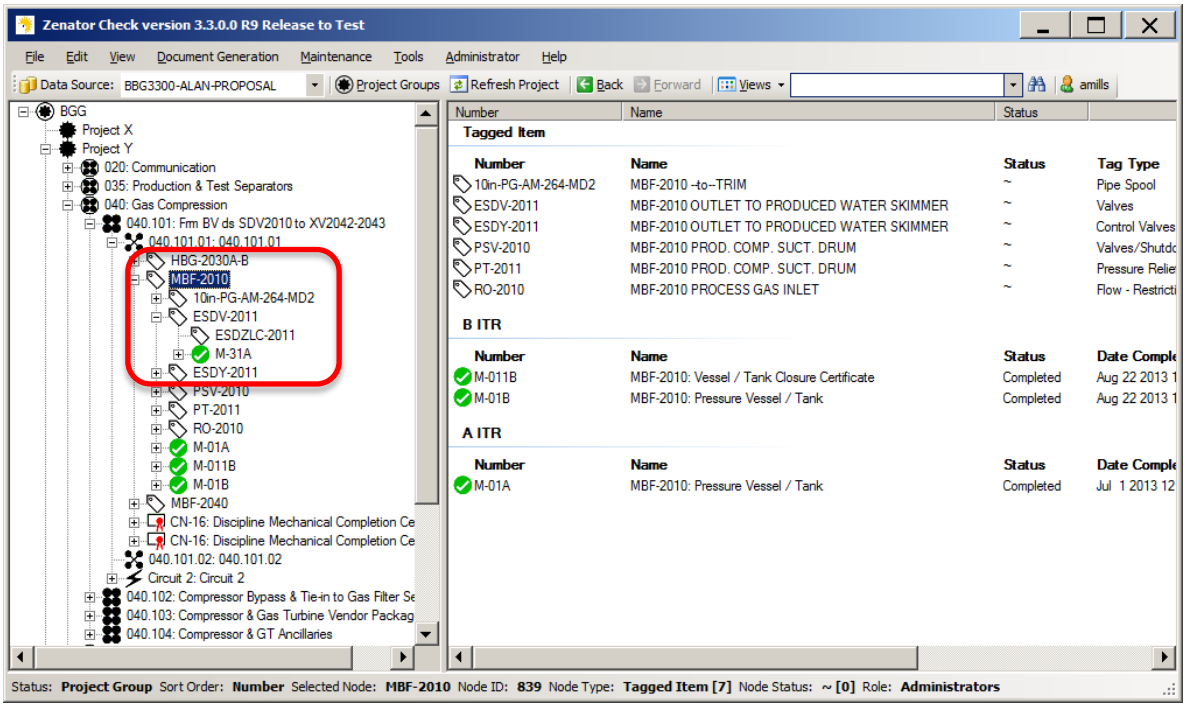
The ability to build and vary the composition of the equipment within the standard hierarchy of systems.

Refer also to 1.7, Project Hierarchy in Project Y.

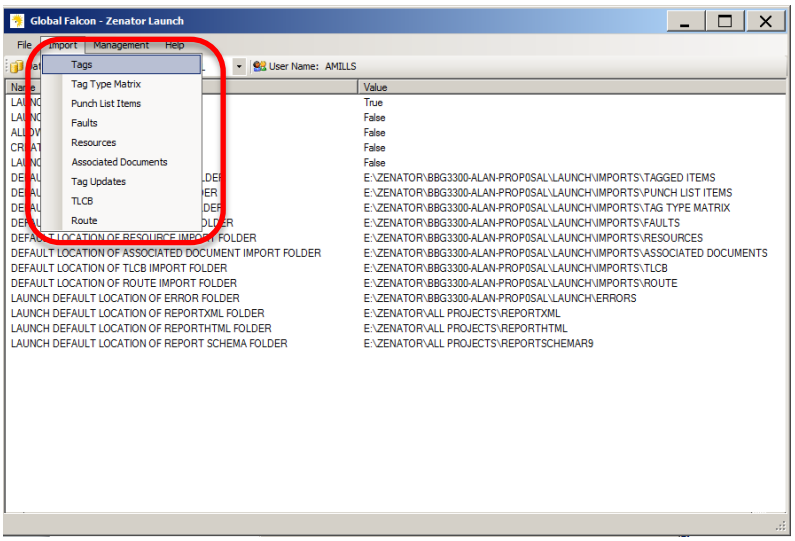
Zenator is extremely flexible and supports multiple levels in a project's hierarchy. Tag data with Parent > Child and Parent > Child > Grand Child relationships are easily imported using Zenator Launch. Sample screenshots are shown below.

Projects are using this Parent & Child relationship to define tag structures down to 3, 4 and 5 levels.

Project Hierarchy with Parent > Child > Grand Child Tag relationships



Sample Import file from Launch for Parent > Child > Grand Child Tag relationships

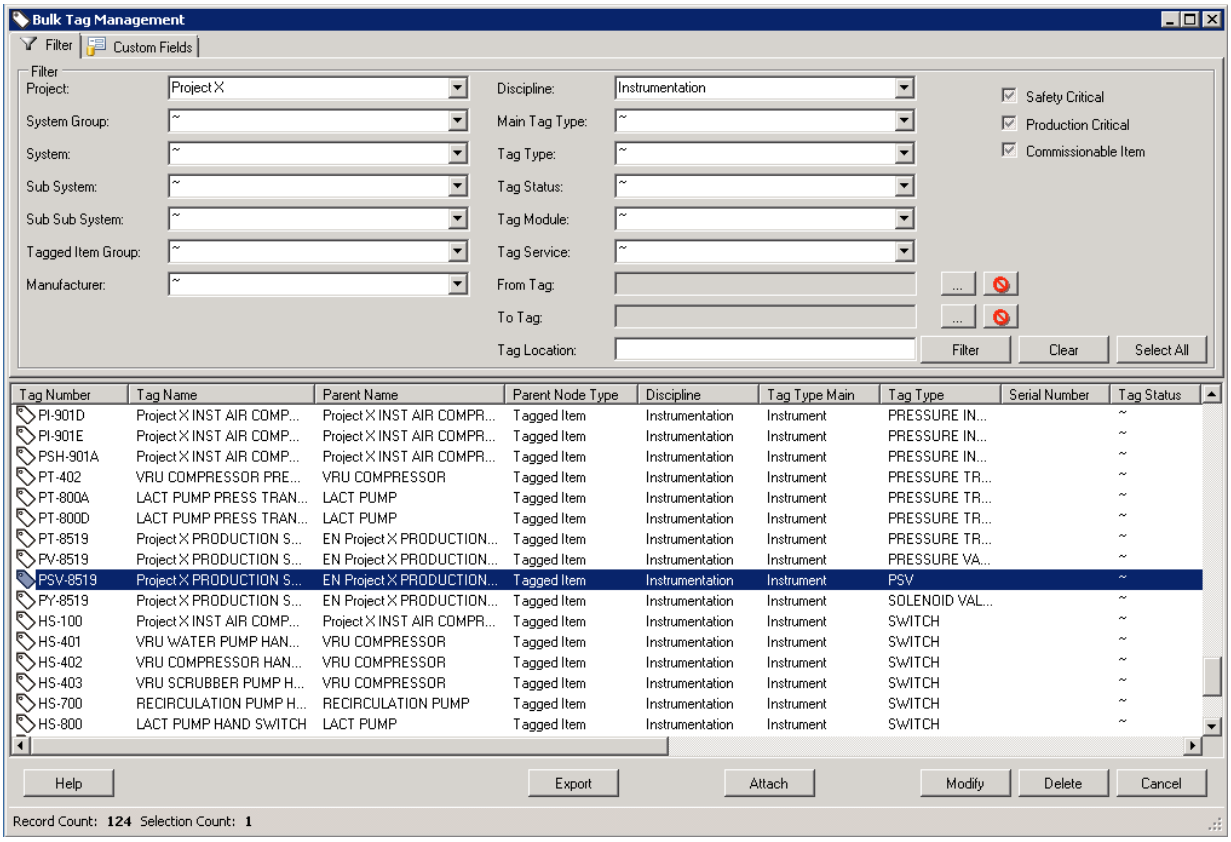


B	C	D	E	F
Tag No	**Tag Name**	**Discipline**	**Parent Tag No**	**Status**
10in-PG-AM-264-MD2	MBF-2010 –to–TRIM	Piping	MBF-2010	
10in-PG-AM-285-ME2	NAP2900–to–TRIM	Piping	NAP2900	
18in-PG-A-202-MD2	18"-PG-AM202-MD2–to–18"-PG-A234-MD2	Piping		
18in-PG-A-234-MD2	18"-PG-A202-MD2–to–18"-PG-A245-MD2	Piping		
18in-PG-A-245-MD2	18"-PG-2014-D2–to–18"-PG-2016-D2	Piping		
2in-PG-AM-293-MF1	2"-PG-AM276-MD2–to–CBA-2910	Piping		
AAP-_2075	Heater for Lube Oil Tank BBJ-2074	Mechanical		
ABJ-2070	Turbine Fired Wash Tank	Mechanical		
ABJ-2071	Turbine Crank Soak Tank	Mechanical		
ABJ-2073	Compressor Lube Oil Overhead Tank	Mechanical		
BDV-2044	MBF-2040 OUTLET DEPRESSURING TO HP RELIEF HEADER	Mechanical	MBF-2040	
BDY-2044	MBF-2040 OUTLET DEPRESSURING TO HP RELIEF HEADER	Mechanical	MBF-2040	
CBA-2020	Production Compressor	Mechanical		
CBA-2910	Seal Gas Booster Compressor	Mechanical		
ESDV-2011	MBF-2010 OUTLET TO PRODUCED WATER SKIMMER	Mechanical	MBF-2010	
ESDV-20200	CBA-2020 PROD. COMP. TO FUEL GAS SUPERHEATER	Mechanical	CBA-2020	
ESDV-20201	CBA-2020 PROD. COMP. ANTI SURGE BYPASS	Mechanical	CBA-2020	
ESDV-2040	MBF-2040 GAS OUTLET	Mechanical	MBF-2040	
ESDV-2041	MBF-2040 PRODUCED WATER OUTLET	Mechanical	MBF-2040	
ESDV-2043	MBF-2040 GAS OUTLET / SEQUENCE VALVE BYPASS	Mechanical	MBF-2040	
ESDV-2047	COMPRESSOR PRIMARY SEAL GAS	Mechanical		
ESDY-2011	MBF-2010 OUTLET TO PRODUCED WATER SKIMMER	Mechanical	MBF-2010	
ESDY-20200-A	CBA-2020 PROD. COMP. TO FUEL GAS SUPERHEATER	Mechanical	CBA-2020	
ESDY-20200-B	SDV-20200 PARTIAL STROKE TEST	Mechanical	CBA-2020	
ESDY-20201-A	CBA-2020 PROD. COMP. ANTI SURGE BYPASS	Mechanical	CBA-2020	

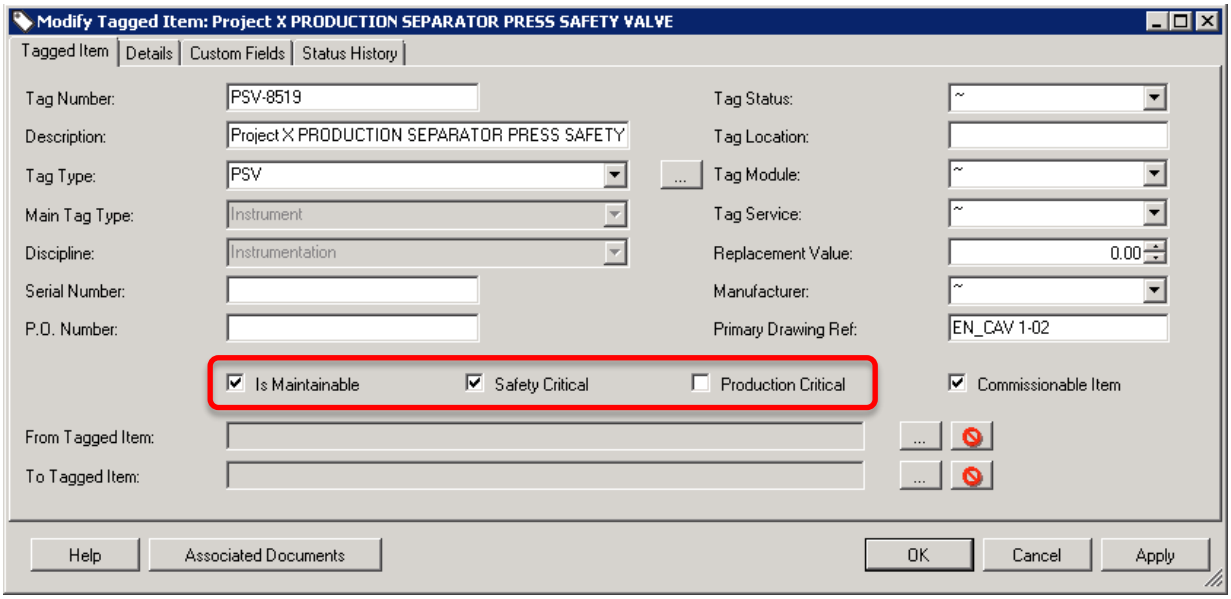
1.18 Tracking Safety Critical Elements

Provide the ability to identify "tag" and track safety critical elements.

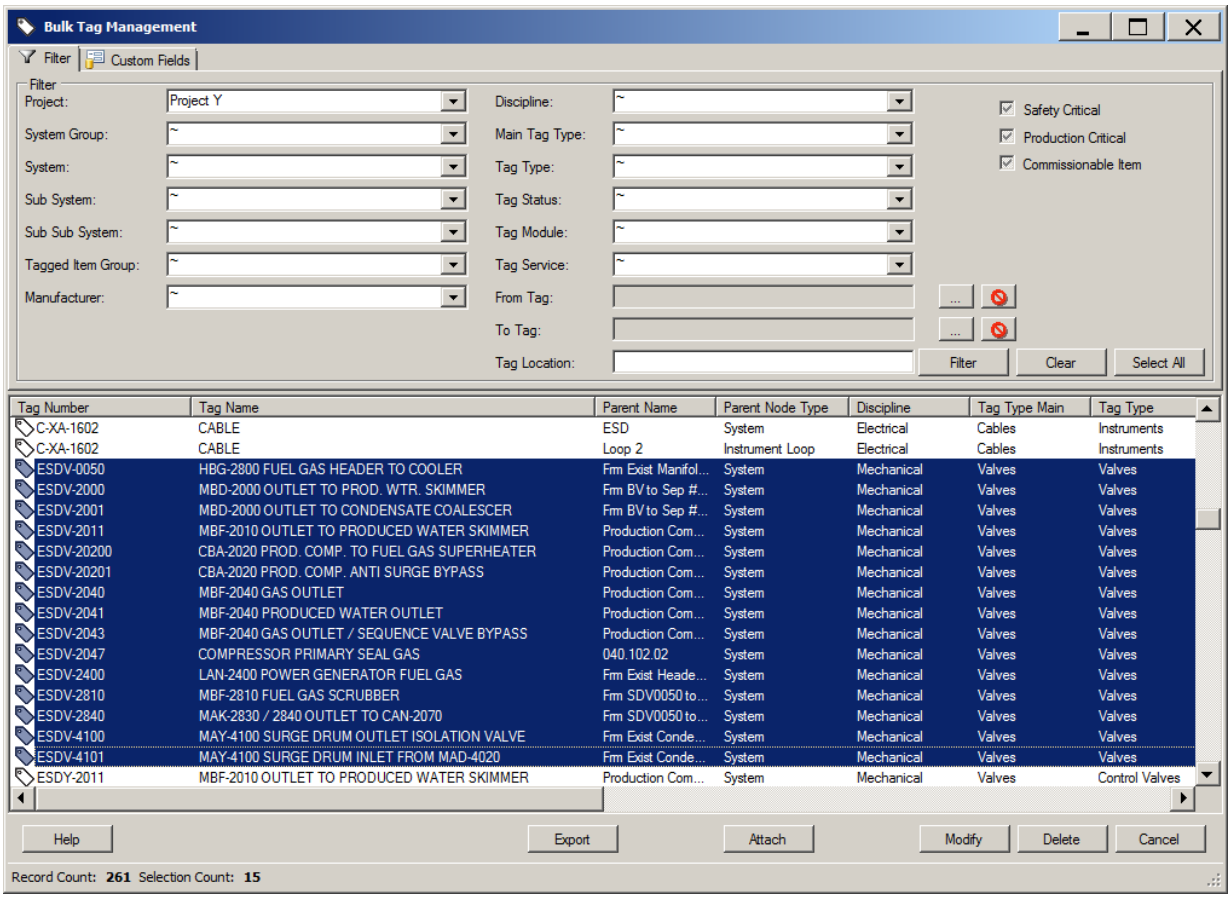
From Bulk Management select Tags to be Maintainable, Safety Critical, Production Critical



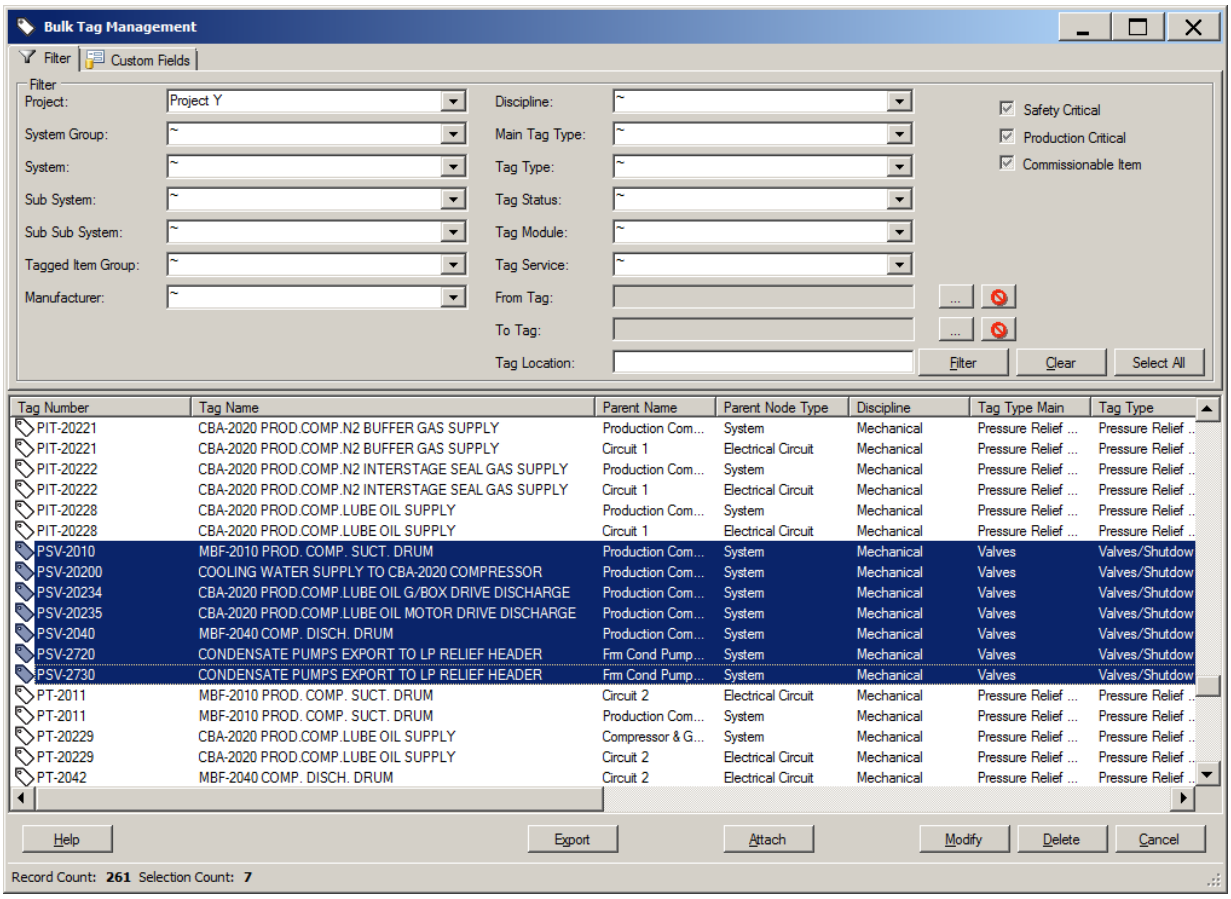
Attributes on Tag to Denote Maintainable, Safety Critical, Production Critical



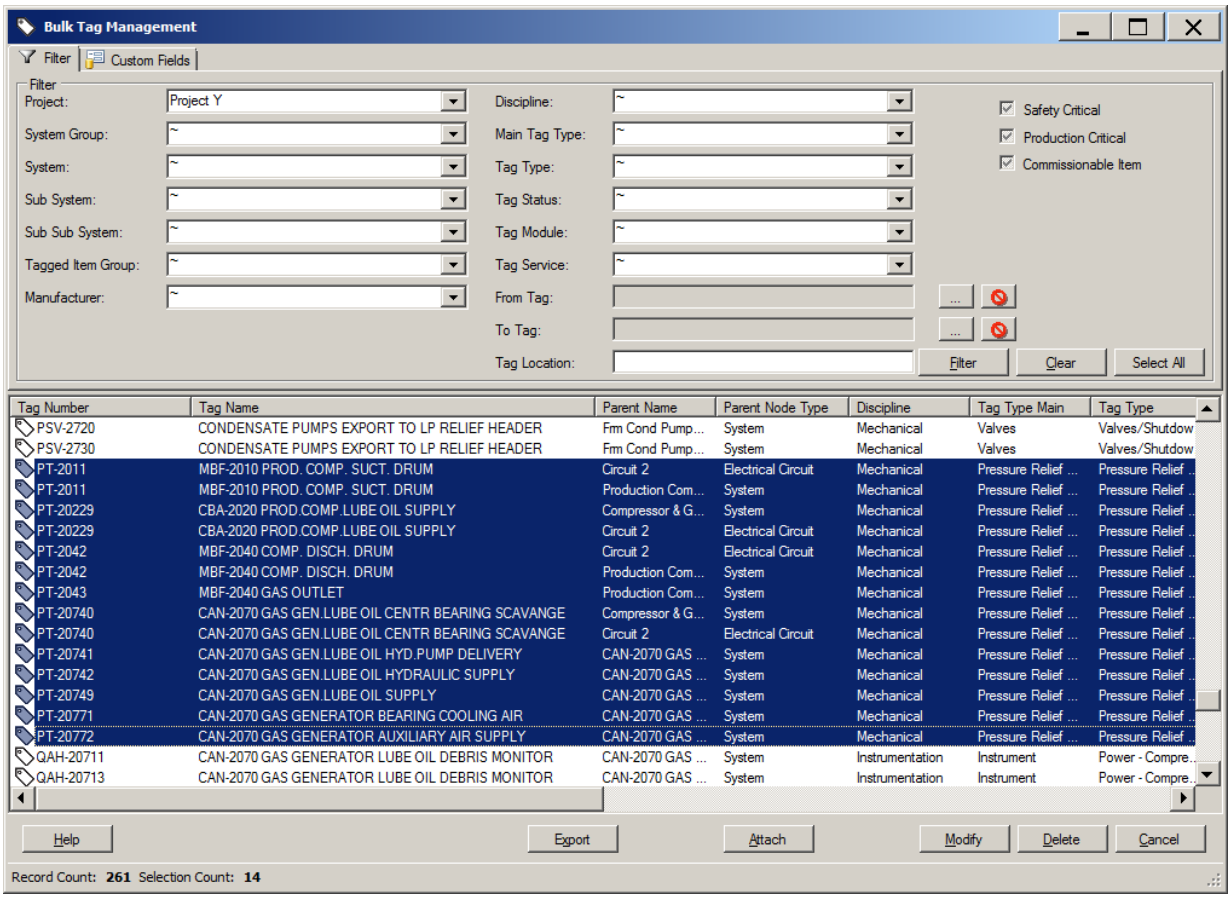
Bulk Management Tags selected as Maintainable, Safety Critical, Production Critical



Bulk Management Tags selected as Maintainable, Safety Critical, Production Critical

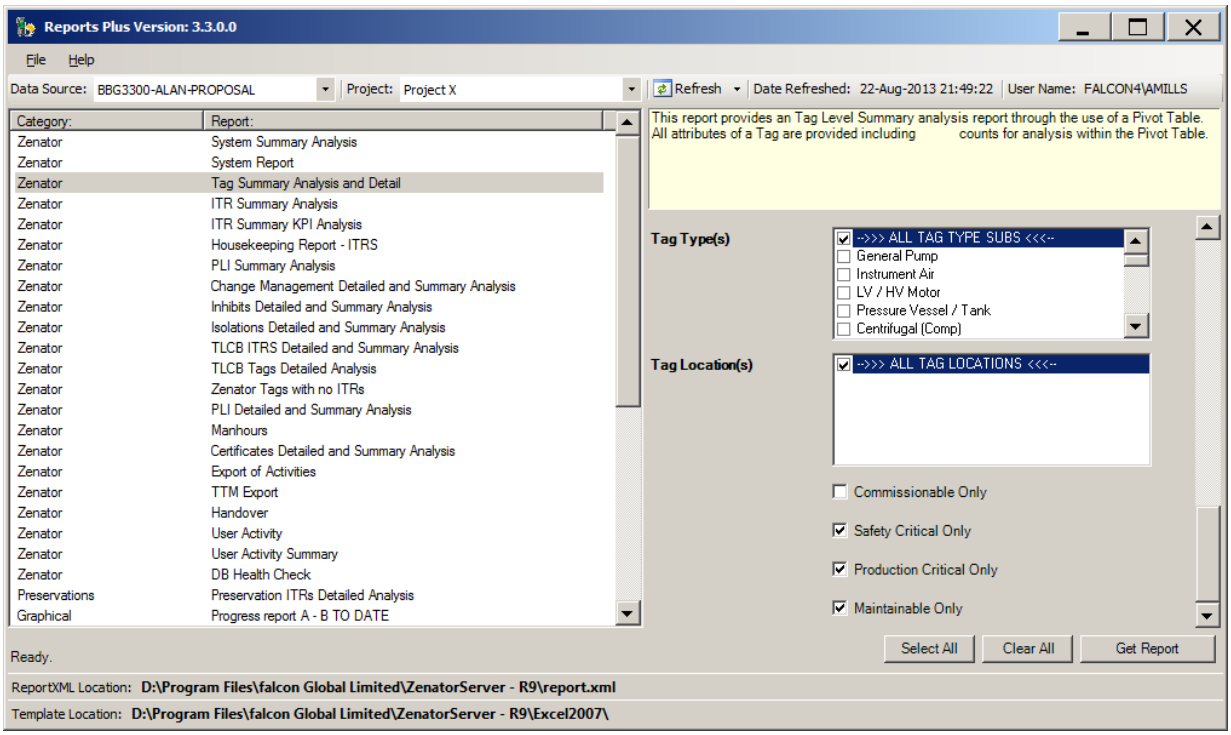


Bulk Management Tags selected as Maintainable, Safety Critical, Production Critical

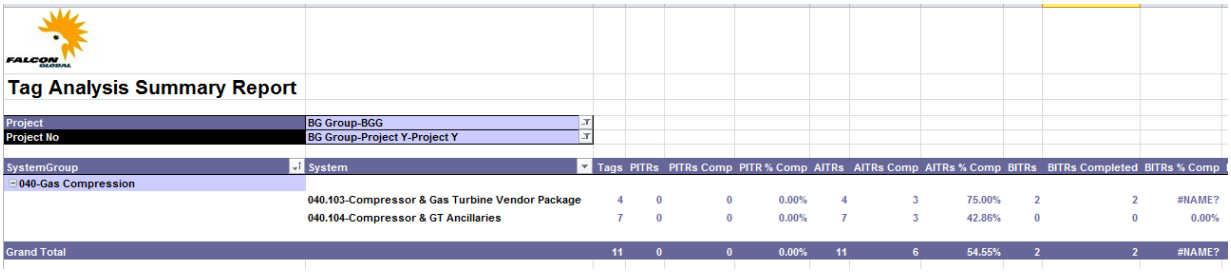


Reports of Tags that are Maintainable, Safety Critical, Production Critical

Report of Maintainable, Safety Critical and Production Critical Tags



Report of Maintainable, Safety Critical and Production Critical Tags



Tag Analysis Summary Report

Project	BG Group-BGG
Project No	BG Group-Project Y-Project Y

SystemGroup	System	Tags	PITRs	PITRs Comp	PITR % Comp	AITRs	AITRs Comp	AITRs % Comp	BITRs	BITRs Completed	BITRs % Comp
040-Gas Compression											
	040.103-Compressor & Gas Turbine Vendor Package	4	0	0	0.00%	4	3	75.00%	2	2	#NAME?
	040.104-Compressor & GT Ancillaries	7	0	0	0.00%	7	3	42.86%	0	0	0.00%
Grand Total		11	0	0	0.00%	11	6	54.55%	2	2	#NAME?

SubSystem	TagNo	TagName	Discipline	ParentTagNo	ParentTagName	Maintainable	SafetyCritical	ProductionCritical
040.103.01-040.103.01	ESDV-20200	CBA-2020 PROD. COMP. TO FUEL GAS SUPERHEATER	Mechanical	CBA-2020	Production Compressor	Y	Y	Y
040.103.01-040.103.01	ESDV-20201	CBA-2020 PROD. COMP. ANTI SURGE BYPASS	Mechanical	CBA-2020	Production Compressor	Y	Y	Y
040.103.01-040.103.01	PSV-20234	CBA-2020 PROD.COMP.LUBE OIL G/BOX DRIVE DISCHARGE	Mechanical	CBA-2020	Production Compressor	Y	Y	Y
040.103.01-040.103.01	PSV-20235	CBA-2020 PROD.COMP.LUBE OIL MOTOR DRIVE DISCHARGE	Mechanical	CBA-2020	Production Compressor	Y	Y	Y
~	PT-20229	CBA-2020 PROD.COMP.LUBE OIL SUPPLY	Mechanical			Y	Y	Y
~	PT-20740	CAN-2070 GAS GEN.LUBE OIL CENTR BEARING SCAVANGE	Mechanical			Y	Y	Y
040.104.01-040.104.01	PT-20741	CAN-2070 GAS GEN.LUBE OIL HYD.PUMP DELIVERY	Mechanical	CAN-2070	CAN-2070 GAS GENERATOR	Y	Y	Y
040.104.01-040.104.01	PT-20742	CAN-2070 GAS GEN.LUBE OIL HYDRAULIC SUPPLY	Mechanical	CAN-2070	CAN-2070 GAS GENERATOR	Y	Y	Y
040.104.01-040.104.01	PT-20749	CAN-2070 GAS GEN.LUBE OIL SUPPLY	Mechanical	CAN-2070	CAN-2070 GAS GENERATOR	Y	Y	Y
040.104.01-040.104.01	PT-20771	CAN-2070 GAS GENERATOR BEARING COOLING AIR	Mechanical	CAN-2070	CAN-2070 GAS GENERATOR	Y	Y	Y
040.104.01-040.104.01	PT-20772	CAN-2070 GAS GENERATOR AUXILIARY AIR SUPPLY	Mechanical	CAN-2070	CAN-2070 GAS GENERATOR	Y	Y	Y

Report of Maintainable and Safety Critical Tags

TagNo	TagName	TagTypeMain	TagTypeSub	Discipline	ParentTagNo	ParentTagName	Maintainable	SafetyCritical	ProductionCritical
ESDV-20200	CBA-2020 PROD. COMP. TO FUEL GAS SUPERHEATER	Valves	Valves	Mechanical	CBA-2020	Production Compressor	Y	Y	Y
ESDV-20201	CBA-2020 PROD. COMP. ANTI SURGE BYPASS	Valves	Valves	Mechanical	CBA-2020	Production Compressor	Y	Y	Y
CBA-2910	Seal Gas Booster Compressor	Compressor	Reciprocating	Mechanical			Y	Y	N
PSV-20234	CBA-2020 PROD.COMP.LUBE OIL G/BOX DRIVE DISCHARGE	Valves	Valves/Shutdown Valves	Mechanical	CBA-2020	Production Compressor	Y	Y	Y
PSV-20235	CBA-2020 PROD.COMP.LUBE OIL MOTOR DRIVE DISCHARGE	Valves	Valves/Shutdown Valves	Mechanical	CBA-2020	Production Compressor	Y	Y	Y
PT-20229	CBA-2020 PROD.COMP.LUBE OIL SUPPLY	Pressure Relief Valve / Pressure Safety Valve	Pressure Relief Valve (Installation only)	Mechanical			Y	Y	Y
PT-20740	CAN-2070 GAS GEN.LUBE OIL CENTR BEARING SCAVANGE	Pressure Relief Valve / Pressure Safety Valve	Pressure Relief Valve (Installation only)	Mechanical			Y	Y	Y
PT-20741	CAN-2070 GAS GEN.LUBE OIL HYD.PUMP DELIVERY	Pressure Relief Valve / Pressure Safety Valve	Pressure Relief Valve (Installation only)	Mechanical	CAN-2070	CAN-2070 GAS GENERATOR	Y	Y	Y
PT-20742	CAN-2070 GAS GEN.LUBE OIL HYDRAULIC SUPPLY	Pressure Relief Valve / Pressure Safety Valve	Pressure Relief Valve (Installation only)	Mechanical	CAN-2070	CAN-2070 GAS GENERATOR	Y	Y	Y
PT-20749	CAN-2070 GAS GEN.LUBE OIL SUPPLY	Pressure Relief Valve / Pressure Safety Valve	Pressure Relief Valve (Installation only)	Mechanical	CAN-2070	CAN-2070 GAS GENERATOR	Y	Y	Y
PT-20771	CAN-2070 GAS GENERATOR BEARING COOLING AIR	Pressure Relief Valve / Pressure Safety Valve	Pressure Relief Valve (Installation only)	Mechanical	CAN-2070	CAN-2070 GAS GENERATOR	Y	Y	Y
PT-20772	CAN-2070 GAS GENERATOR AUXILIARY AIR SUPPLY	Pressure Relief Valve / Pressure Safety Valve	Pressure Relief Valve (Installation only)	Mechanical	CAN-2070	CAN-2070 GAS GENERATOR	Y	Y	Y
CBA-2020	Production Compressor	Compressor	Centrifugal	Mechanical			Y	Y	N
CAN-2070	CAN-2070 GAS GENERATOR	Generator / Alternator - Mechanical	Gas Turbine	Mechanical			Y	Y	N

Report of Maintainable and Production Critical Tags

Tag Analysis Summary Report

Project	BG Group-BGG
Project No	BG Group-Project Y-Project Y

SystemGroup	System	Tags	PITRs	PITRs Comp	PITR % Comp	AITRs	AITRs Comp	AITRs % Comp	BITRs	BITRs Completed
035-Production & Test Separators										
	035.101-Frm BV to Sep #3 Outlet	2	0	0	0.00%	2	0	0.00%	0	0
040-Gas Compression										
	040.103-Compressor & Gas Turbine Vendor Package	5	0	0	0.00%	5	4	80.00%	3	3
	040.102-Compressor Bypass & Tie-in to Gas Filter Seps_ & S	1	0	0	0.00%	1	0	0.00%	0	0
	040.104-Compressor & GT Ancillaries	7	0	0	0.00%	7	3	42.86%	0	0
	040.101-Frm BV ds SDV2010 to XV2042-2043	9	0	0	0.00%	9	6	66.67%	2	2
050-Fuel Gas										
	050.103-Frm SDV0050 to ds GT FG Filters & GT	2	0	0	0.00%	2	0	0.00%	0	0
	050.101-Frm Exist Manifold to SDV0050	1	0	0	0.00%	1	0	0.00%	0	0
	050.104-Frm Exist Header to New Power Generators	1	0	0	0.00%	1	0	0.00%	0	0
055-Condensate Coalescer										
	055.102-Frm Exist Condensate Coalescer, Surge Dr_ & Pumps	2	0	0	0.00%	2	0	0.00%	0	0
	055.103-Frm Cond Pumps to Gas Line	2	0	0	0.00%	2	0	0.00%	2	2
Grand Total		32	0	0	0.00%	32	13	40.63%	7	7

SubSystem	TagNo	TagName	Discipline	ParentTagNo	ParentTagName	Maintainable	SafetyCritical	ProductionCritical
~	ESDV-2000	MBD-2000 OUTLET TO PROD. WTR. SKIMMER	Mechanical			Y	N	Y
~	ESDV-2001	MBD-2000 OUTLET TO CONDENSATE COALESCER	Mechanical			Y	N	Y
040.101.01-040.101.01	ESDV-2011	MBF-2010 OUTLET TO PRODUCED WATER SKIMMER	Mechanical	MBF-2010	Production Compressor Suction Drum	Y	N	Y
040.103.01-040.103.01	ESDV-20200	CBA-2020 PROD. COMP. TO FUEL GAS SUPERHEATER	Mechanical	CBA-2020	Production Compressor	Y	Y	Y
040.103.01-040.103.01	ESDV-20201	CBA-2020 PROD. COMP. ANTI SURGE BYPASS	Mechanical	CBA-2020	Production Compressor	Y	Y	Y
040.101.01-040.101.01	ESDV-2040	MBF-2040 GAS OUTLET	Mechanical	MBF-2040	Production Compressor Discharge Drum	Y	N	Y
040.101.01-040.101.01	ESDV-2041	MBF-2040 PRODUCED WATER OUTLET	Mechanical	MBF-2040	Production Compressor Discharge Drum	Y	N	Y
040.101.01-040.101.01	ESDV-2043	MBF-2040 GAS OUTLET / SEQUENCE VALVE BYPASS	Mechanical	MBF-2040	Production Compressor Discharge Drum	Y	N	Y
040.101.01-040.101.01	PSV-2010	MBF-2010 PROD. COMP. SUCT. DRUM	Mechanical	MBF-2010	Production Compressor Suction Drum	Y	N	Y
040.103.01-040.103.01	PSV-20200	COOLING WATER SUPPLY TO CBA-2020 COMPRESSOR	Mechanical	CBA-2020	Production Compressor	Y	N	Y
040.101.01-040.101.01	PSV-2040	MBF-2040 COMP. DISCH. DRUM	Mechanical	MBF-2040	Production Compressor Discharge Drum	Y	N	Y
040.101.01-040.101.01	PT-2011	MBF-2010 PROD. COMP. SUCT. DRUM	Mechanical	MBF-2010	Production Compressor Suction Drum	Y	N	Y
040.101.01-040.101.01	PT-2042	MBF-2040 COMP. DISCH. DRUM	Mechanical	MBF-2040	Production Compressor Discharge Drum	Y	N	Y
040.101.01-040.101.01	PT-2043	MBF-2040 GAS OUTLET	Mechanical	MBF-2040	Production Compressor Discharge Drum	Y	N	Y
040.102.02-040.102.02	ESDV-2047	COMPRESSOR PRIMARY SEAL GAS	Mechanical			Y	N	Y
040.103.01-040.103.01	PSV-20234	CBA-2020 PROD.COMP.LUBE OIL G/BOX DRIVE DISCHARGE	Mechanical	CBA-2020	Production Compressor	Y	Y	Y
040.103.01-040.103.01	PSV-20235	CBA-2020 PROD.COMP.LUBE OIL MOTOR DRIVE DISCHARGE	Mechanical	CBA-2020	Production Compressor	Y	Y	Y
~	PT-20229	CBA-2020 PROD.COMP.LUBE OIL SUPPLY	Mechanical			Y	Y	Y
~	PT-20740	CAN-2070 GAS GEN.LUBE OIL CENTR BEARING SCAVANGE	Mechanical			Y	Y	Y
040.104.01-040.104.01	PT-20741	CAN-2070 GAS GEN.LUBE OIL HYD.PUMP DELIVERY	Mechanical	CAN-2070	CAN-2070 GAS GENERATOR	Y	Y	Y
040.104.01-040.104.01	PT-20742	CAN-2070 GAS GEN.LUBE OIL HYDRAULIC SUPPLY	Mechanical	CAN-2070	CAN-2070 GAS GENERATOR	Y	Y	Y
040.104.01-040.104.01	PT-20749	CAN-2070 GAS GEN.LUBE OIL SUPPLY	Mechanical	CAN-2070	CAN-2070 GAS GENERATOR	Y	Y	Y
040.104.01-040.104.01	PT-20771	CAN-2070 GAS GENERATOR BEARING COOLING AIR	Mechanical	CAN-2070	CAN-2070 GAS GENERATOR	Y	Y	Y
040.104.01-040.104.01	PT-20772	CAN-2070 GAS GENERATOR AUXILIARY AIR SUPPLY	Mechanical	CAN-2070	CAN-2070 GAS GENERATOR	Y	Y	Y
~	ESDV-0050	HBG-2800 FUEL GAS HEADER TO COOLER	Mechanical			Y	N	Y
~	ESDV-2810	MBF-2810 FUEL GAS SCRUBBER	Mechanical			Y	N	Y
~	ESDV-2840	MAK-2830 / 2840 OUTLET TO CAN-2070	Mechanical			Y	N	Y
~	ESDV-2400	LAN-2400 POWER GENERATOR FUEL GAS	Mechanical			Y	N	Y
~	ESDV-4100	MAY-4100 SURGE DRUM OUTLET ISOLATION VALVE	Mechanical			Y	N	Y
~	ESDV-4101	MAY-4100 SURGE DRUM INLET FROM MAD-4020	Mechanical			Y	N	Y
~	PSV-2720	CONDENSATE PUMPS EXPORT TO LP RELIEF HEADER	Mechanical			Y	N	Y
~	PSV-2730	CONDENSATE PUMPS EXPORT TO LP RELIEF HEADER	Mechanical			Y	N	Y

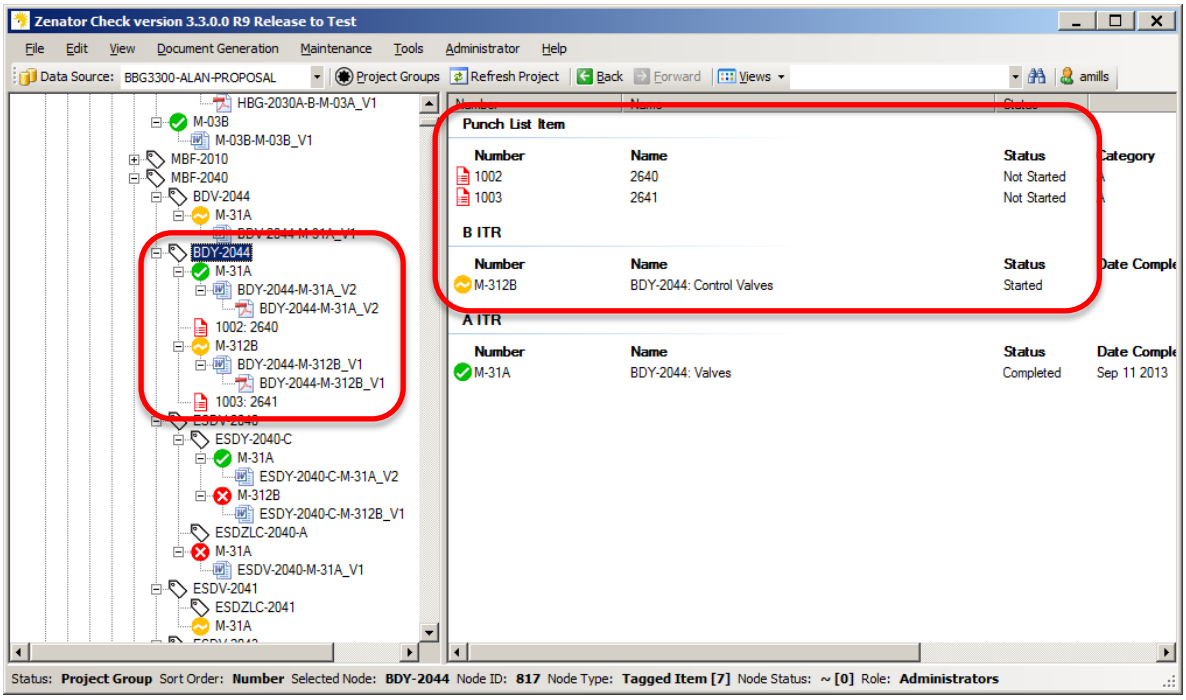
1.19 Tag and ITR Status

Provide views and reports:

(1) identifying equipment, sub-systems and systems status on passed or failed tests (failed tests such as fialed due to particular design criteria such as an incorrect pump design curve),
(2) safety critical elements status,
(3) readiness status views to support the Project to Asset Transfer.

Refer to 1.18 for details of how Safety Critical elements are tracked and managed in Zenator.
Refer to 1.13 for more information on Project to Asset transfer.

Examples in Sub System 040.101.01 in Failed State on Tag BDY-2044 with PLIs



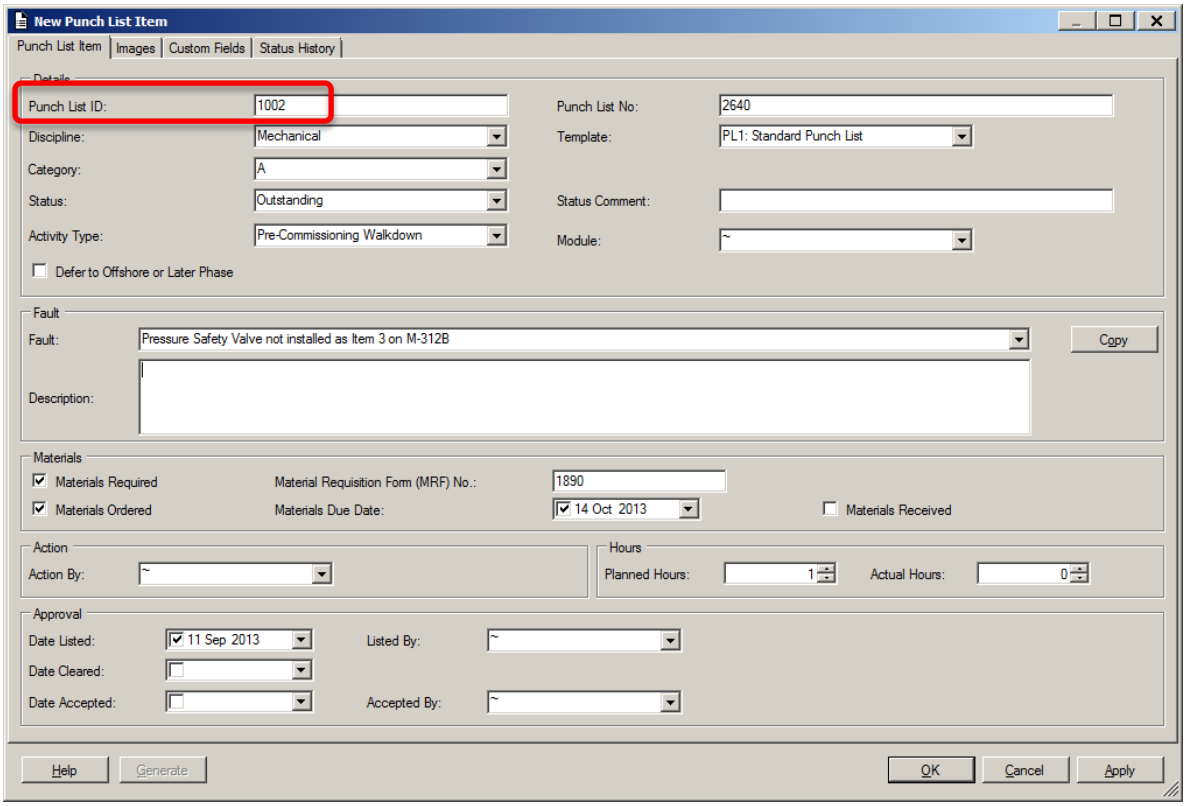
BITR M-312B failed and PLIs 2640 and 2641 raised

	Pre-Commissioning: Control Valves		M-312B Page 1 of 2
Unique ID:		Item/Tag No.	
Project Name:		Sub-System No.	

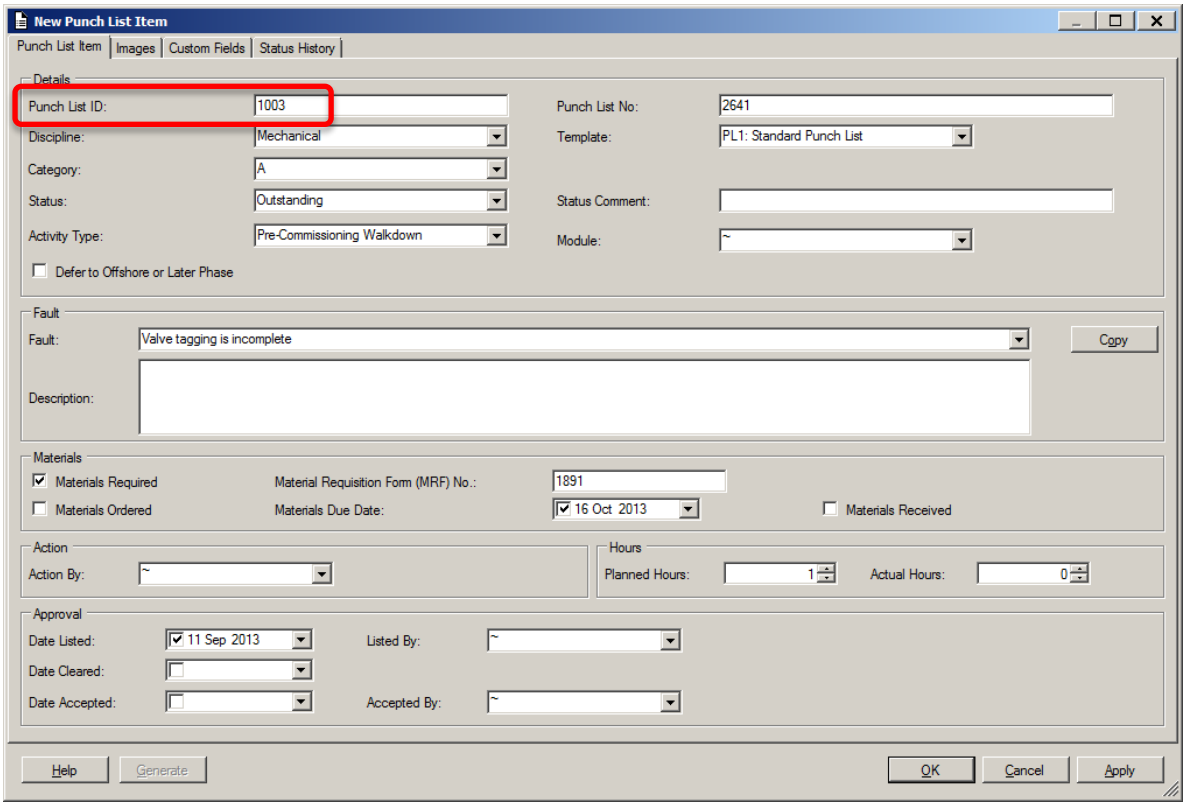
Data Sheet			
Equipment Description	MBF-2040 OUTLET DEPRESSURING TO HP RELIEF HEADER		
Sub-System Description	040.101 040.101.01		
Location:		Module Detail:	
Drawing Reference		Date Printed:	11-Sep-13

No.	Description of Check / Action to be made	Results	Initial / Sign	PLI No.
1	Confirm that the ITR Mechanical Completion form **M-31A** has been completed and Punch list and Construction check list if any has also been completed and no subsequent damage has occurred since Mechanical Completion.	*Confirmed*	*MCV*	*N/A*
2	Confirm that all Preservation measures have been removed from all components / equipment prior to carrying out functional checks.	*Confirmed*	*MCV*	*N/A*
3	Confirm that all Pressure relief facilities (where applicable) are installed correctly to drawings and that their test seals are intact from recent calibration of the device.	*PSV not installed*	*MCV*	*2640*
4	Ensure all valves associated with the package have their correctly designed actuator or manual operator installed and that they are free to move. Confirm that Valve Tagging is complete.	*Valve Tagging Missing*	*MCV*	*2641*
5	Check that valve interlocks are installed (if applicable) and the system operates as designed. Ensure keys are safely located.	*Confirmed*	*MCV*	*N/A*
6	Ensure that all manufacturers' documentation for the complete package is readily available and correct for the installed equipment and is ready for transfer to Operations Department as part of Turnover Acceptance documentation.	*Confirmed*	*MCV*	*N/A*
7	Confirm all associated electrical and instrument checks are complete, where applicable	*Confirmed*	*MCV*	*N/A*
8	Carry out manufacturers pre-start checks, where applicable	*Confirmed*	*MCV*	*N/A*
9	Prepare commissioning log in accordance with TCP procedures	*Confirmed*	*MCV*	*N/A*
10	In conjunction with Instrument section, carry out stroke Check of the valve(s) and confirm they function correctly	*Confirmed*	*MCV*	*N/A*
11	During Stroke Check, for each stroke verify that the actual valve opening in field matches with the indication in the DCS. Note down the results in the table given in the following page.	*Confirmed*	*MCV*	*N/A*
11	During each stroke investigate for any abnormal noise and smooth movement of the valve stem.	*Confirmed*	*MCV*	*N/A*
12	Carry out and record any additional checks that may have been performed and/or requested by the system TCP Procedure.	*Confirmed*	*MCV*	*N/A*
13	Compile a detailed Test Report for the unit and ensure this is attached to the TCP Procedure together with this form.	*Confirmed*	*MCV*	*N/A*
14	Following successful completion of above checks together with relevant commissioning procedure checks and functional testing of package carry out Punch Listing for all installed equipment. Roll-up all outstanding items into one composite list for Turnover Commissioning Package Acceptance.	*Item 4 Valve Tagging Missing*	*MCV*	*N/A*
15	Update latest issue of design drawings for "As Built" Information.		*MCV*	*N/A*

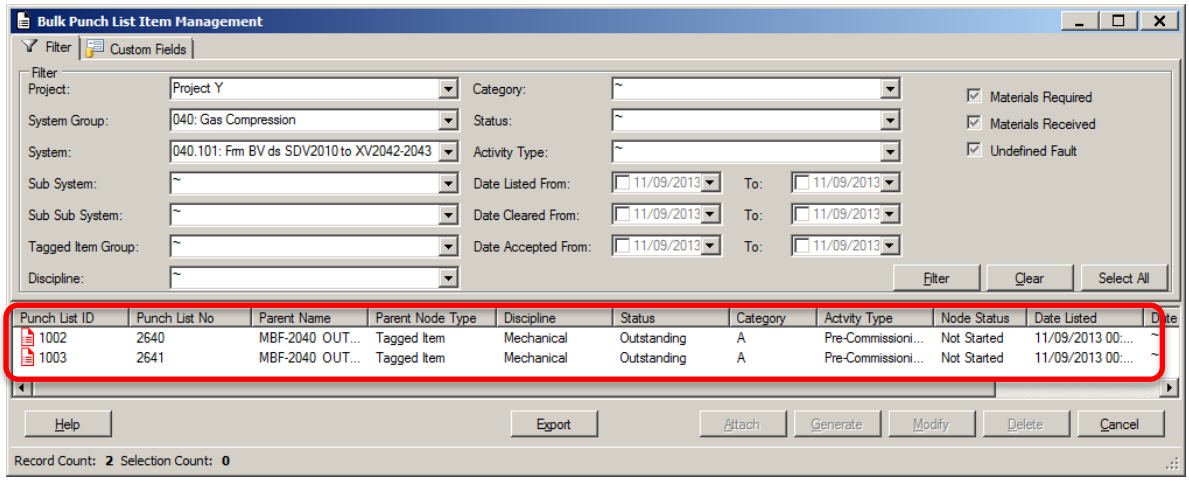
PLI 2640 on Tag BDY-2040



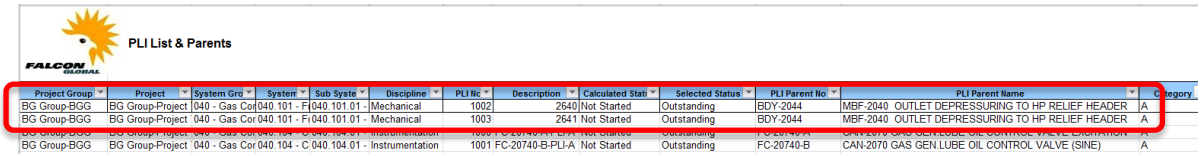
PLI 2641 on Tag BDY-2040



PLIs in Bulk Management

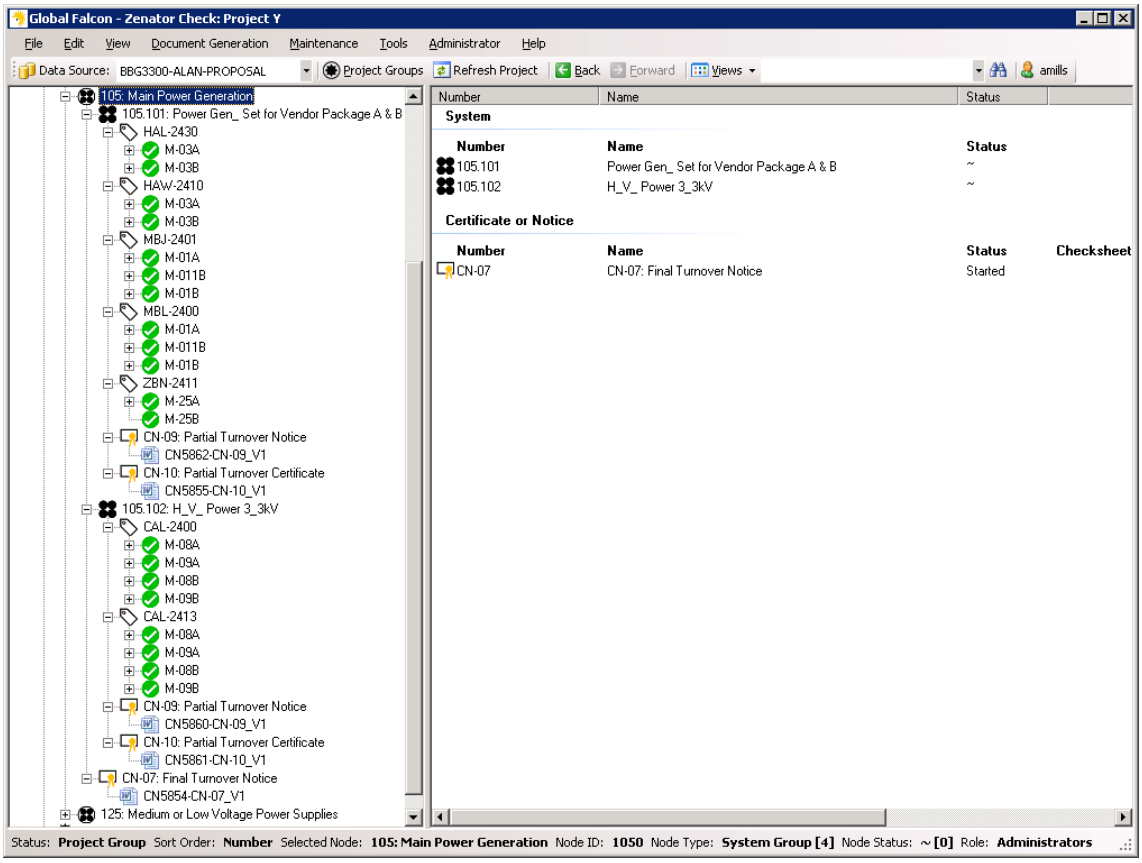


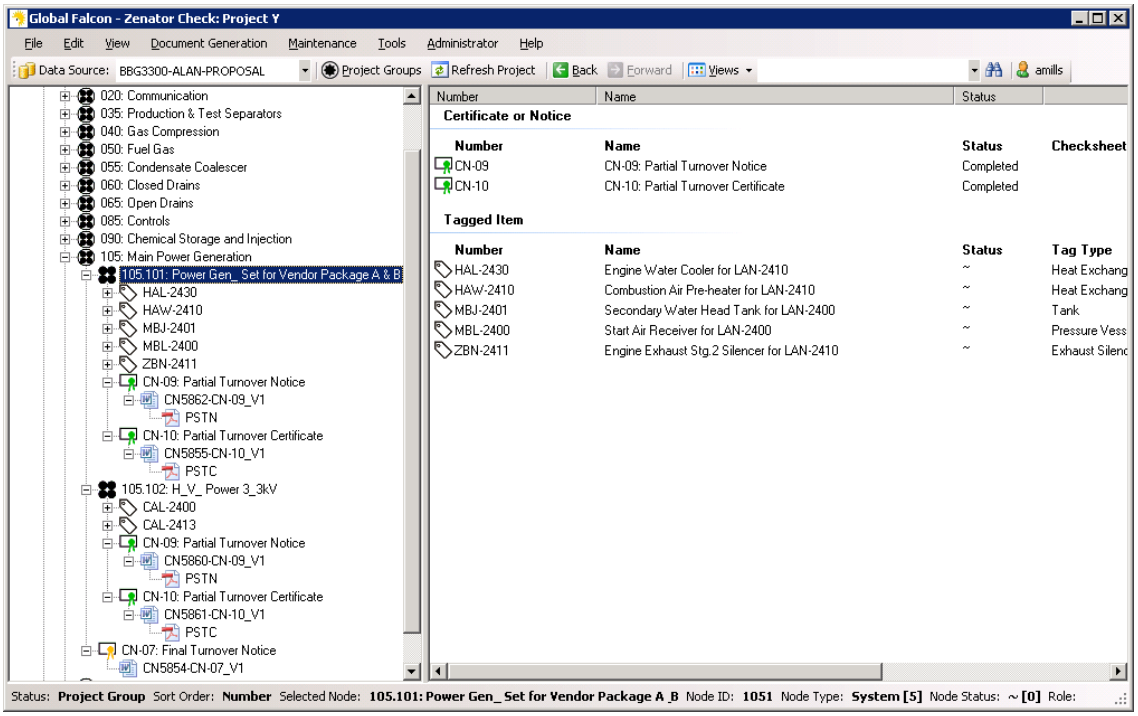
PLIs and Parents from Reports Plus



System Completion of Main Power Generation 105 – Project to Asset Transfer
Step 1 – System 105.10 Nearing Readiness for Turnover

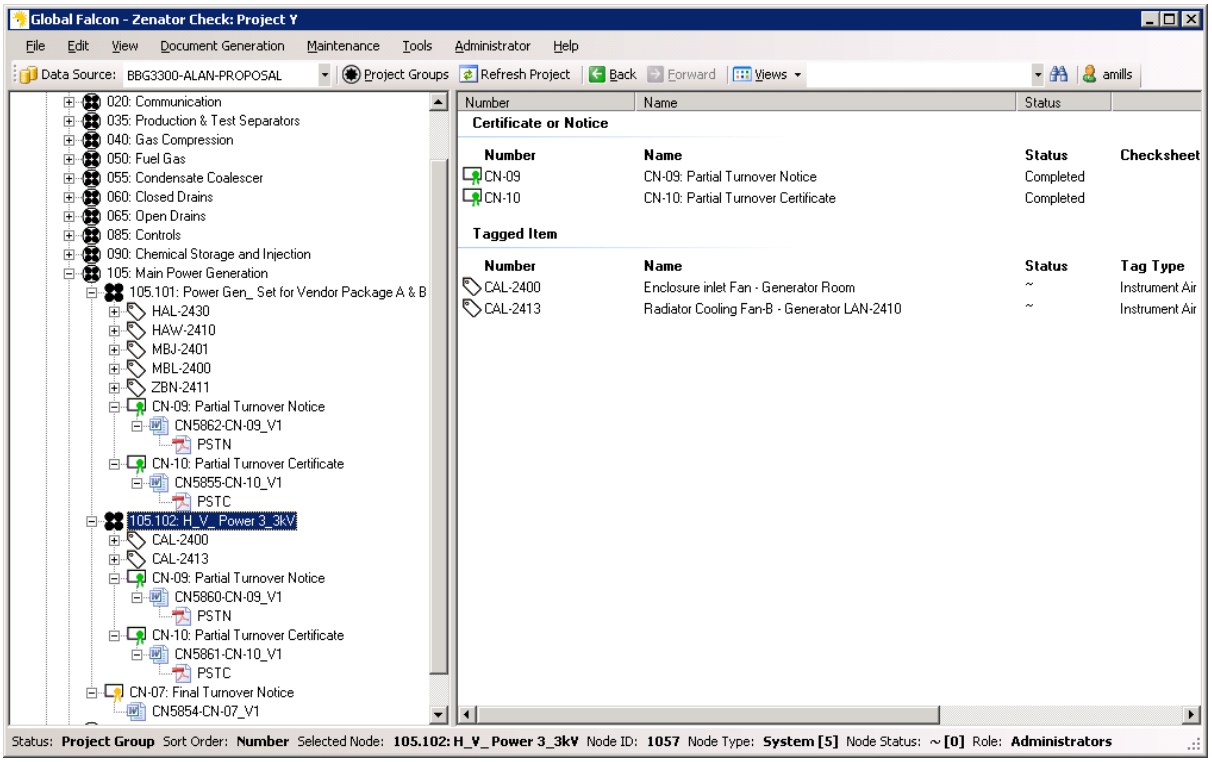
- *All A & B ITRs complete*
- *ignore Mechanical Completion, Function Testing and System Commissioning Certificate*
- *Partial Turnover Certificates and Partial Turnover Notices issued*



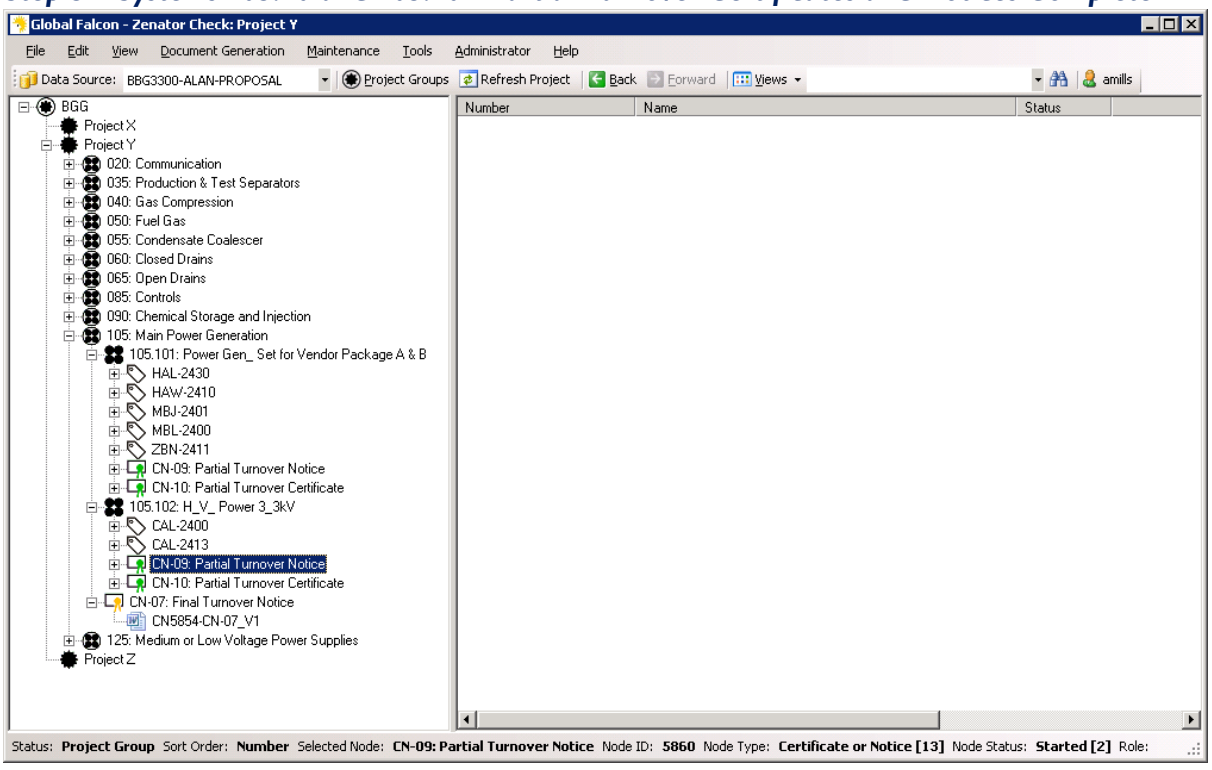


Step 2 – System 105.20 Nearing Readiness for Turnover

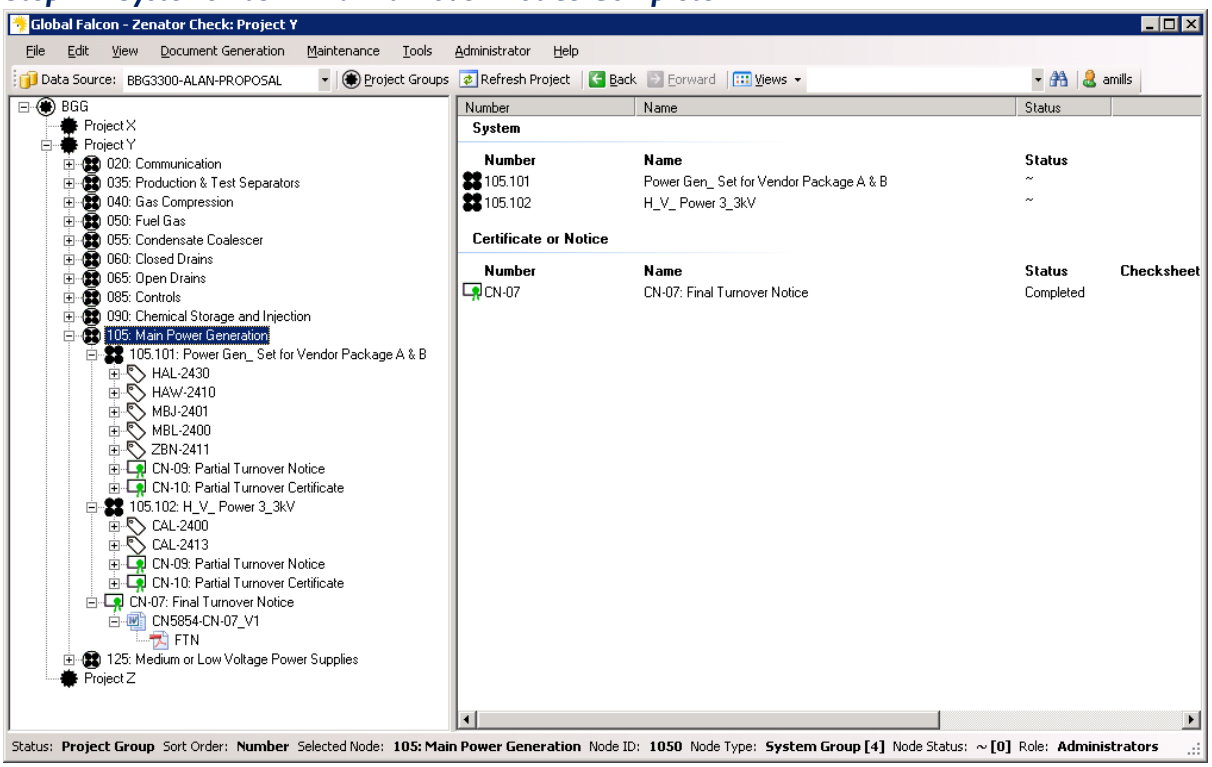
- *All A & B ITRs complete*
- *ignore Mechanical Completion, Function Testing and System Commissioning Certificate*
- *Partial Turnover Certificates and Partial Turnover Notices issued*



Step 3 – Systems 105.10 and 105.20 - Partial Turnover Certificates and Notices Complete



Step 4 – Systems 105 - Final Turnover Notice Complete



System 105 Main Power Generation - Final Turnover Notice

Certificates and Notices		
	Final Turnover Notice	CN-07 Page 1 of 2

Date:	11-Sep-13
Unique ID:	
Project No/Location:	
Project Description:	

This notice acknowledg
of the facility specified
exclusions noted below:

Summary of remaining it

Describe any portions of

Approved by:

COMPANY – Project Manager

OWNER OPERATOR – Start-U

OWNER OPERATOR – Produ

Certificates and Notices		
	Final Turnover Notice	CN-07 Page 2 of 2

Date:	11-Sep-13
Unique ID:	
Project No/Location:	BG Group-Project Y -
Project Description:	BGG - Project Y

Quality Assurance review:

A. TCP completion checklist:
- Marked up P&IDs included? Yes___ No___
- Redlined loop drawings? Yes___ No___
- Regulatory approvals obtained by Commissioning Coordinator and on file? Yes___ No___
- Pre-shipment / initial walkdown punchlist or outstanding work list items resolved? Yes___ No___
- All systems flushed? Yes___ No___
- All other documentation as agreed upon for this project is included? Yes___ No___
- All system TCPs completed (all systems ready for start-up)? Yes___ No___
- Comments (explain any items missing from TCP files):

B. Has data from commissioning been entered to equipment file (SAP M&R module)? Yes___ No___

C. Walkthrough comments:
- New Punchlist items identified? Yes___ No___
  How many added _____ Total _____
- Punchlist attached? Yes___ No___

Other comments:

Personnel participating in care/custody turnover walkthrough:

Name	Company	Title	Date
		COMPANY – Proj. Mgr. or desig.	
		COMPANY – Coordinator	
		OWNER OPERATOR – Start-Up Manager	
		OWNER OPERATOR – Sr. Installation position or desig.	
		OWNER OPERATOR – Ops. Mgr. or desig.	

1.20 Preservations

Document the method of protection and preventative maintenance carried out on tag items, equipment, sub-systems and systems before and after they are taken into use. Every operation on a piece of equipment needs to be recorded from the time it was manufactured until the point of hand-over at final acceptance.

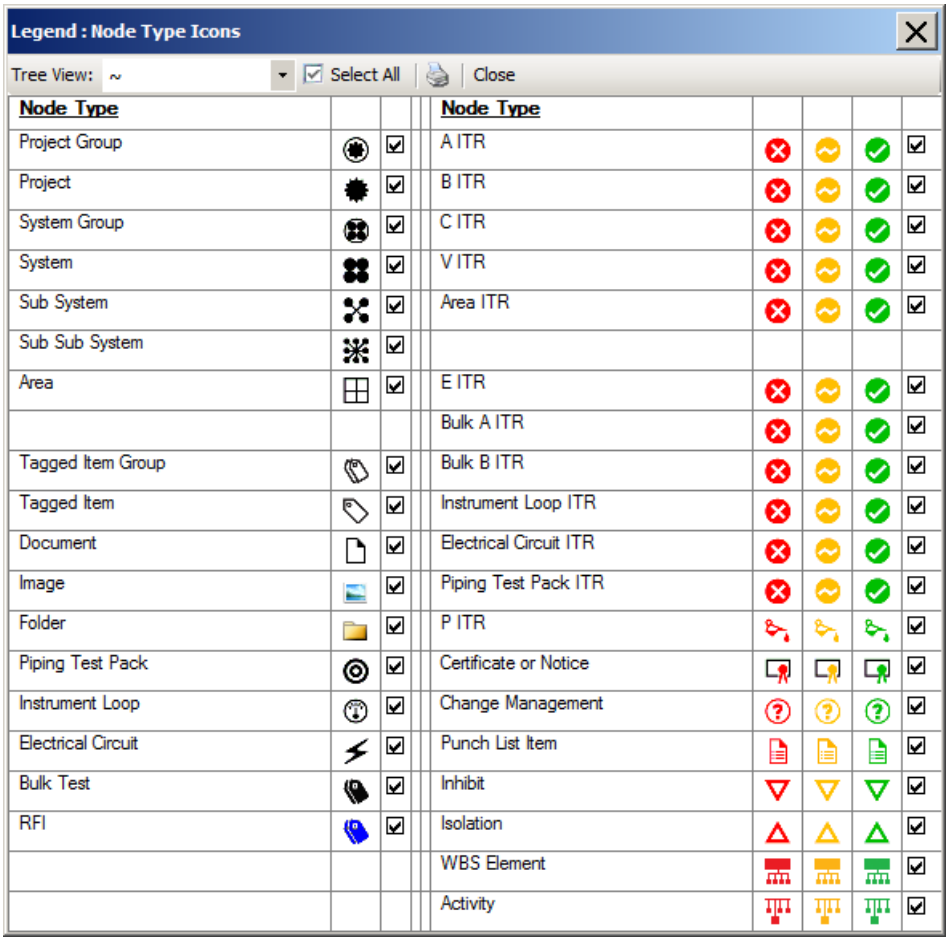
It is normal practice to include every operation on each Commissionable Component, (Tagged Item) as it will impact Handover and therefore needs to be known. In Zenator we have designed nodes and icons for each of these activities. Refer overleaf to the Legend of node icons.

There are 68 Preservation ITR templates (PITRs) included with Zenator. Customers are free to customise these templates and produce new PITRs to suit particular needs and Preservations on specialised items of equipment.

The Preservations functionality in Zenator allows authorised users to decide when PITRs will start, ie, from Delivery, or from Installation, or from Mothballing. Further definitions can be added in the Lookup Tables. Specific Locations can be added in the Lookup Tables, such as Warehouse 1, Row 5, Shelf 3. Or Storage Yard X, or Quarantine.

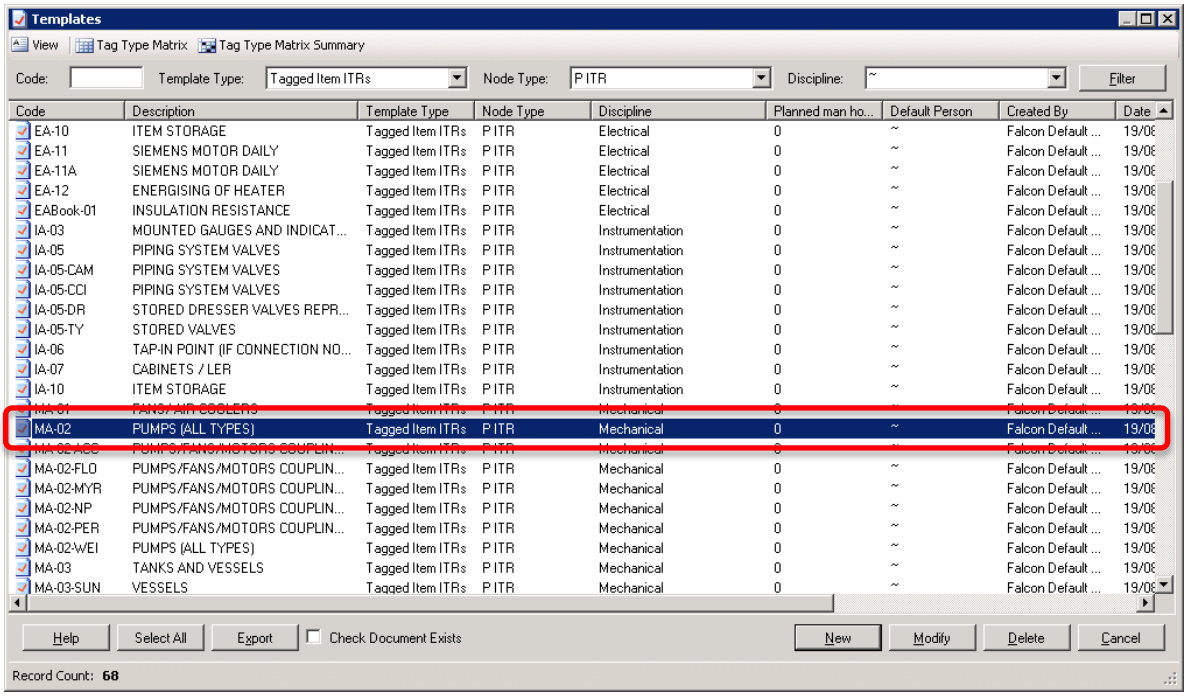
Users can set PITRs to Proactive or Reactive mode, meaning the documents are generated with a certain number in advance (Proactive) or will generate automatically on completion of a PITR (Reactive). From Reports Plus, the current status of Preservations and a a full History is obtained. In additon, as preparations are underway for a Handover to Operations it is vital that all temporary conditions are noted, made safe and included in all documentation. These include any temporary strainers, Isolations or Inhibits. Screenshot examples follow.

Legend

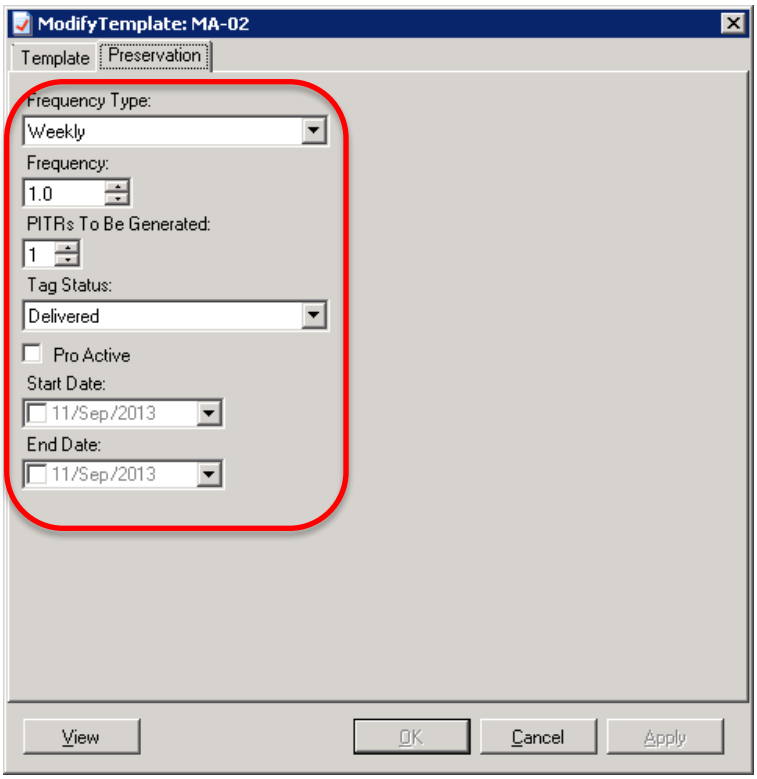

Legend : Node Type Icons
Tree View:
Select All
Close
Node Type
Project Group
Project
System Group
System
Sub System
Sub Sub System
Area
Tagged Item Group
Tagged Item
Document
Image
Folder
Piping Test Pack
Instrument Loop
Electrical Circuit
Bulk Test
RFI
Node Type
A ITR
B ITR
C ITR
V ITR
Area ITR
E ITR
Bulk A ITR
Bulk B ITR
Instrument Loop ITR
Electrical Circuit ITR
Piping Test Pack ITR
P ITR
Certificate or Notice
Change Management
Punch List Item
Inhibit
Isolation
WBS Element
Activity

Preservations, Tightness and Cleanliness

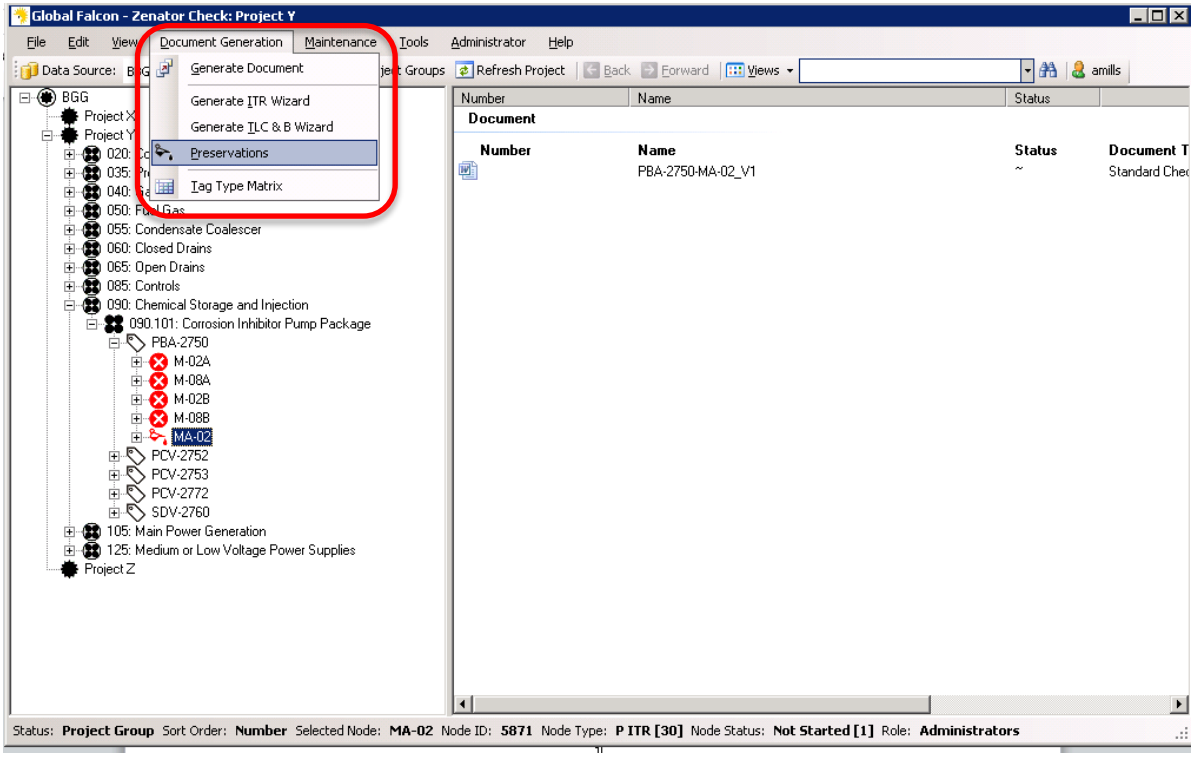
Preservation Templates



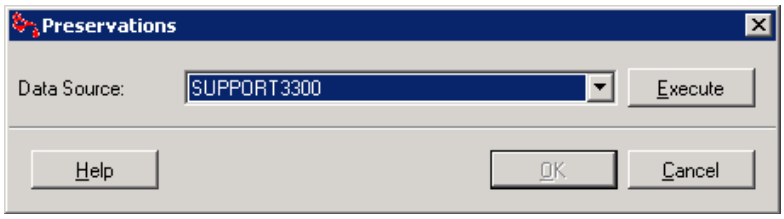
Set Frequency, Tag Status and whether Reactive or Pro-Active

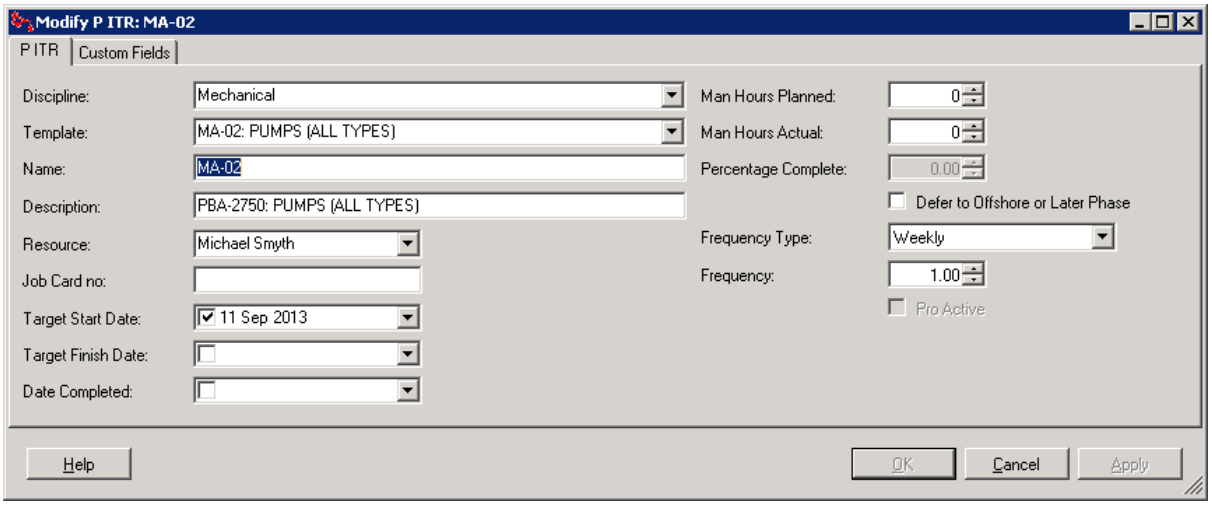


Document Generation > Preservations



Run Preservations Service to Generate PITRs on Tag PBA-2750 for MA-02



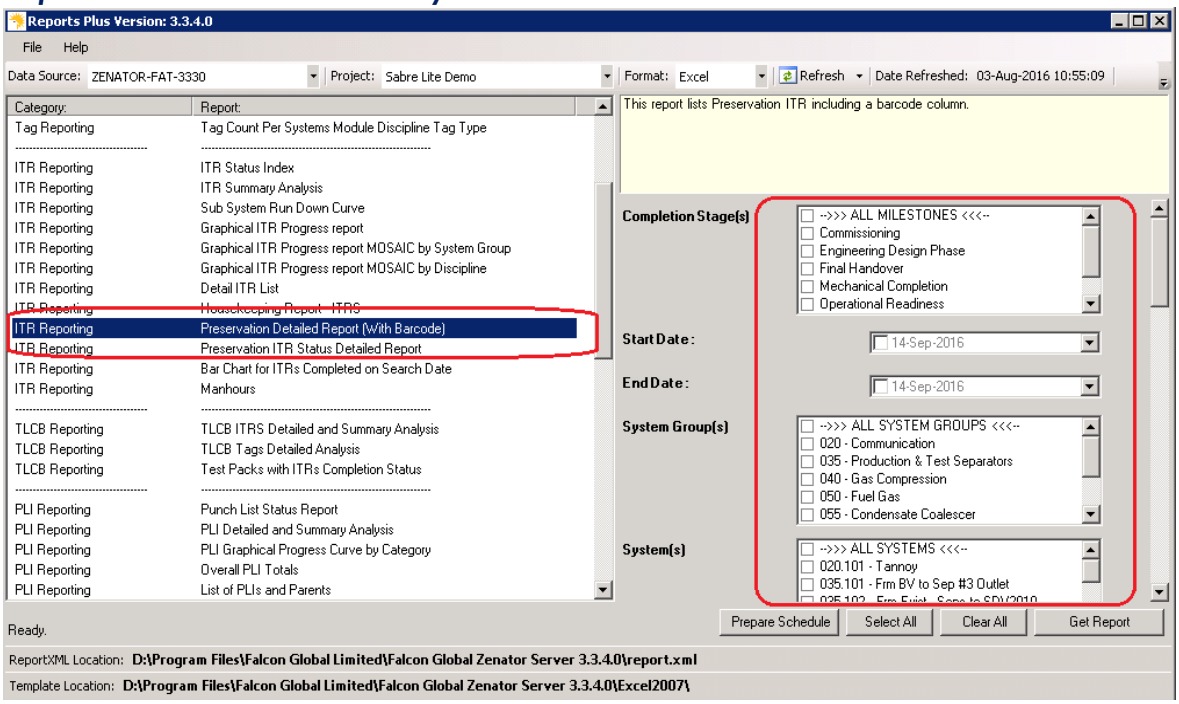


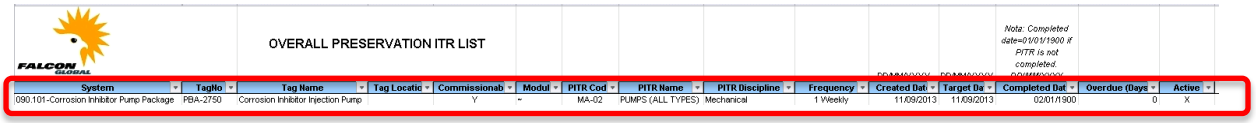
	MECHANICAL PRESERVATIONS PUMPS (ALL TYPES)		MA-02 Page 1 of 1
Planned Date:	11/09/2013 00:00:00	Actual Date:	
Project:	BGG/Project Y		
System:	Corrosion Inhibitor Pump Package/Corrosion Inhibitor Pump Package		
Tag:	PBA-2750 / Corrosion Inhibitor Injection Pump		

Module :	~	**Service :**	~
Model No :	216	**Size :**	216
Type :		**Manufacturer :**	0

DESCRIPTION OF CHECKS	CHECK OK/ NON OK
1. Ensure item if in "warehouse" storage is positioned in either original package or on a even surface within "warehouse". **Refer to and fill in MA-10**.	
2. Confirm that lubrication is correct by checking dipstick/ sight glass/ oiler bottle levels.	
3. Confirm that pump is electrically isolated.	
4. Following pump rotation as indicated: rotate shaft 1 ¼ revolution and confirm that final rest position is different from start position. Mark / record final position.	
5. Confirm that all openings (vents and drains) are closed or plugged. Confirm equipment is tagged / labelled for type of Internal Preservation.	
6. Refer to vendor preservation procedure for specific instructions	
7. Confirm preservation label is in place and updated.	
COMMENTS:	

Reports Plus PITRs Detailed Analysis





We concur 100% with the findings by Company expressed earlier in the document that with Tightness and Cleanliness, Preservation is absolutely crucial and if not properly followed, will have cost and schedule implications many times greater than the cost of adhering to disciplined procedures.

Furthermore, Preservation becomes even more vital if a project is delayed or mothballed. It has been our experience that Operators have ignored the need for Preservation on lower value items of equipment, such as manual valves, because these were not uniquely tagged and hence "invisible" to the System and the people responsible for Preservations. Consequently, when the plant needed to come out of mothballs, the manual valves that not been uniquely Tagged and hence not been Preserved were not in good condition, cost many millions of dollars to replace and had significant impact on eventual project Startup.

In Zenator, our materials and training courses we place great emphasis on "keeping it tight, keeping it clean". We fully understand the need for System integrity and the methodical, procedural approach needed to ensure loss of containment or contamination can occur because of incorrectly taken steps.

*Of the 360 plus templates supplied with Zenator (Preservations, AITRs, BITRs, sample CITRs, PLIs, MOC, Certs & Notices) many talk about the need for and demonstration of Preservation, Tightness and Cleanliness. We have assigned the term, "**Critical Factors**" to describe Tightness, Cleanliness and Preservation. These are discussed further with examples at 1.30.*

In addition, Reports Plus produces a full Preservations History of all PITRs completed and outstanding on Tagged Items.

A User Guide to Preservations follows.

User Guide to Preservations

Introduction

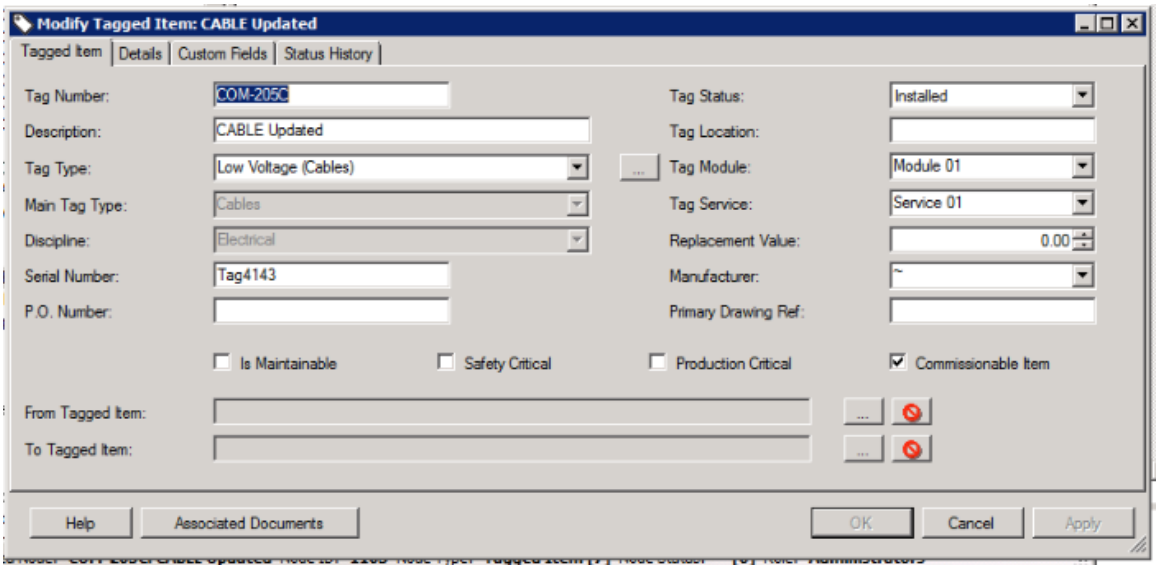
This is a quick guide on how to create and use the Preservations function within Zenator.

Preservations

Preservation activities can be tracked and managed in Zenator Check along with your other ITRs. They are designed to run as a background process after being set up. They are basically the same as ITRs with the exception of a few elements and what is displayed on their detail screen.

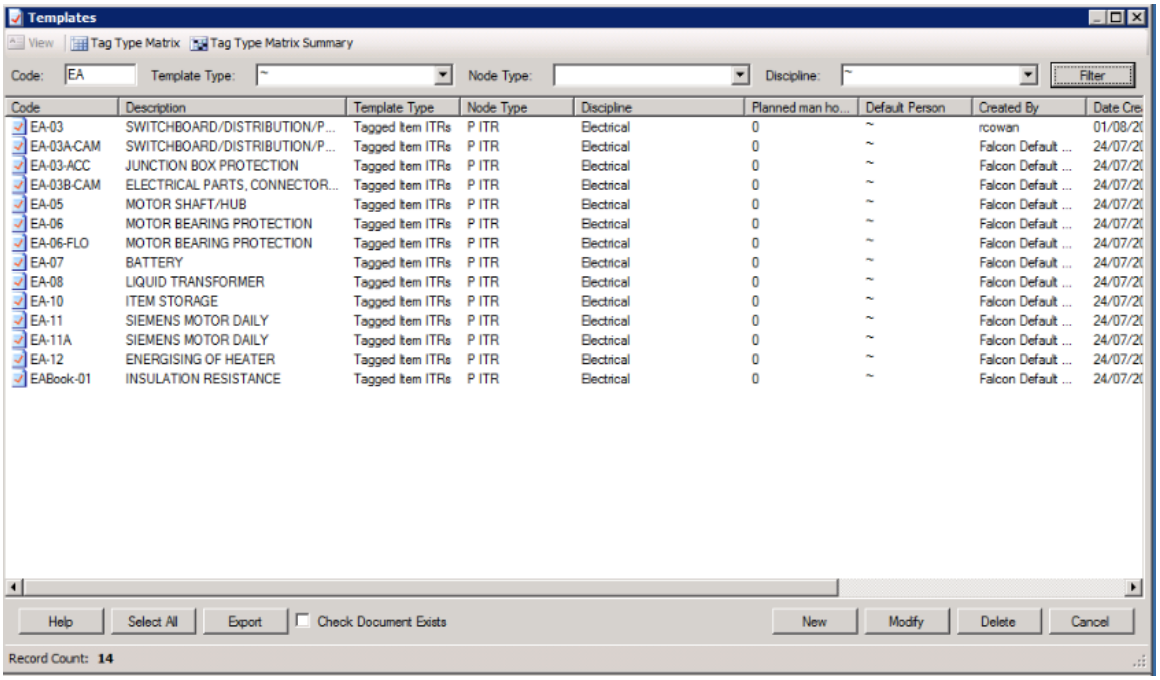
Tag Type Matrix

At this point of creating preservations the tag type matrix will have been created and each Tag will have a certain Tag Type. This is the key to how Zenator Check will be able to find Tags that require preservations. In the below screenshot of the Tag screen the Tag Type Main is Cable and the Tag Type is Low Voltage (Cables):

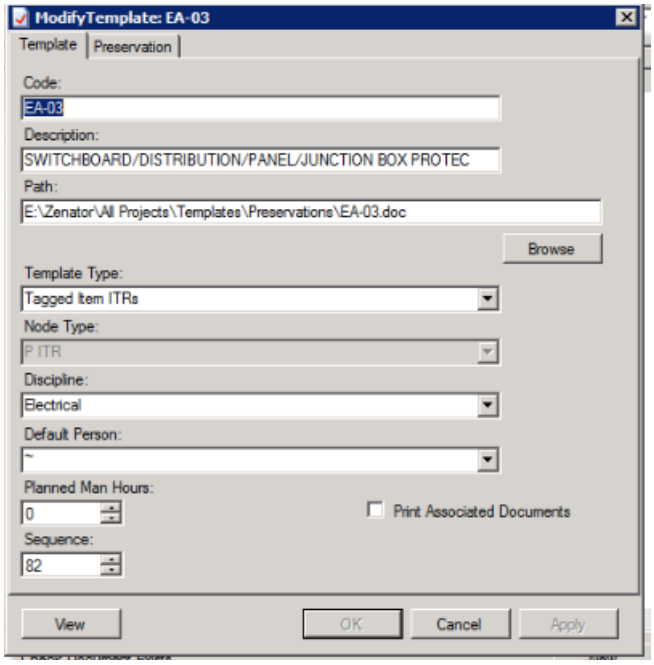


Templates

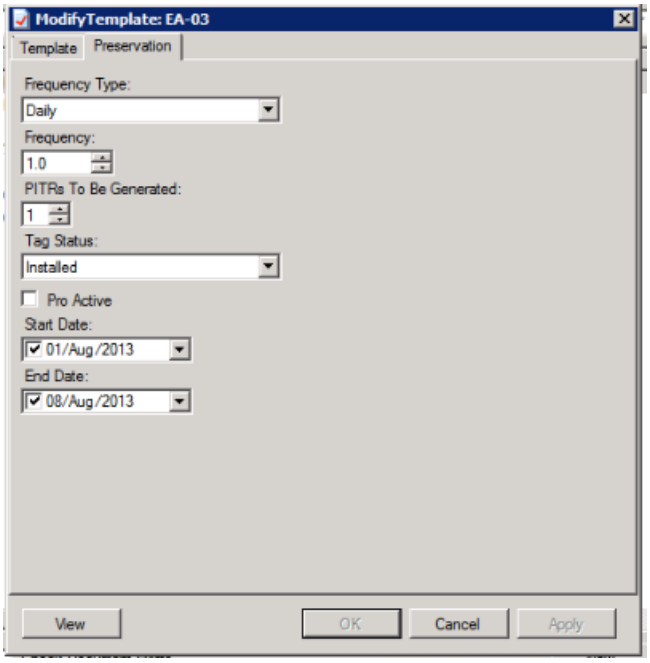
There are currently several Templates available within Zenator that can be used for Preservations. By going to Template screen:



In the screen above the filter is for Electrical Discipline Templates with a Node Type P ITR. By selecting Template EA-03 and choosing modify:



On the first Tab the Discipline is set to Electrical, Node Type is P ITR and Template Type is a Tagged Item ITRs. The second tab is preservations:



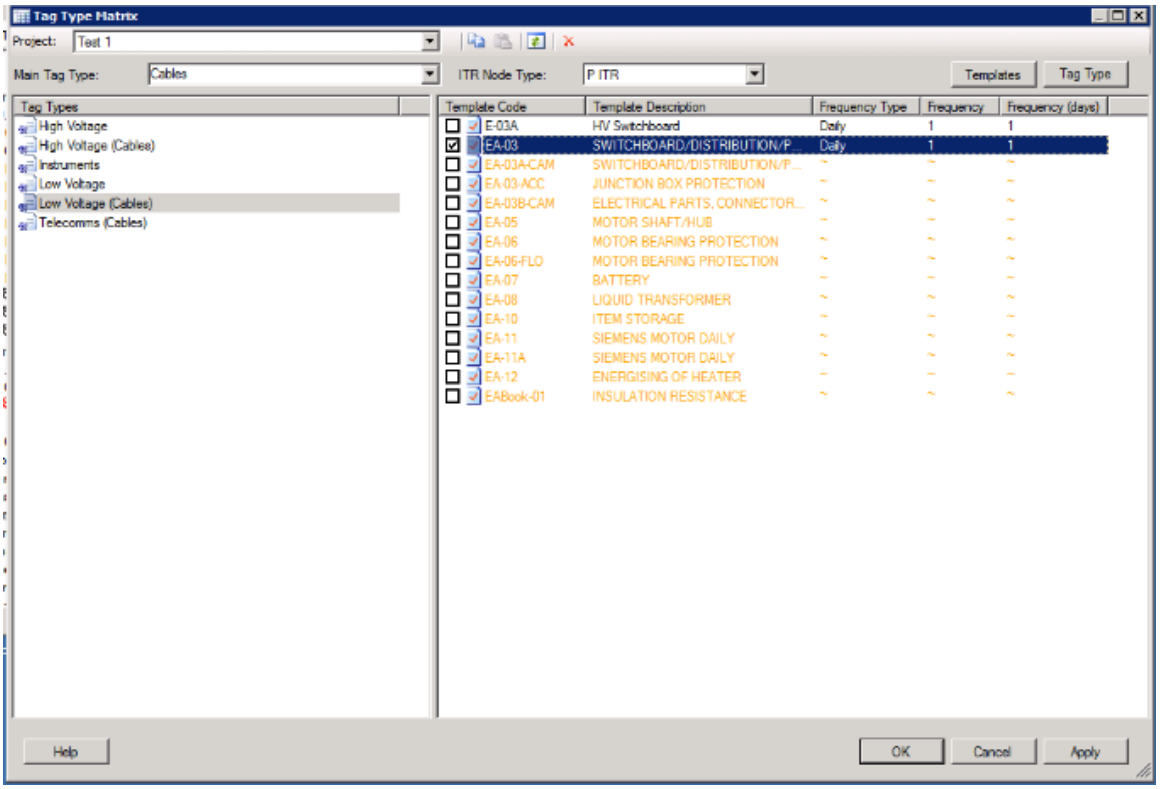
Frequency *– Since preservations activities are typically conducted more than once, Zenator will allow multiple Checksheets of the same type to be allocated to a tag. Each PITR that you allocate will be the same in content, but have a slightly different number. Zenator Check allows you to add a custom frequency value to the Checksheet template.*

Generation Mode *– With PITRs you have the option to generate multiple documents at the same. Each one of these will have a specific completion date imprinted on the form and based on the frequency you have chosen. This is known as Proactive Mode. So if a shaft rotation is scheduled every four weeks and I set the template to produce 4 ITRs in advance, then Check will generate 4 ITRs spanning the next 16 weeks. When one is completed it will produce the next one; always maintaining 4 ITRs ahead.*

Tag Status *- This refers to the stage a tag is currently in (i.e. constructed, in transit, installed). With preservations, each PITR is set to "activate" or be triggered by a tag status. The idea is that as equipment cycles through different stages the preservation activities or at least their frequencies may change. By assigning each PITR to start when a tag reaches a certain status, you can ensure that the proper work is being done.*

Setting Up Preservations using the Tag Type Matrix

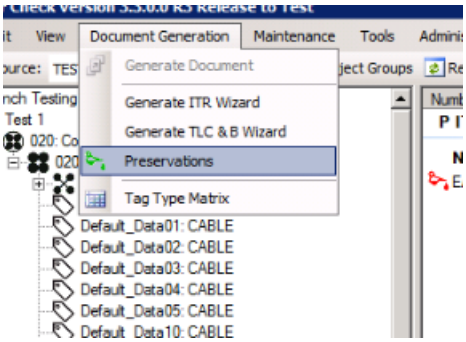
The next step is to set up these templates in the TTM Matrix. This can be done through Check. The process is the same as with other ITRs, simply filter the ITR type and check the boxes for the forms you want associated with each tag Type



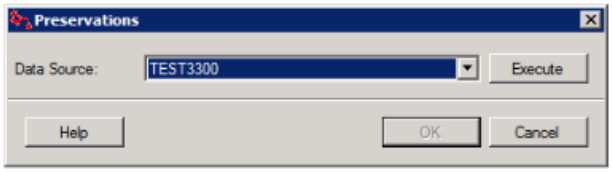
From here you are putting a rule in place that if the tag has a Main Tag Type of Cables and a Tag Type of Low Voltage (Cables) then if a preservation is required it will use the EA-03 Template.

Switching On Preservations

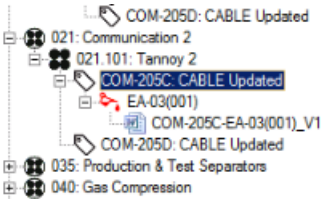
From here you would have the option of turning Preservations on as a process or running the process manually. In order to set this, click Preservations under the Document Generation Menu.



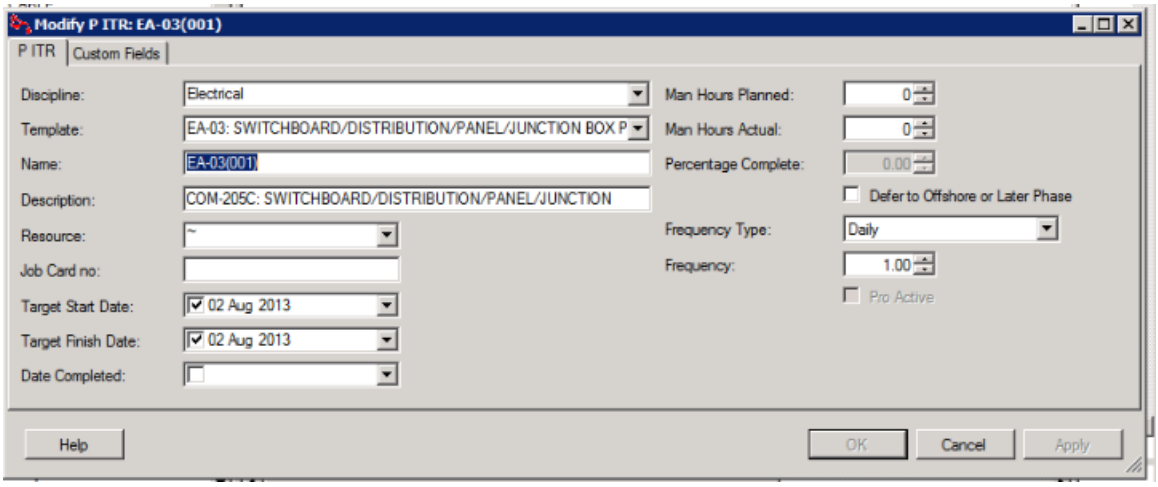
This Dialogue box allows you to start or stop preservations. What does this process do? Based on the interval you select Zenator will look through your tree for tags that have preservations. It will check to see if the number of generated PITRs matches what is set up in the template registry. If it doesn't it will generate new PITRs. If it does, nothing will happen. To run this process manually click the execute button.



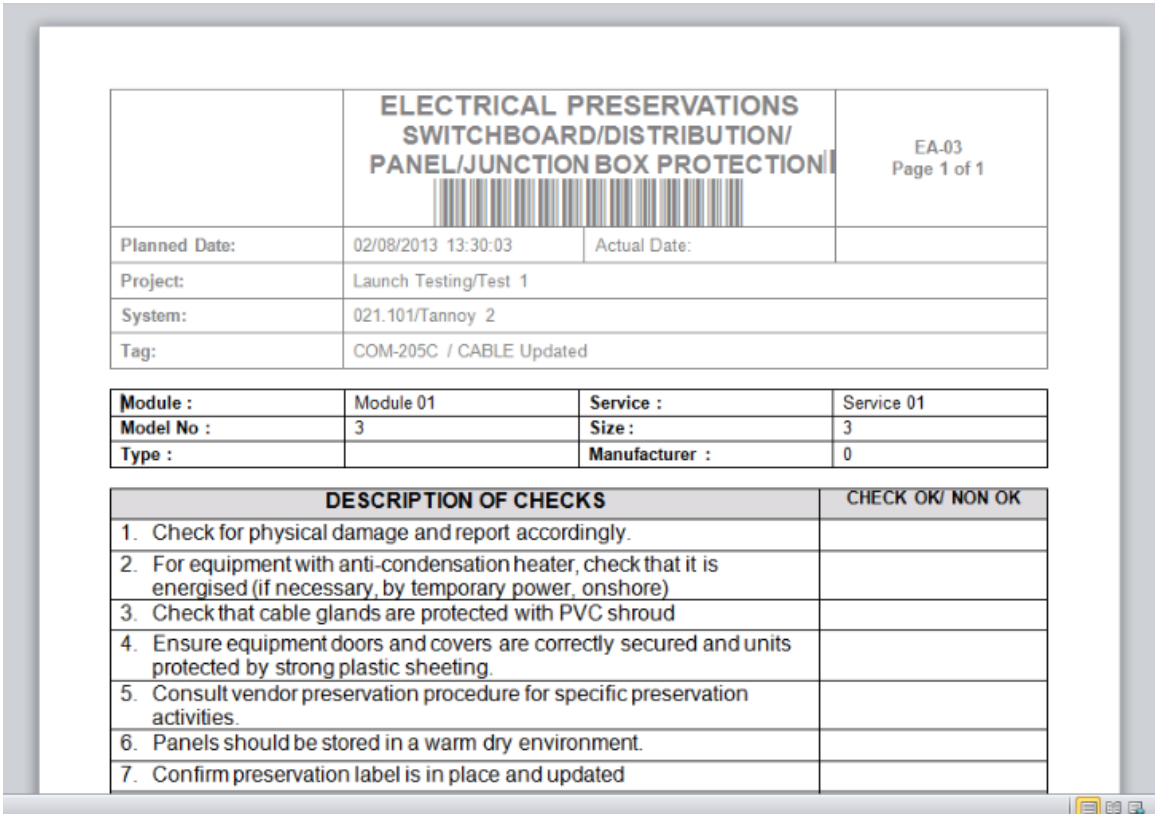
On the tree we can see the Preservation has been created and the template generated ready for completion.



As we can see from the PITR screen that all the details have been created using the information from the template.



Finally the generated document will look like this:



ELECTRICAL PRESERVATIONS
SWITCHBOARD/DISTRIBUTION/
PANEL/JUNCTION BOX PROTECTION

EA-03
Page 1 of 1

Planned Date:	02/08/2013 13:30:03	Actual Date:	
Project:	Launch Testing/Test 1		
System:	021.101/Tannoy 2		
Tag:	COM-205C / CABLE Updated		

Module :	Module 01	**Service :**	Service 01
Model No :	3	**Size :**	3
Type :		**Manufacturer :**	0

DESCRIPTION OF CHECKS	CHECK OK/ NON OK
1. Check for physical damage and report accordingly.	
2. For equipment with anti-condensation heater, check that it is energised (if necessary, by temporary power, onshore)	
3. Check that cable glands are protected with PVC shroud	
4. Ensure equipment doors and covers are correctly secured and units protected by strong plastic sheeting.	
5. Consult vendor preservation procedure for specific preservation activities.	
6. Panels should be stored in a warm dry environment.	
7. Confirm preservation label is in place and updated	

1.21 Cleanliness

Document the assurance that cleaning is performed in accordance with the criticality of the tag items, equipment, sub-systems and systems and includes evaluation of vendor requirements and industry standard practices.

Refer to the examples shown in 1.29

1.22 Tightness

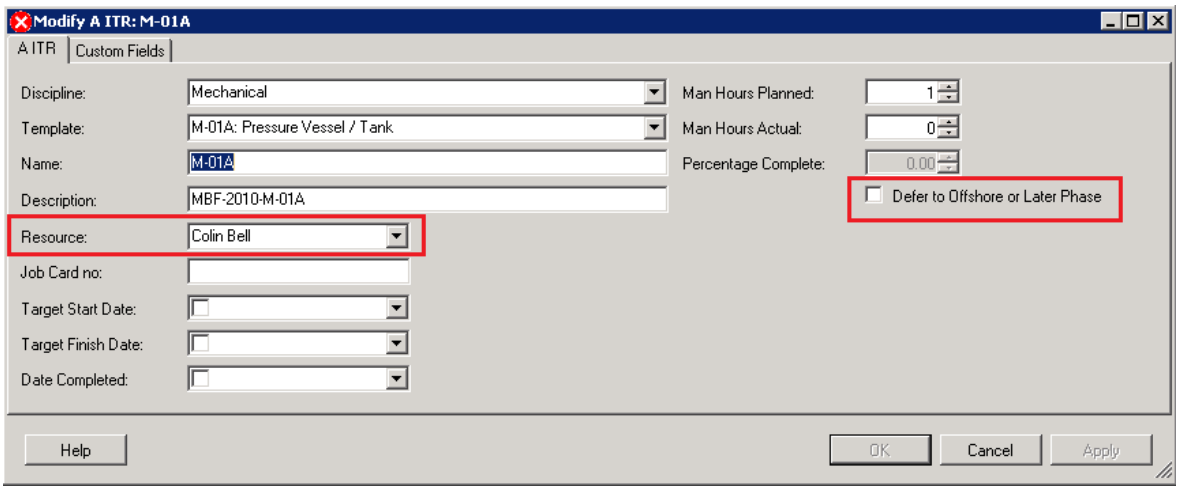
Document tag items, equipment, sub-systems and systems internal tightness and external tightness against design specifications.

Refer to the examples shown in 1.29

1.23 Carry Over Work

Document the Carry Over Work process (also referred to Close Out).

All ITRs have the ability to be flagged as Carry Over Work or "Defer to Off Shore or Later Phase". The Resource field can also be used to defined who (individual, department, contractor, etc) will be responsible for that work scope.



The process of flagging work at transient stages within a project are as follows:

- *Individually flag an ITR in the above screen.*
- *Use the Bulk Management ITR screen to find and bulk update outstanding ITRs. ITRs can be easily filtered using the ITR status to locate outstanding work for the chosen system or Sub System. The resulting ITRs can be updated in a single Bulk Update action to set the Defer flag and potentially assign a Resource.*

1.24 Custom Fields for Tightness, Cleanliness and Preservation

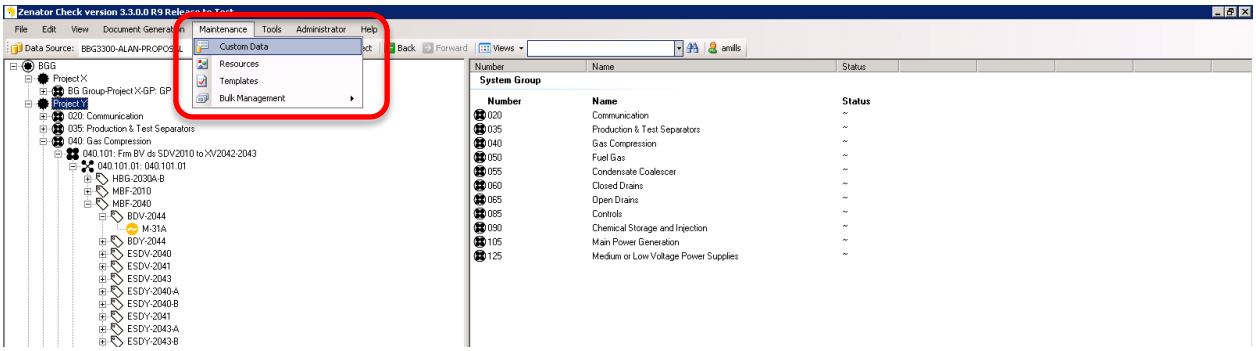
Be able to filter the data in the toolset by Tightness data, Cleanliness data and Preservation data.

Attributes for any Critical Factor can easily be assigned to a node. In the following example we show how the Custom Fields functionality is used to manage and track Tightness and Cleanliness. To add reporting capability we would mark the attribute for any Critical Factor, say, Tightness and Cleanliness, on the node form.

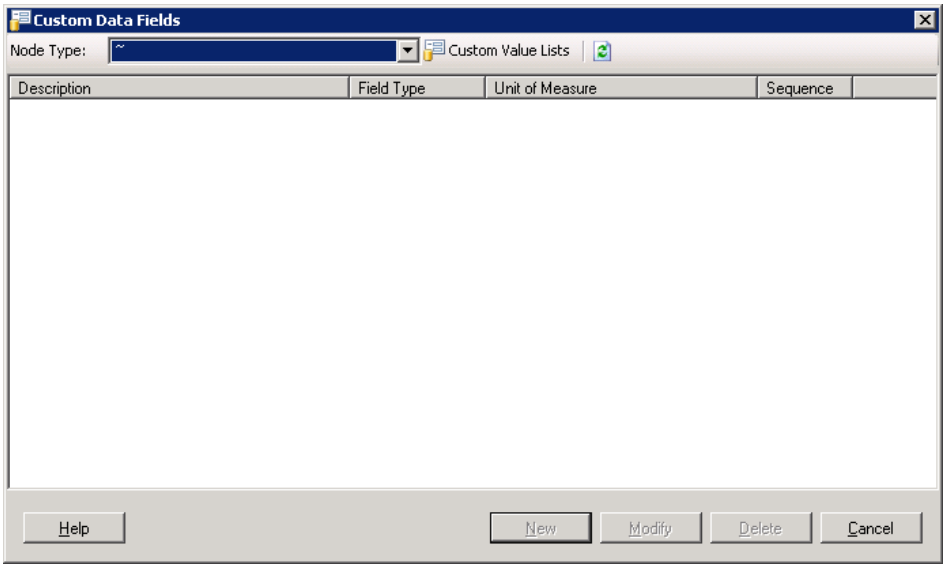
In a series of steps we show how attributes for Tightness and Cleanliness are added to Custom Fields. In the following example, we focus on Cleanliness relating to Vessels and Tanks.

Note, Preservations are a special type of ITR and are dealt with after the Custom Fields example. This includes the way Preservations are assigned, generated, tracked, managed and reported. Detailed Preservations reports include a complete Preservations History.

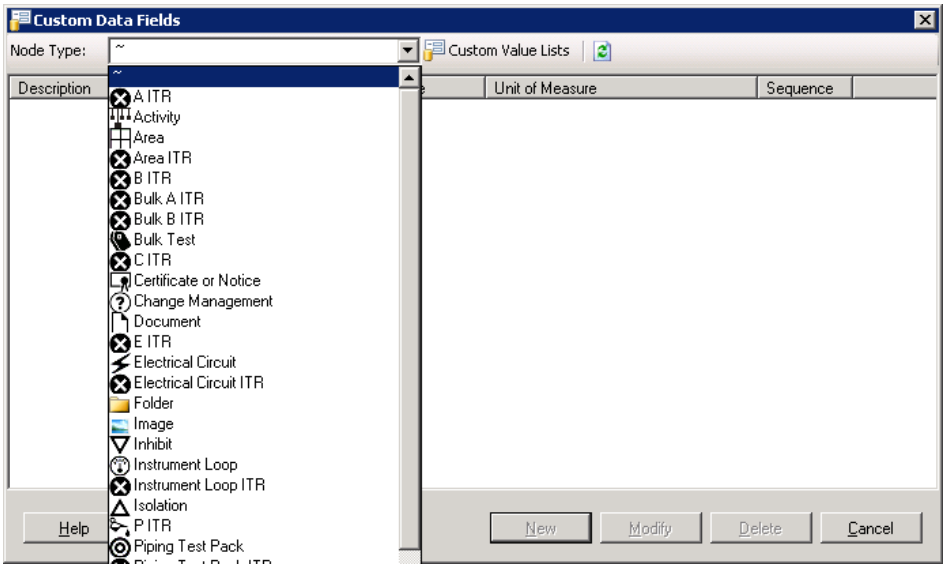
Step 1 Maintenance > Custom Data



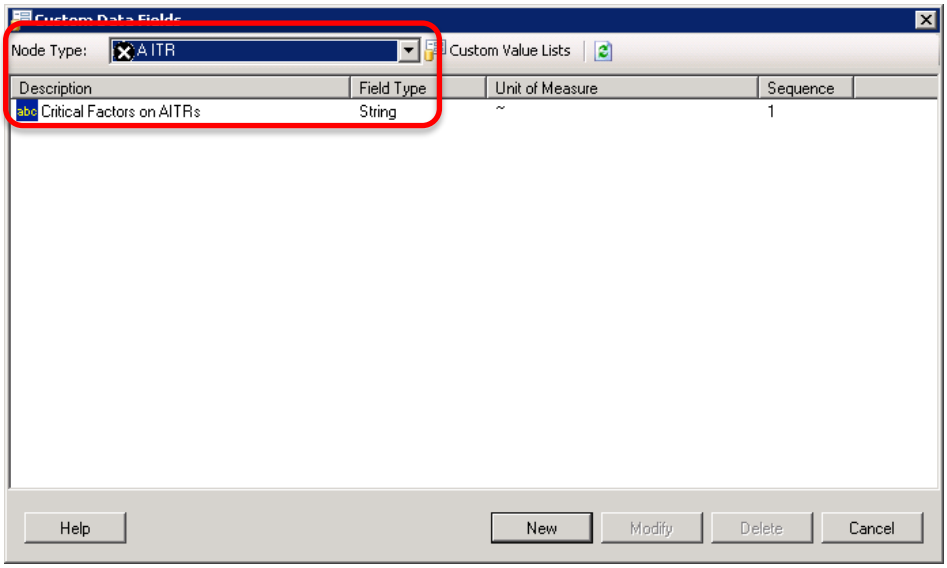
Step 2 Custom Fields > AITR Node



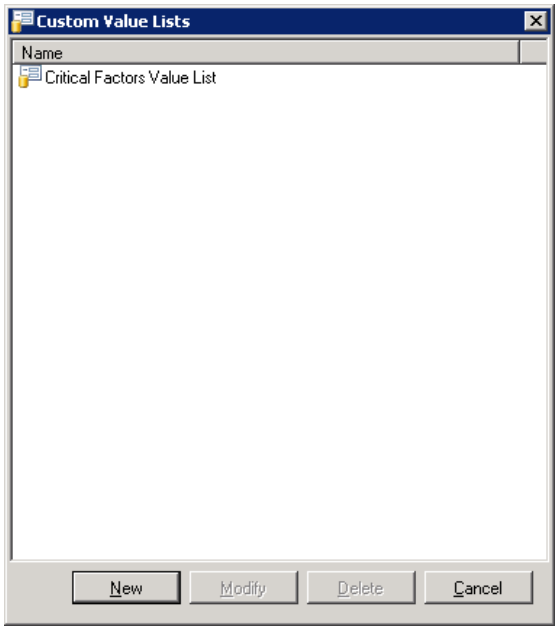
Custom Data Field



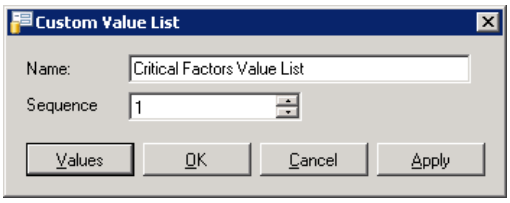
Step 3 Create New Custom Field called Critical Factors on AITRs



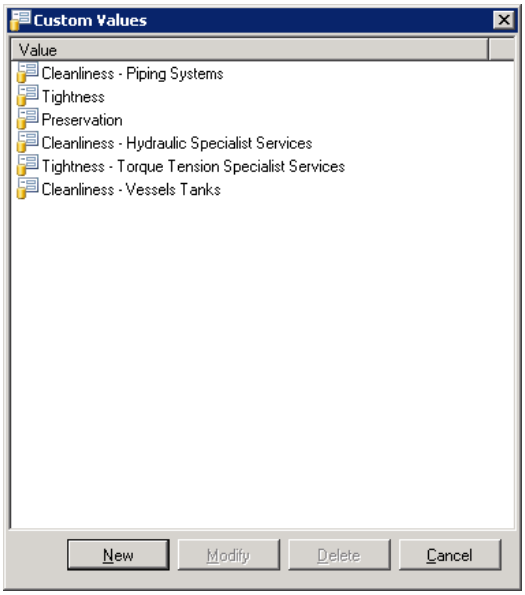
Step 4 Add a Custom Value List to Critical Factors



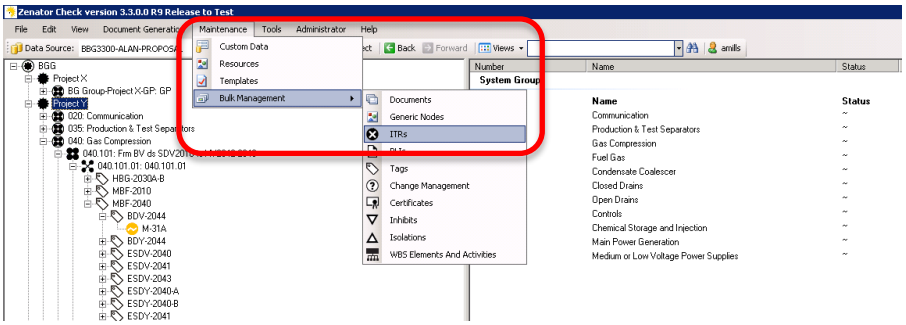
Step 5 Add Values to the Critical Factors Value List



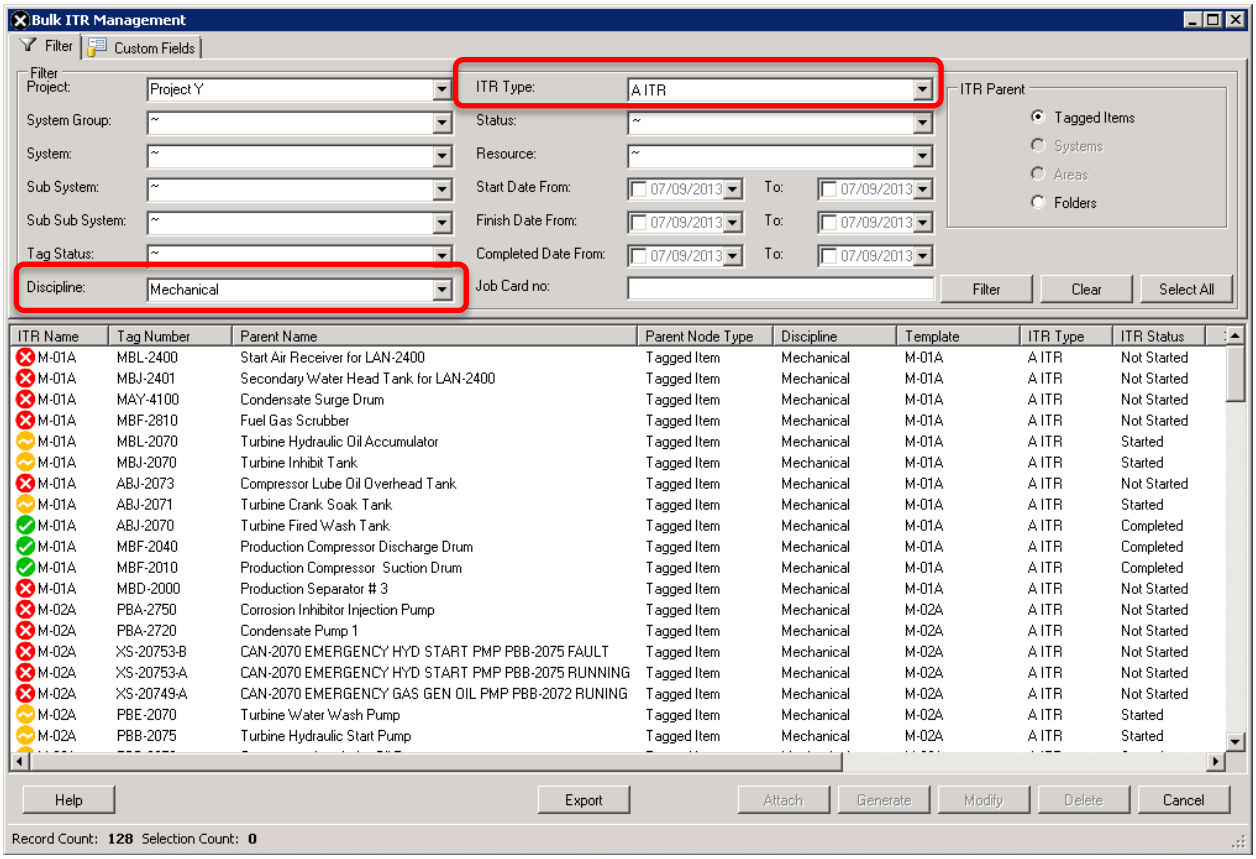
Step 6 Create Custom Values



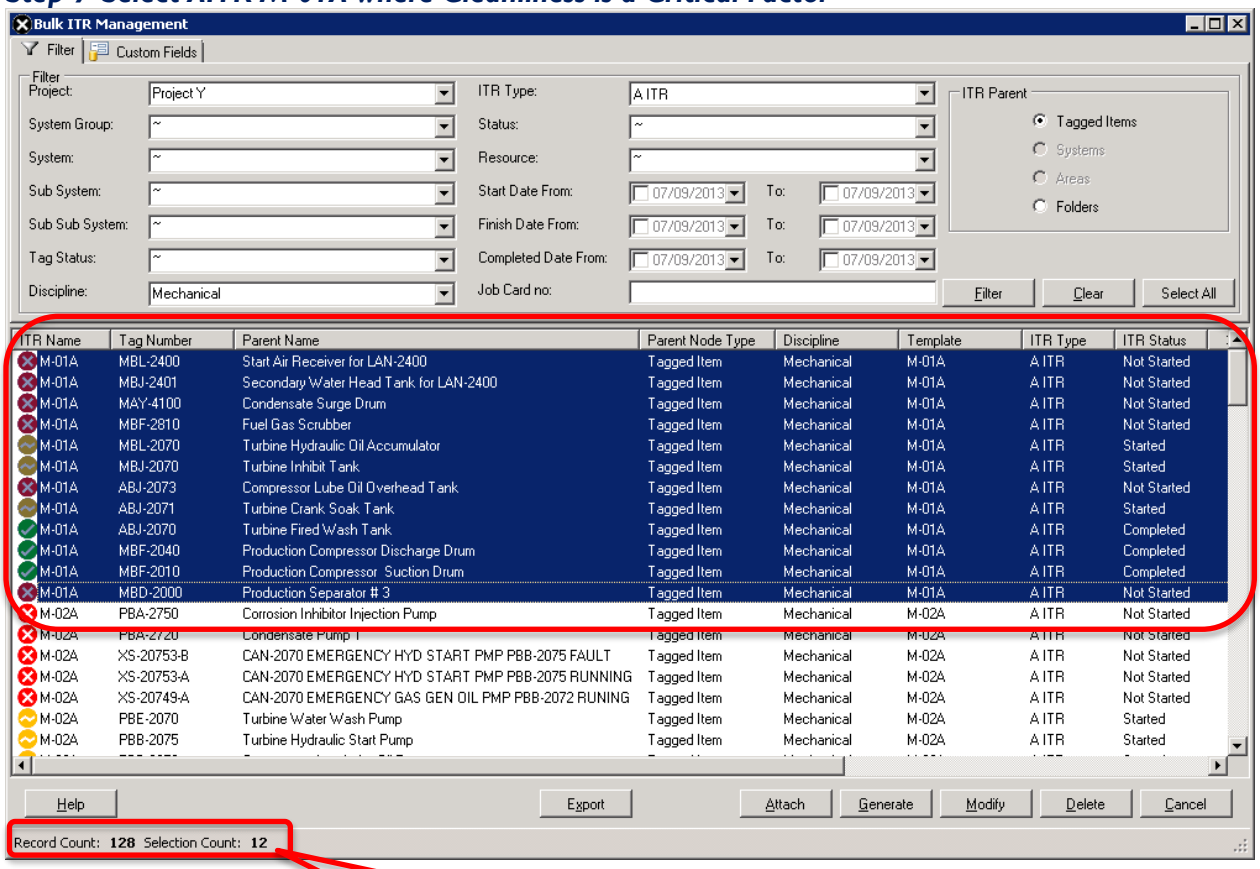
Step 7 Exit from Custom Values and open Bulk Management > ITRs



Step 8 In Bulk Management ITRs, select Mechanical Discipline, AITRs

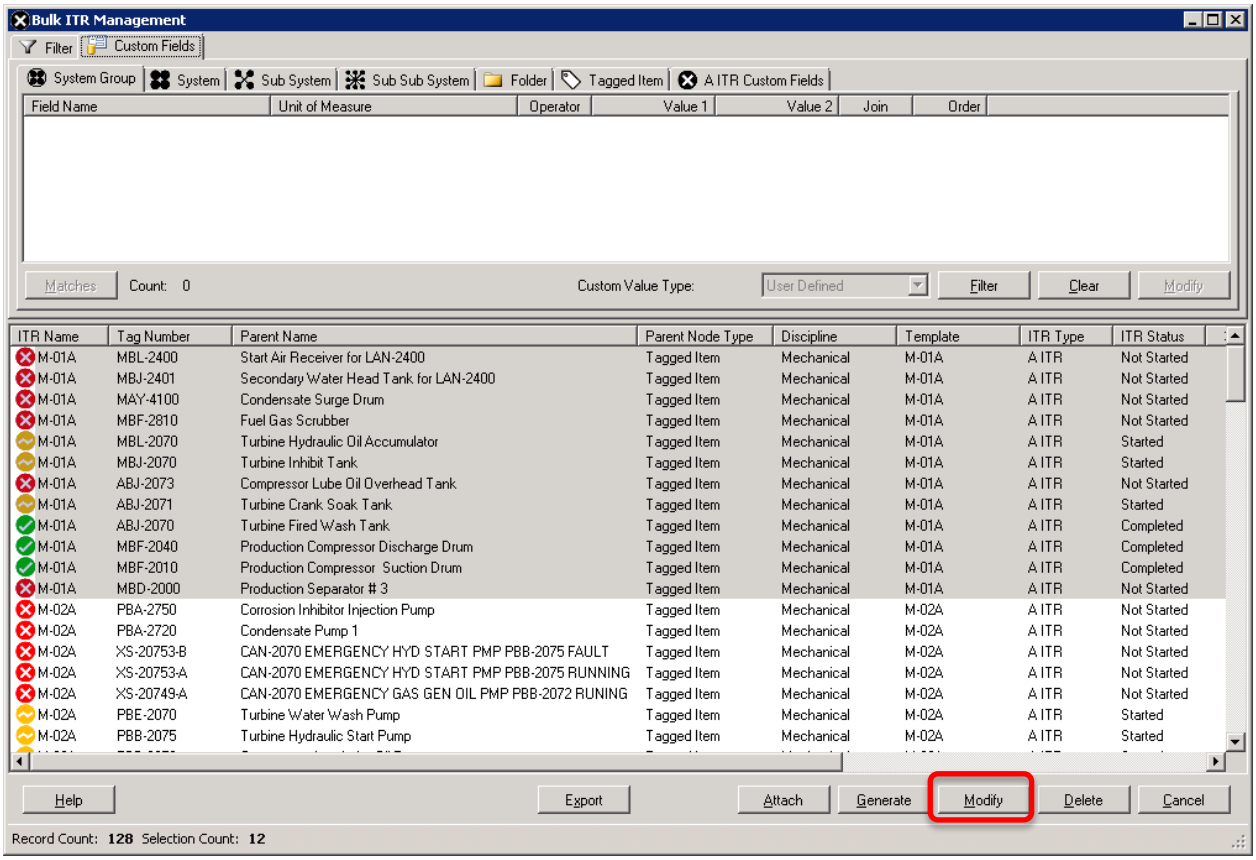


Step 9 Select AITR M-01A where Cleanliness is a Critical Factor

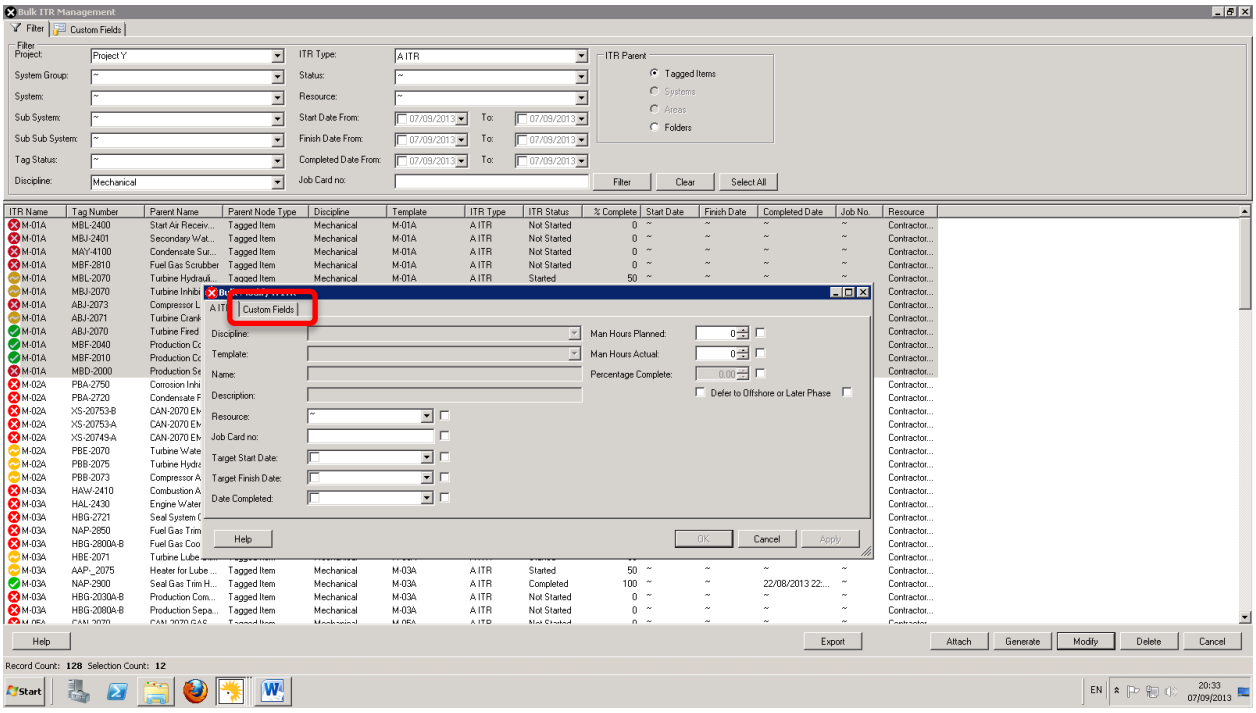


Filtering returns all the Mechanical AITRs in Project Y, and the highlighted selection is for 12 M-01A

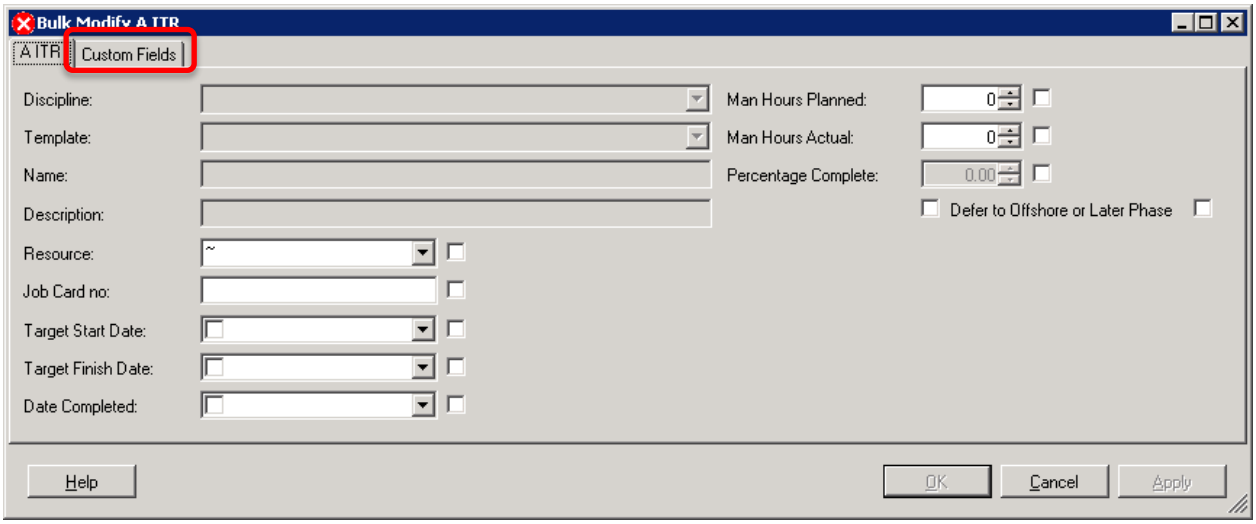
Step 10 Select to Modify the M-01A AITRs



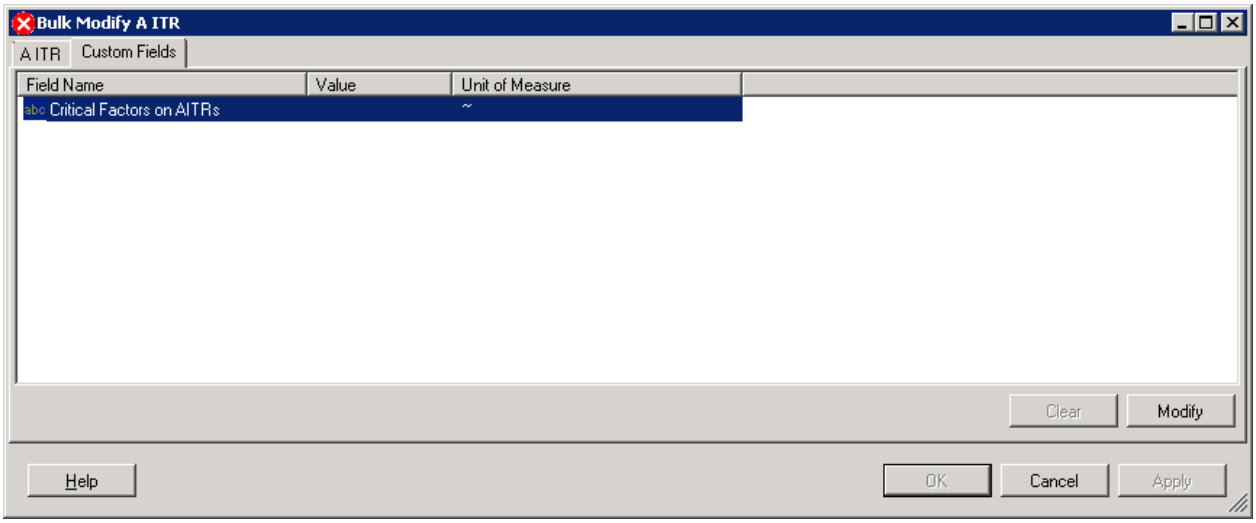
Step 11 Select Custom Fields tab



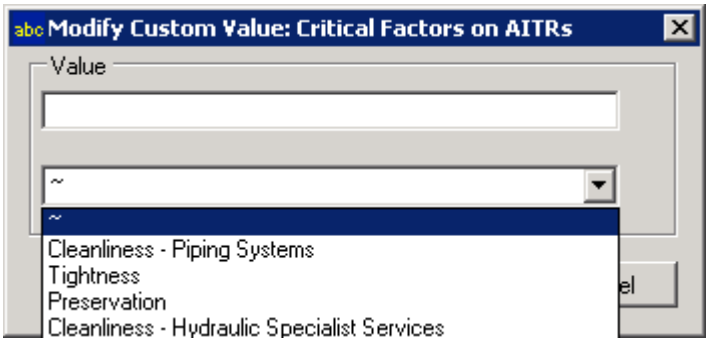
Larger view of Custom Fields tab



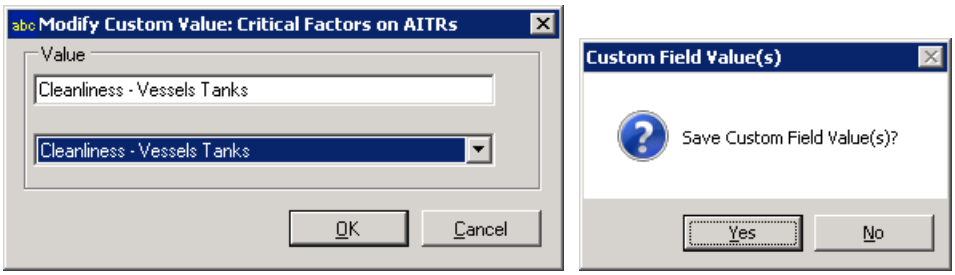
Step 12 Double Click Critical Factors on AITRs



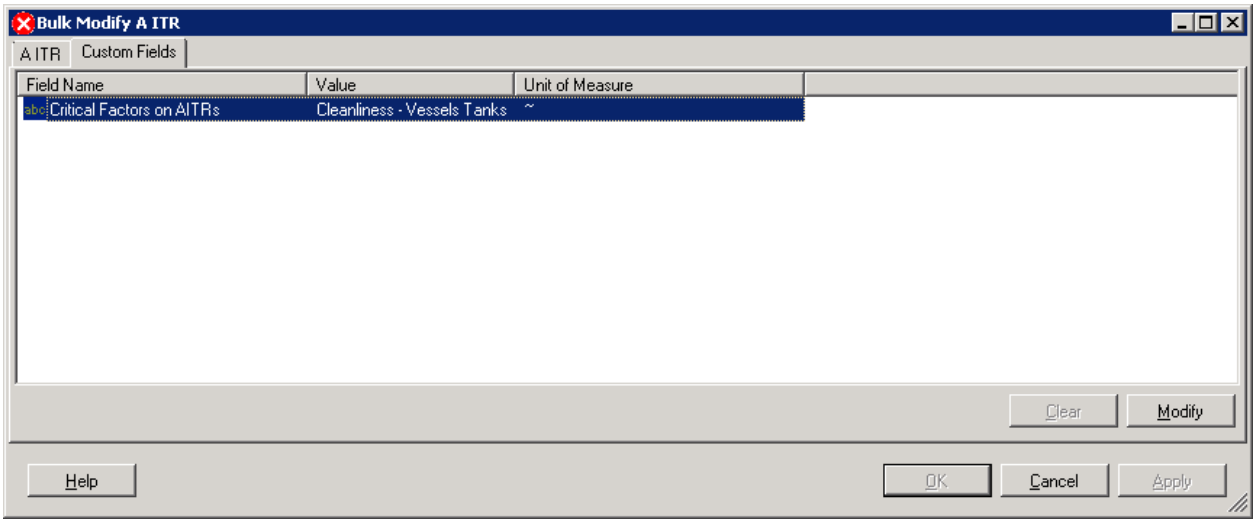
Step 13 Choose Appropriate Cleanliness for Vessels & Tanks from Critical Factors



Step 14 Save Choice of Critical Factor in Custom Field Values

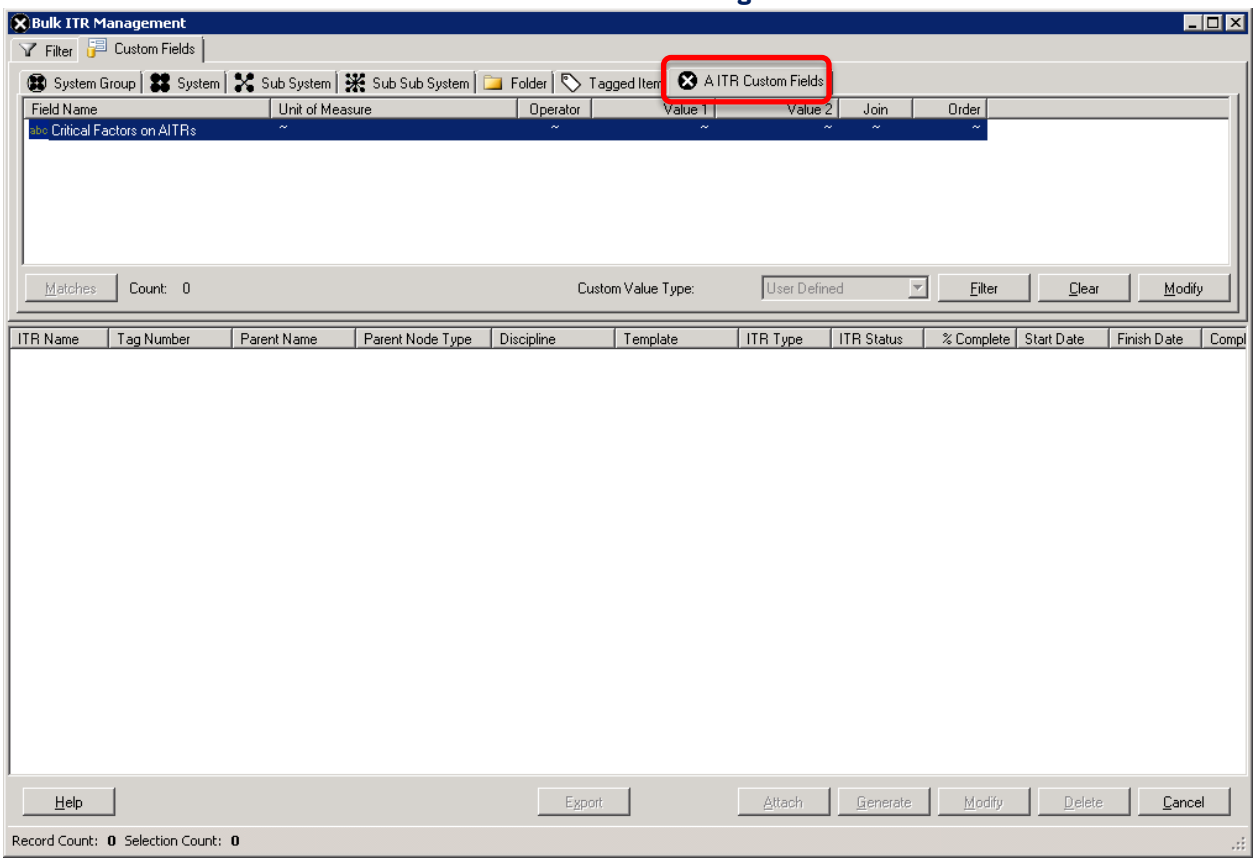


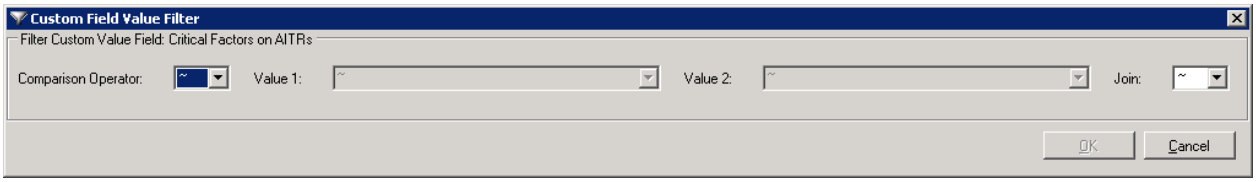
Selection of Cleanliness – Vessels & Tanks on all M-01A AITRs in Project Y

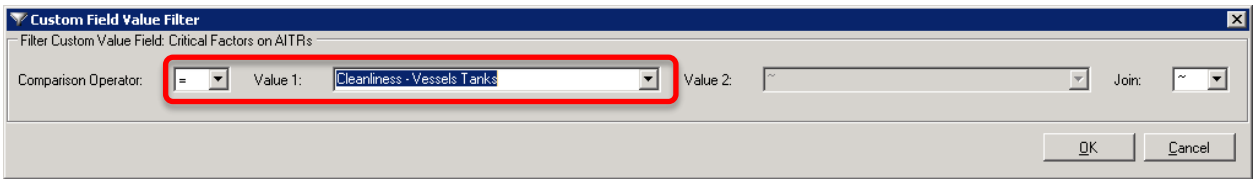


Step 15 Exit and Return to Bulk Management

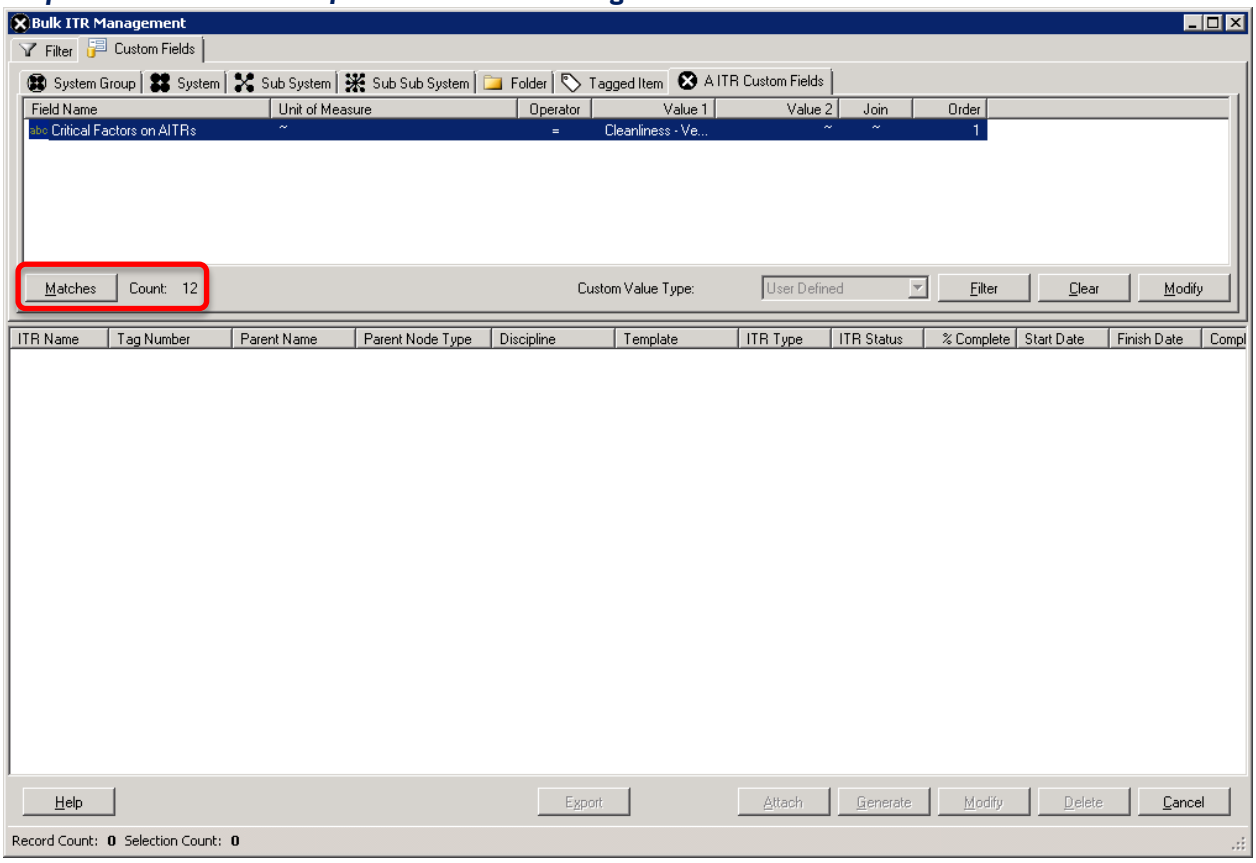
Select AITR Custom Fields and choose Cleanliness relating to Vessels and Tanks

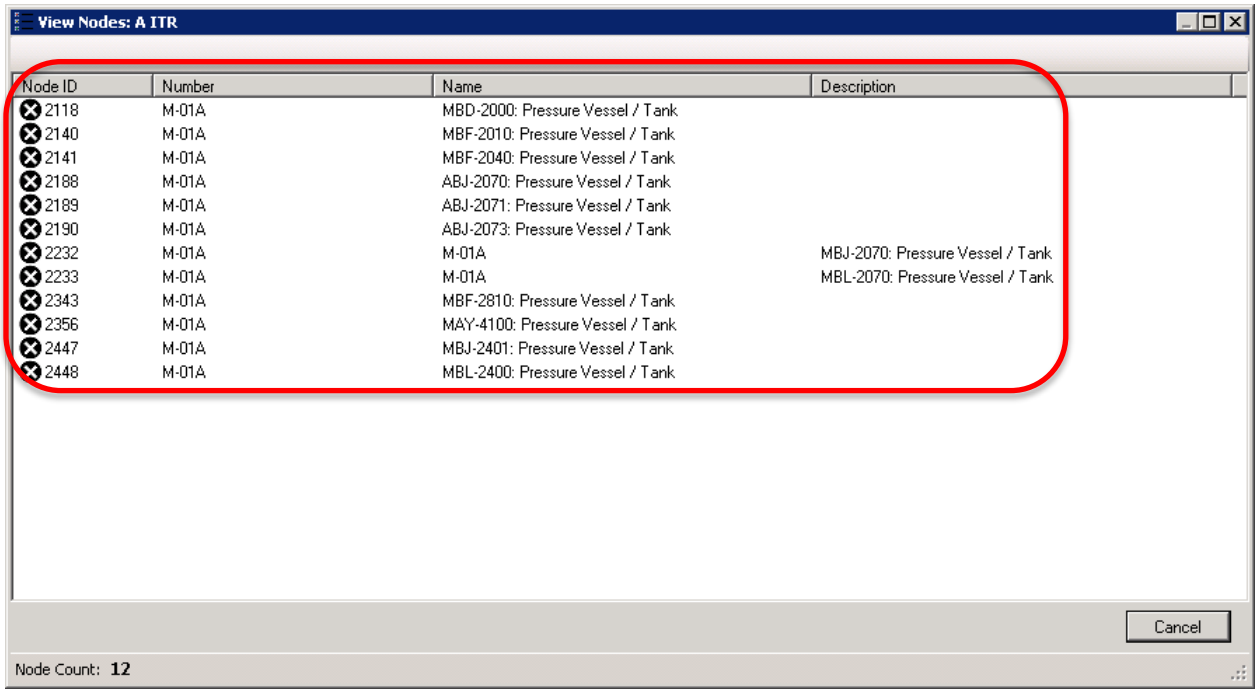






Step 16 Find Matches for Cleanliness relating to Vessels & Tanks





1.25 Managing Punch Lists

The software needs to provide a Completion Management 'Punch List' that describes incomplete work or malfunction of equipment or construction.

All Punch List information on a project is managed and controlled in Zenator. If PLIs originate externally to Zenator, for example in a Contractor's database, or in Operations database, these are all consolidated in Zenator. Importing externally created PLIs is made very easy. A specific import template is used in Zenator Launch to populate all such external PLIs quickly and easily in Zenator. Individual PLIs can be added and modified manually in Zenator. Bulk Management of PLIs makes organizing and modifying information very straightforward for users.

Punch List reporting is in Reports Plus where there are a selection of reporting formats (graphical rundown curve, pivot table and tabular) for configuring and running the reports needed. With Zenator comes Walkdown Capture and Check Sync.

Walkdown Capture is an application that runs on Windows 7 or Windows 8 touchscreen tablets with rear-facing camera. It is used in the field for ad-hoc inspection or formal System Walkdowns to Record and Clear punch list items (PLIs). Each PLI can be recorded or cleared in 2 minutes or less, including at least one photo. The Zenator security model is built in to Walkdown Capture. PLIs are automatically populated in Zenator Check using Check Sync. This application synchronizes all PLI information, either new PLIs Recorded or PLIs Cleared, with all photos in a seamless and straightforward manner. Check Sync works wirelessly either through secure ftp data transfer where conditions permit or with a USB upload.

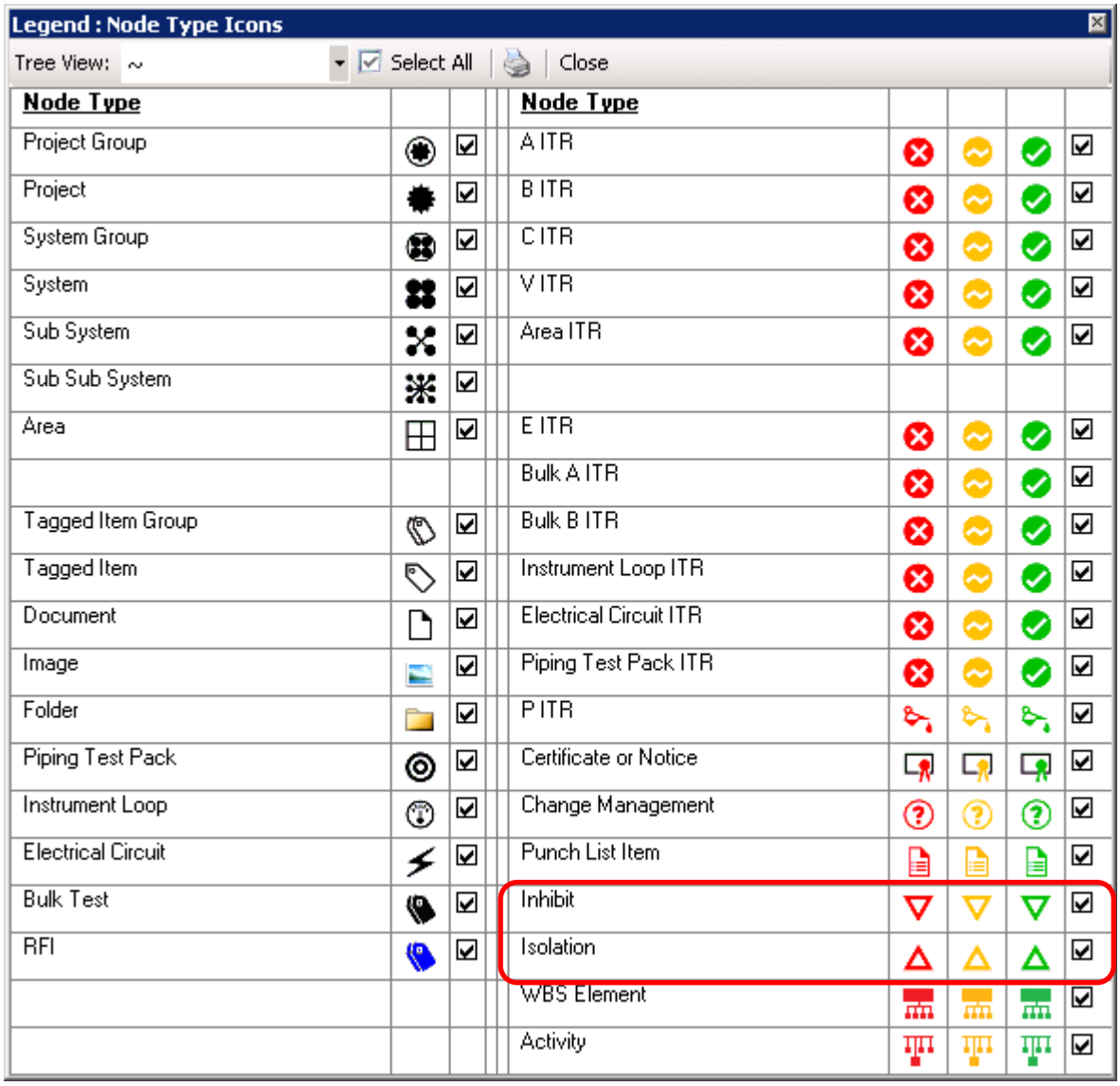
We understand that site working conditions are often far from ideal so have made it easy for Walkdown Capture licenses to easily be moved from one device to another if a device is lost or damaged.
Refer also to Punch Listing in 1.12 and the Zenator Systems Diagram in 1.13.

1.26 Inhibits and Isolations

The software needs to provide a Completion Management Lockout/Tagout capability to ensure people and activities are protected from unexpected startups/energy releases or product operation.

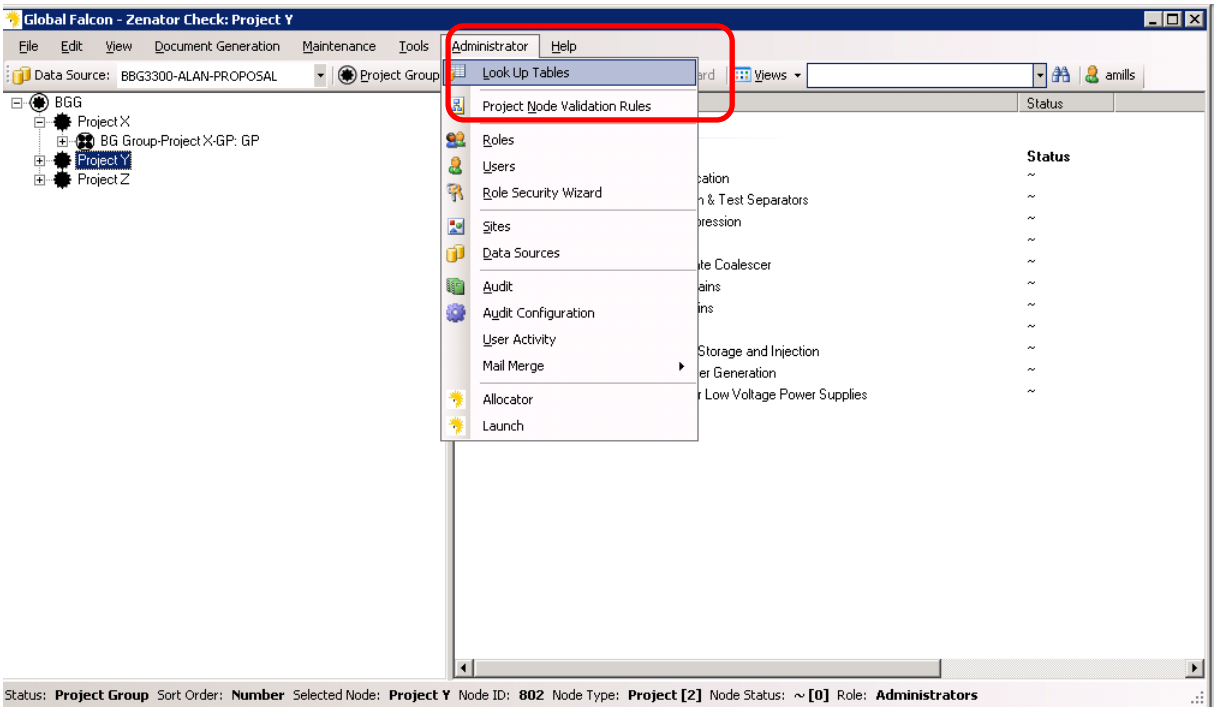
In Zenator we have the Inhibits and Isolations feature to which Lockout / Tagout requirements and regimes can be applied. The Inhibits and Isolations functionality operates in alignment with an Operator's Permit to Work (PTW) policy.

Legend

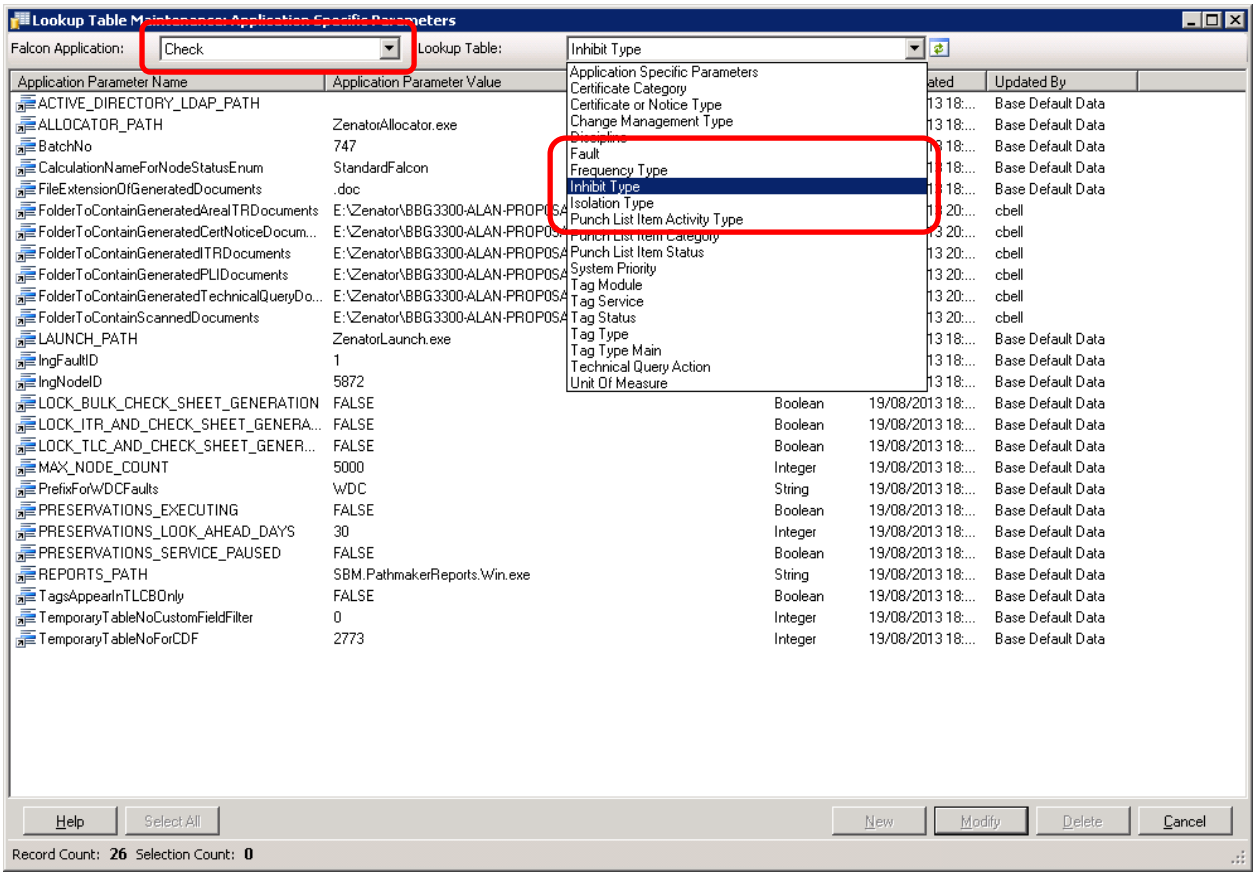


Inhibits and Isolations are defined in the Lookups and are entirely configurable.

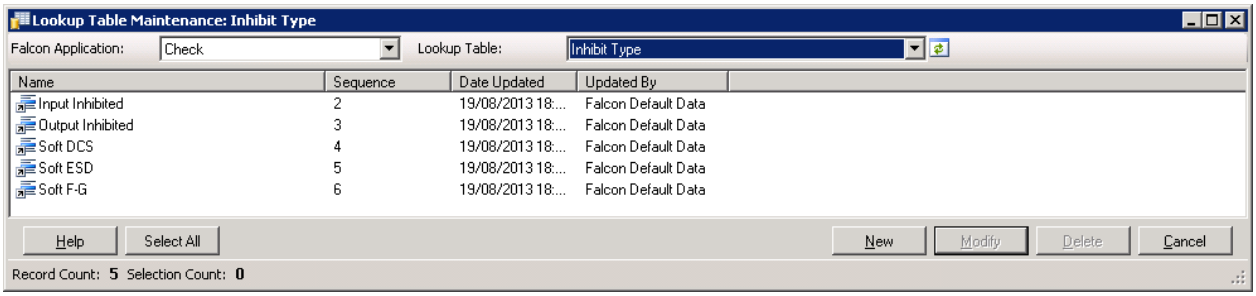
Administrator > Lookup Tables



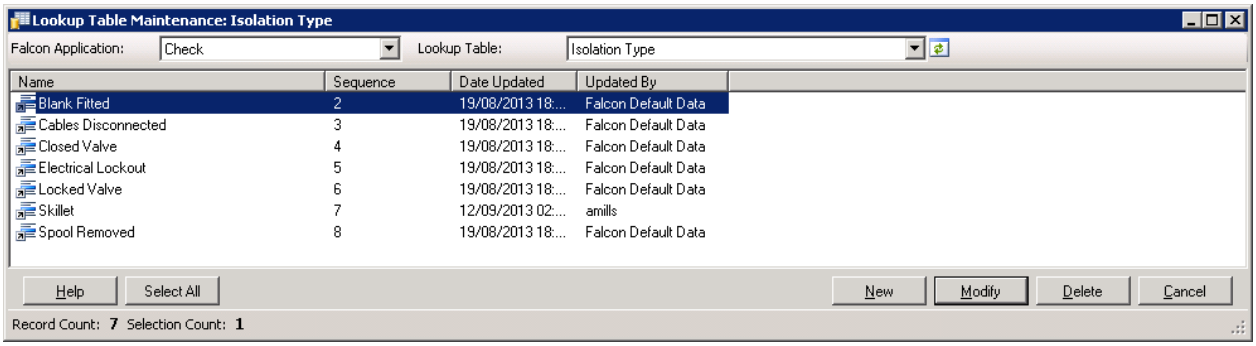
Administrator > Lookup Tables



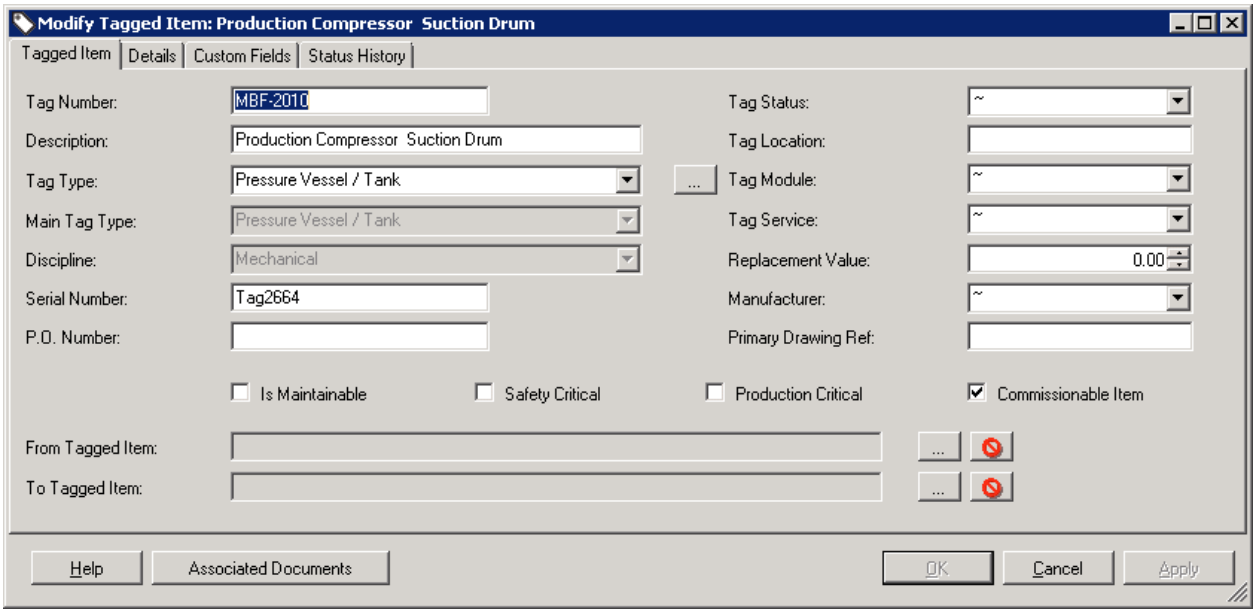
Inhibit Types



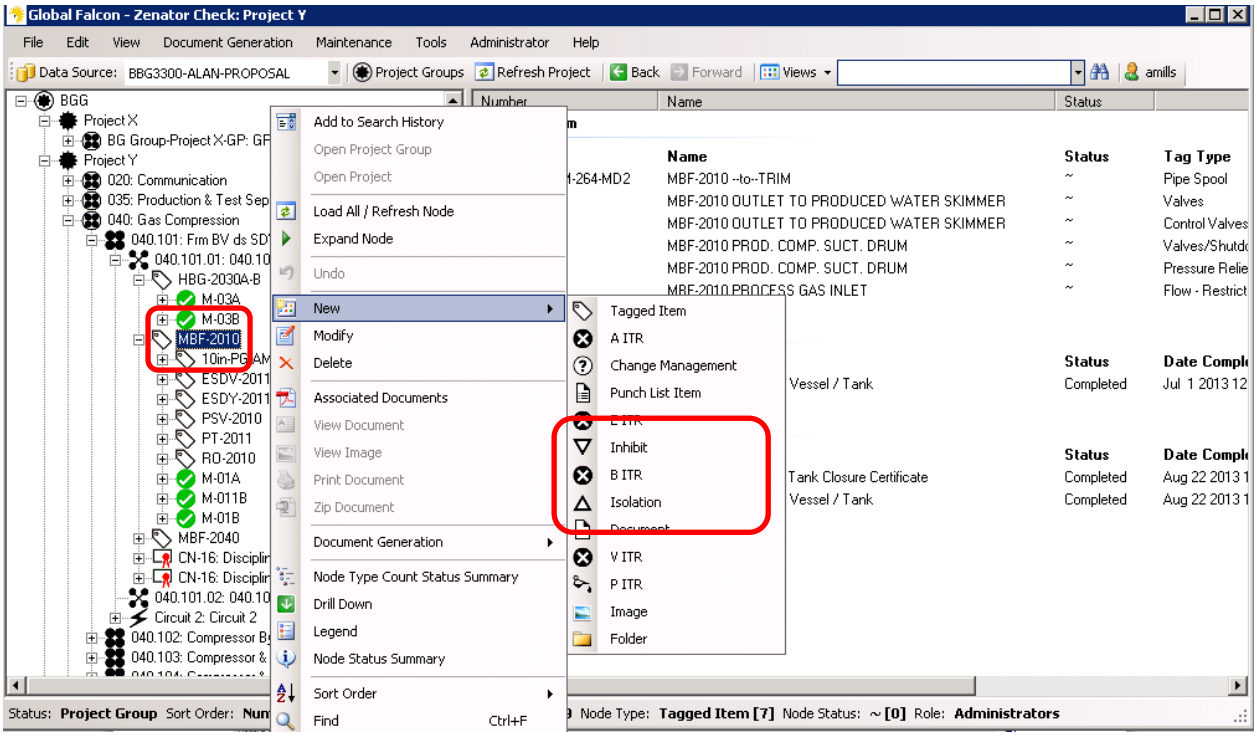
Isolation Types



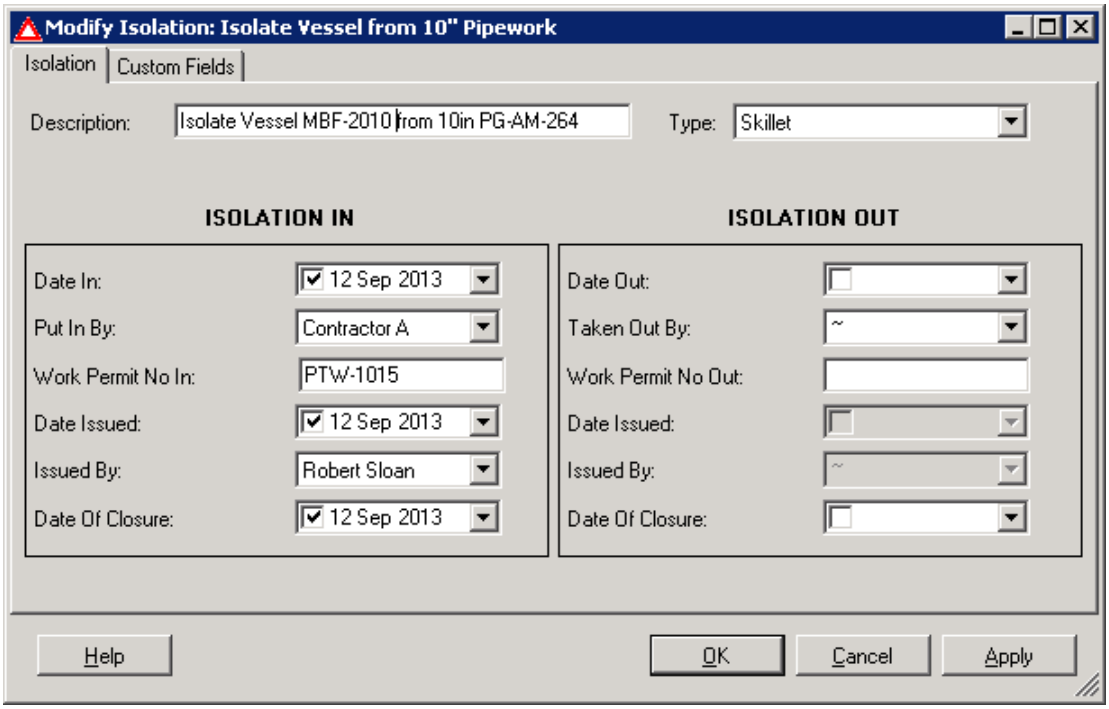
On Tag MBF-2010 Production Compressor Suction Drum, add an Isolation



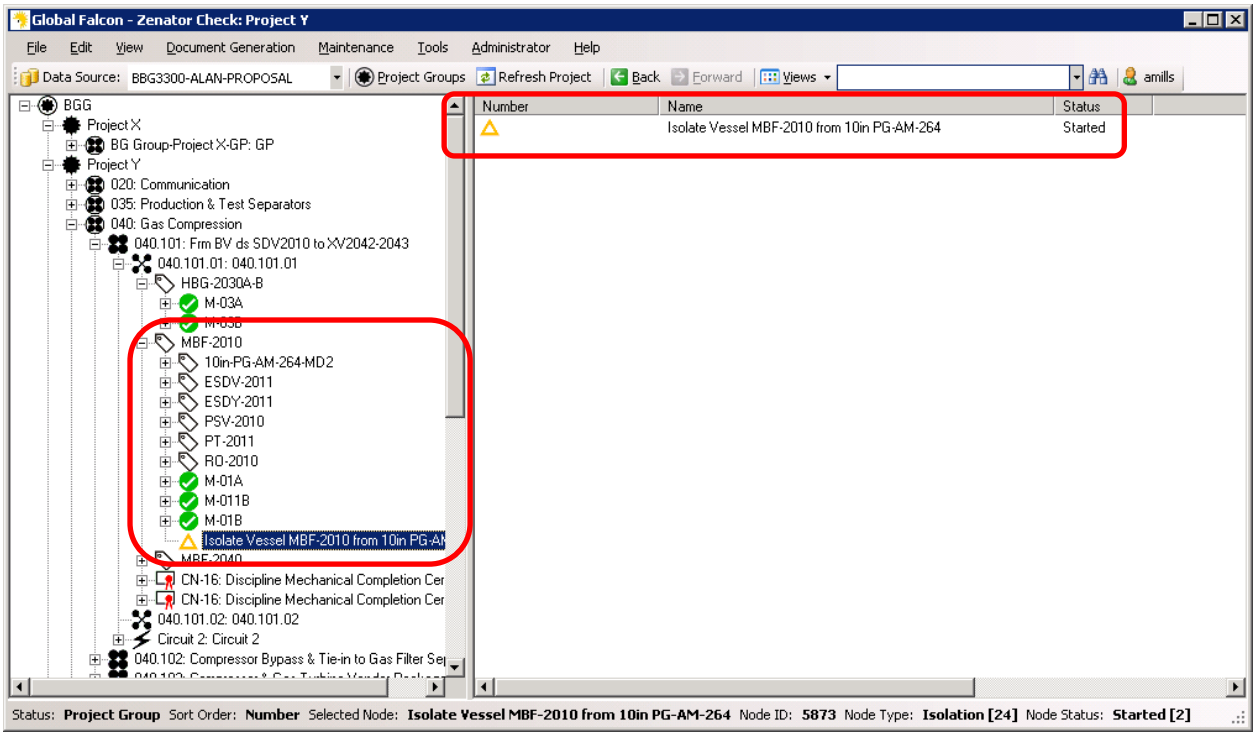
On Tag MBF-2010 add an Isolation



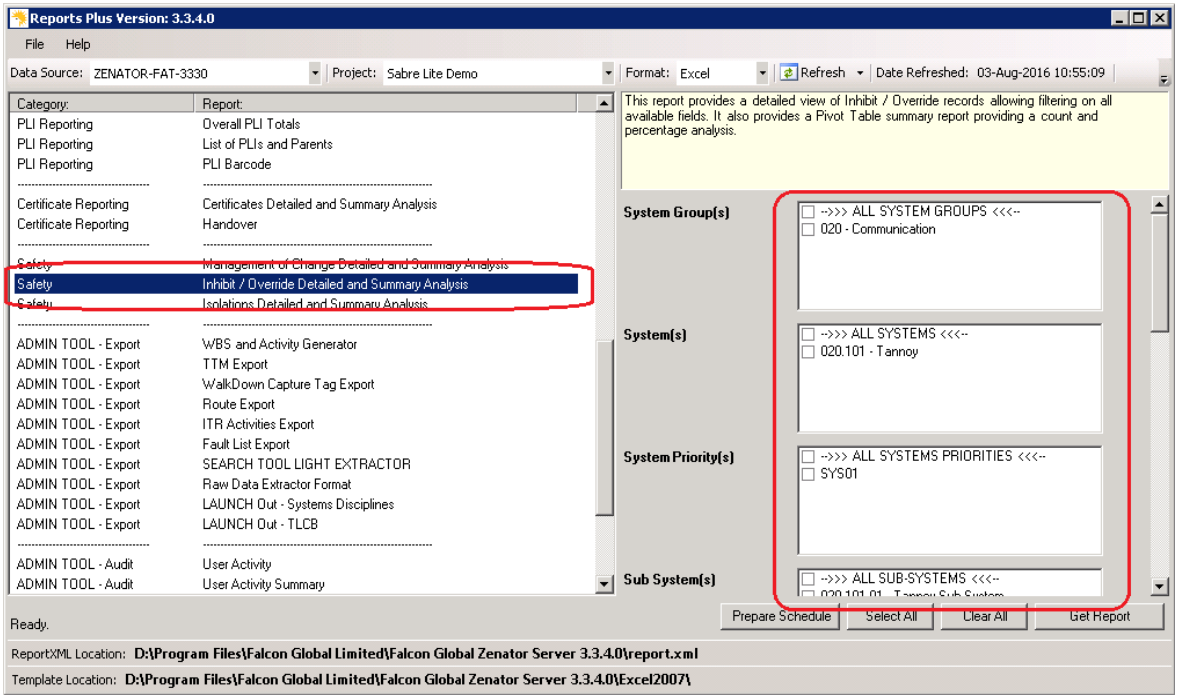
Create New Isolation and Link to Work Permit for Installation



Isolation at MBF-2010 in the Project Hierarchy



In Reports Plus > Isolations Detailed and Summary Analysis



Isolations Summary

Isolations Summary Report

Project	(All)
Isolation Type	(All)

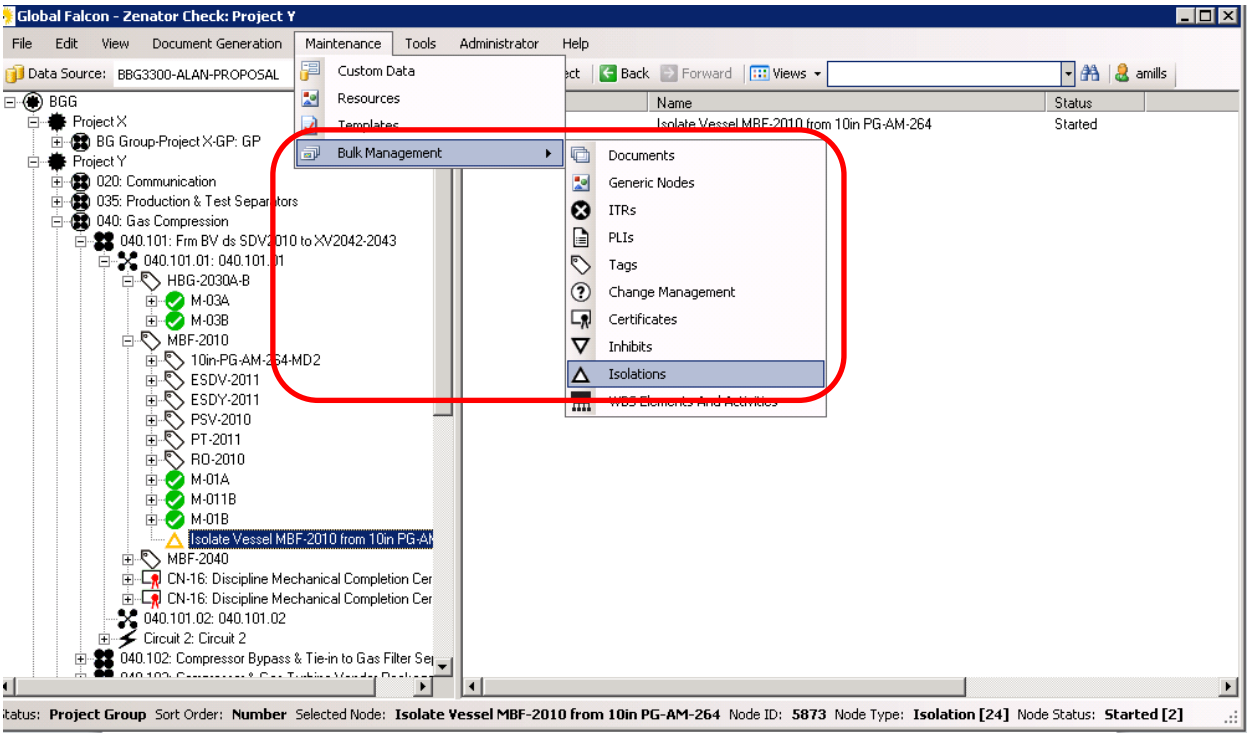
Discipline	System Group	System	Tag	Work Permit No In	Total	Not Started	% Not Started	Started	% Started	Completed	% Completed
Mechanical											
	040-Gas Compression										
		040.101-Frm BV ds SDV2010 to XV2042-2043									
			MBF-2010								
				PTW-1015	1	0	0.00%	1	100.00%	0	0.00%
			MBF-2010 Total		1	0	0.00%	1	100.00%	0	0.00%
		040.101-Frm BV ds SDV2010 to XV2042-2043 Tot			1	0	0.00%	1	100.00%	0	0.00%
	040-Gas Compression Total				1	0	0.00%	1	100.00%	0	0.00%
Mechanical Total					1	0	0.00%	1	100.00%	0	0.00%
Grand Total					1	0	0.00%	1	100.00%	0	0.00%

Detailed Analysis

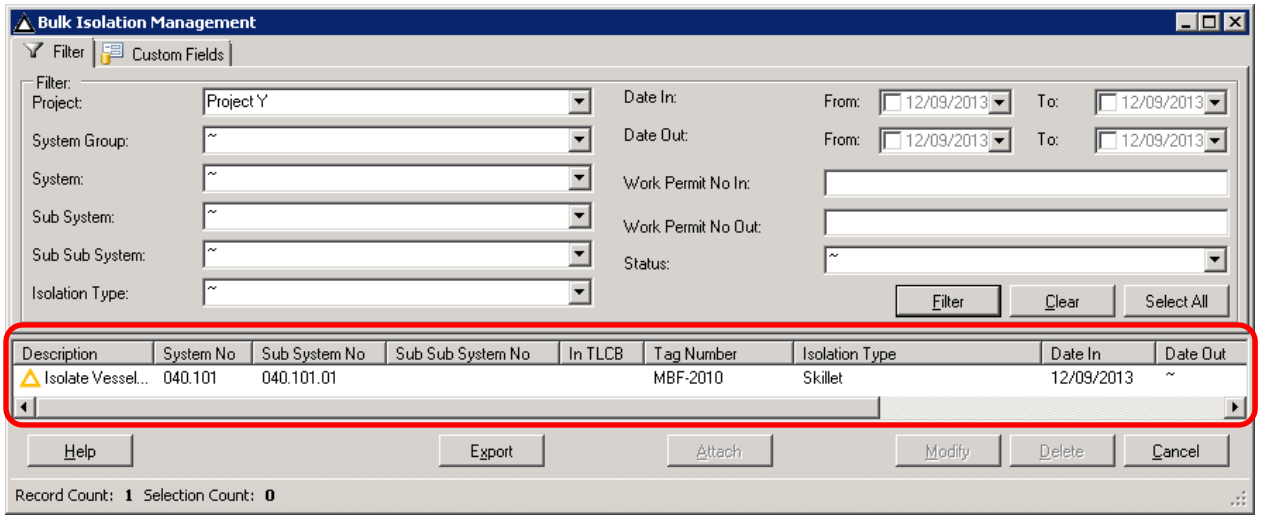
Isolations Detailed Report

Project Group	Project	System Group	System	Sub System	Tag	Discipline	Status	Isolation Type	Isolation Description	Work Pe
BG Group-BGG	BG Group-Project Y-Project Y	040-Gas Compression	040.101-Frm BV ds SDV2010 to XV2042-2043	040.101.01-040.101.01	MBF-2010	Mechanical	Started	Skillet	Isolate Vessel MBF-2010 from 10in PG-AM-264	PTW-1015

Bulk Management > Isolations and Inhibits



Bulk Management > Isolations



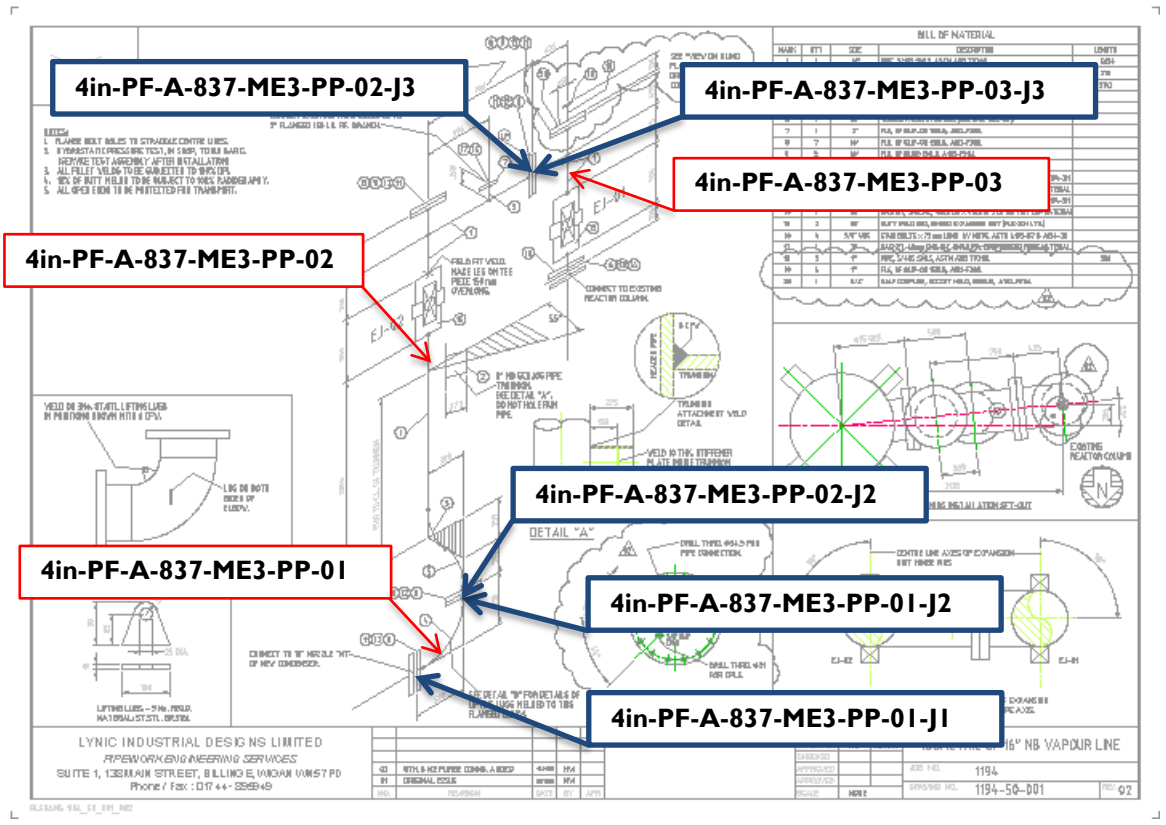
1.27 Custom Fields for Flange Management

The software needs to provide a Completion Management Flange Management capability that ensures all process system flanges are identified and have been mechanically completed in a controlled manner.

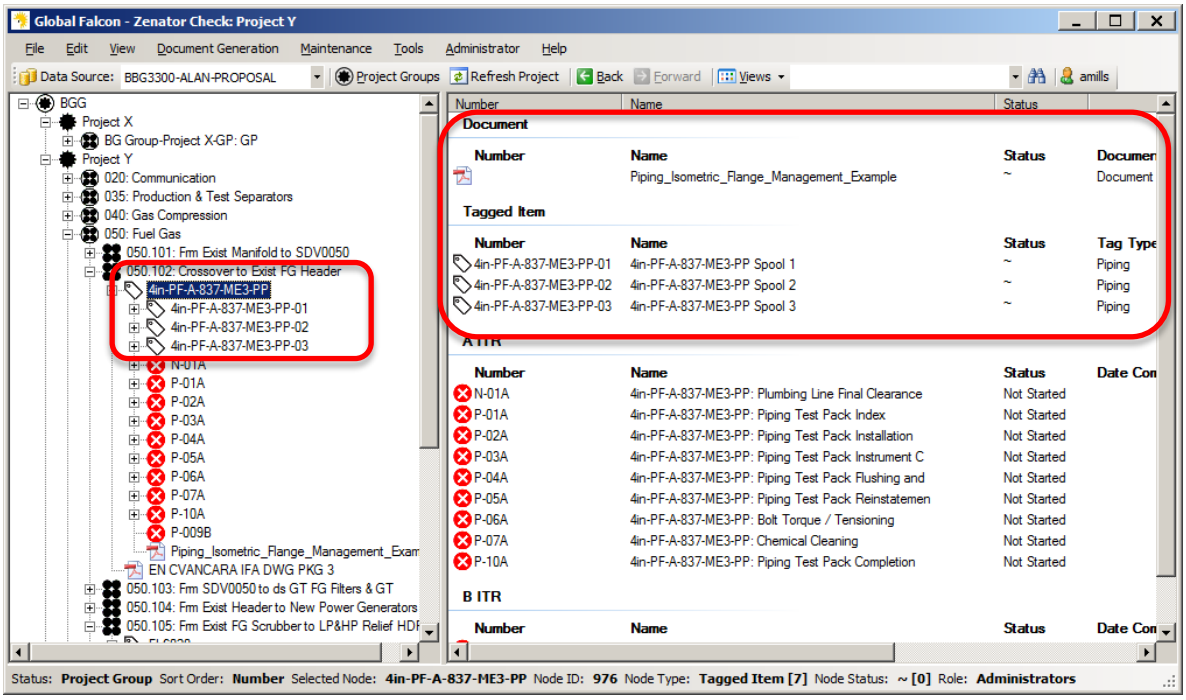
Flange Management and Complete Traceability

Zenator's Tag to Tag capabilities enables both Flange Management and complete traceability on every component, pipe fitting and welder identification. Proof of traceability can be extremely important and build confidence on projects in developing countries.

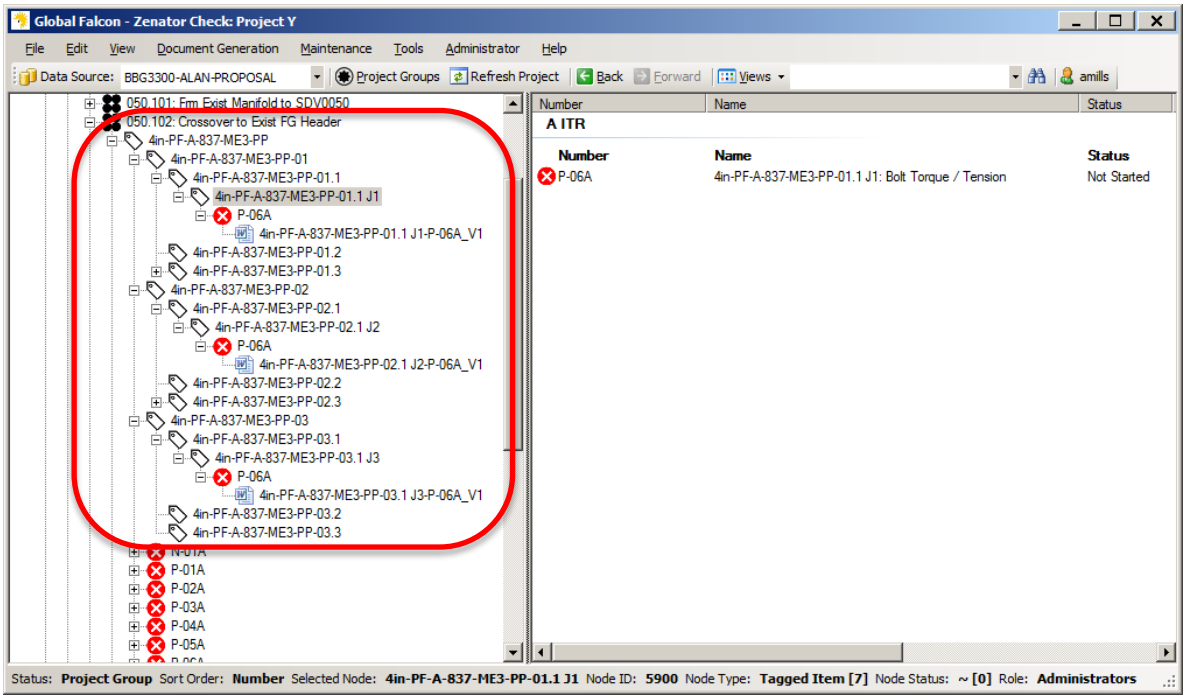
Example Isometric Showing 4in-PF-A-837-ME3 Spools 1 to 3 and Joints 1 to 3



4in-PF-A-837-ME3 and Spools 1 to 3



4in-PF-A-837-ME3, Spools 1 to 3, Joints 1 to 3 with P-06A on Downstream Flange



P-06A on Downstream Flange

	Mechanical Completion: Bolt Torque / Tensioning	P-06A Page 1 of 2

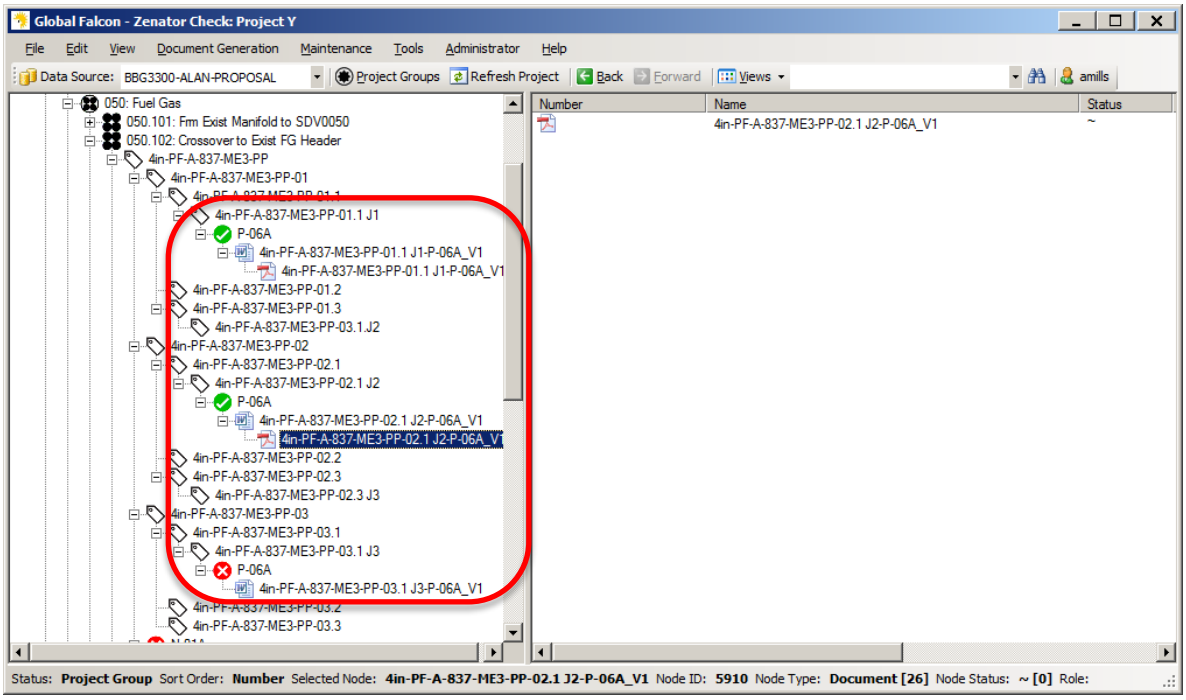
Project Name: Project Y **System Number:**050.102Crossover to Exist FG Header **Line Number:** 050.102Crossover to Exist FG Header **Test Description:** 050.102Crossover to Exist FG Header **P&ID No. :** **Unique ID No. :** 4in-PF-A-837-ME3-PP-02.1 J2-P-06A	**Test Pressure:** 050.102Crossover to Exist FG Header Bar G **Test Medium:** 050.102Crossover to Exist FG Header **Joint Number:** 050.102Crossover to Exist FG Header **Test Duration:** 050.102Crossover to Exist FG Header **Chemical Cleaning:** 050.102Crossover to Exist FG Header **Hot Oil Flush :** 050.102Crossover to Exist FG Header	**Test Pack No** 050.102Crossover to Exist FG Header **Sub System No(s).** 050.102Crossover to Exist FG Header

No.	Description of Check / Action to be made	Results	Initial / Sign	PLI No.
1	Initial Tension (30%) - value: N-mm			
2	Final Tension (100%) – value: N-mm			
3	Final Torque - N-mm			
4	Flange Identified and Marked			
5	Insulation Reinstalled			
6	Heat Tracing Reinstalled			
7	Attach Mark Up Drawing to show Torque value of Flanges tightened			

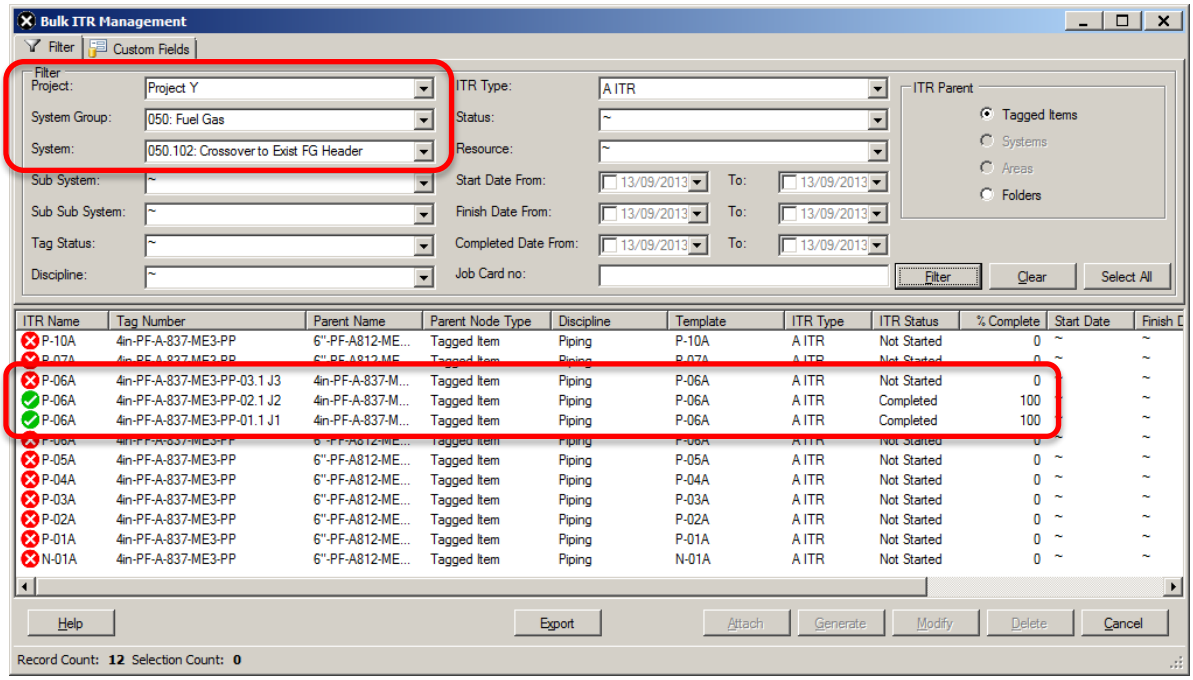
Remarks / Comments:

	Completed By	Approved By	Accepted By	ITR Input to Data Base
Company				
Signature				

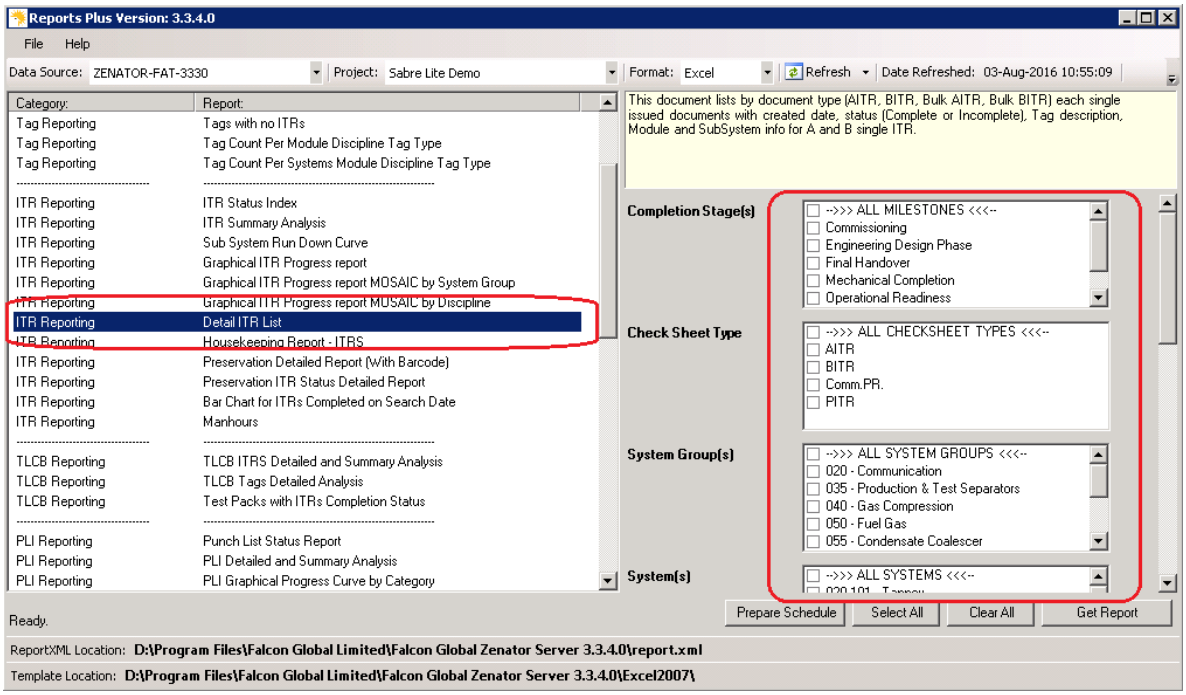
Complete Joints 1 & 2, P-06A on Downstream Flanges



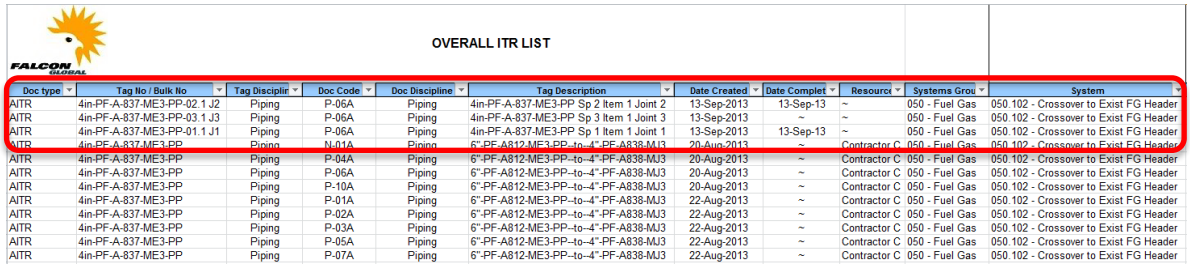
Bulk Management



Reports Plus, ITR Report for M-06A on Flanged Joints in System 050.102



Overall ITR Report, Filtered for AITRs in System 050.102



OVERALL ITR LIST

Doc type	Tag No / Bulk No	Tag Discipline	Doc Code	Doc Discipline	Tag Description	Date Created	Date Complet	Resource	Systems Grou	System
AITR	4in-PF-A-837-ME3-PP-02.1 J2	Piping	P-06A	Piping	4in-PF-A-837-ME3-PP Sp 2 Item 1 Joint 2	13-Sep-2013	13-Sep-13	~	050 - Fuel Gas	050.102 - Crossover to Exist FG Header
AITR	4in-PF-A-837-ME3-PP-03.1 J3	Piping	P-06A	Piping	4in-PF-A-837-ME3-PP Sp 3 Item 1 Joint 3	13-Sep-2013	~	~	050 - Fuel Gas	050.102 - Crossover to Exist FG Header
AITR	4in-PF-A-837-ME3-PP-01.1 J1	Piping	P-06A	Piping	4in-PF-A-837-ME3-PP Sp 1 Item 1 Joint 1	13-Sep-2013	13-Sep-13	~	050 - Fuel Gas	050.102 - Crossover to Exist FG Header
AITR	4in-PF-A-837-ME3-PP	Piping	N-01A	Piping	6"-PF-A812-ME3-PP--to--4"-PF-A838-MJ3	20-Aug-2013	~	Contractor C	050 - Fuel Gas	050.102 - Crossover to Exist FG Header
AITR	4in-PF-A-837-ME3-PP	Piping	P-04A	Piping	6"-PF-A812-ME3-PP--to--4"-PF-A838-MJ3	20-Aug-2013	~	Contractor C	050 - Fuel Gas	050.102 - Crossover to Exist FG Header
AITR	4in-PF-A-837-ME3-PP	Piping	P-06A	Piping	6"-PF-A812-ME3-PP--to--4"-PF-A838-MJ3	20-Aug-2013	~	Contractor C	050 - Fuel Gas	050.102 - Crossover to Exist FG Header
AITR	4in-PF-A-837-ME3-PP	Piping	P-10A	Piping	6"-PF-A812-ME3-PP--to--4"-PF-A838-MJ3	20-Aug-2013	~	Contractor C	050 - Fuel Gas	050.102 - Crossover to Exist FG Header
AITR	4in-PF-A-837-ME3-PP	Piping	P-01A	Piping	6"-PF-A812-ME3-PP--to--4"-PF-A838-MJ3	22-Aug-2013	~	Contractor C	050 - Fuel Gas	050.102 - Crossover to Exist FG Header
AITR	4in-PF-A-837-ME3-PP	Piping	P-02A	Piping	6"-PF-A812-ME3-PP--to--4"-PF-A838-MJ3	22-Aug-2013	~	Contractor C	050 - Fuel Gas	050.102 - Crossover to Exist FG Header
AITR	4in-PF-A-837-ME3-PP	Piping	P-03A	Piping	6"-PF-A812-ME3-PP--to--4"-PF-A838-MJ3	22-Aug-2013	~	Contractor C	050 - Fuel Gas	050.102 - Crossover to Exist FG Header
AITR	4in-PF-A-837-ME3-PP	Piping	P-05A	Piping	6"-PF-A812-ME3-PP--to--4"-PF-A838-MJ3	22-Aug-2013	~	Contractor C	050 - Fuel Gas	050.102 - Crossover to Exist FG Header
AITR	4in-PF-A-837-ME3-PP	Piping	P-07A	Piping	6"-PF-A812-ME3-PP--to--4"-PF-A838-MJ3	22-Aug-2013	~	Contractor C	050 - Fuel Gas	050.102 - Crossover to Exist FG Header

1.28 Pre-Startup Safety Review and Verification of Readiness

The software needs to provide a Pre-Startup Safety Review (PSSR) and Verification of Readiness (VoR) capability that ensures the facility, equipment item or Tagged Items meet the design or operating intent before being operated or started up.

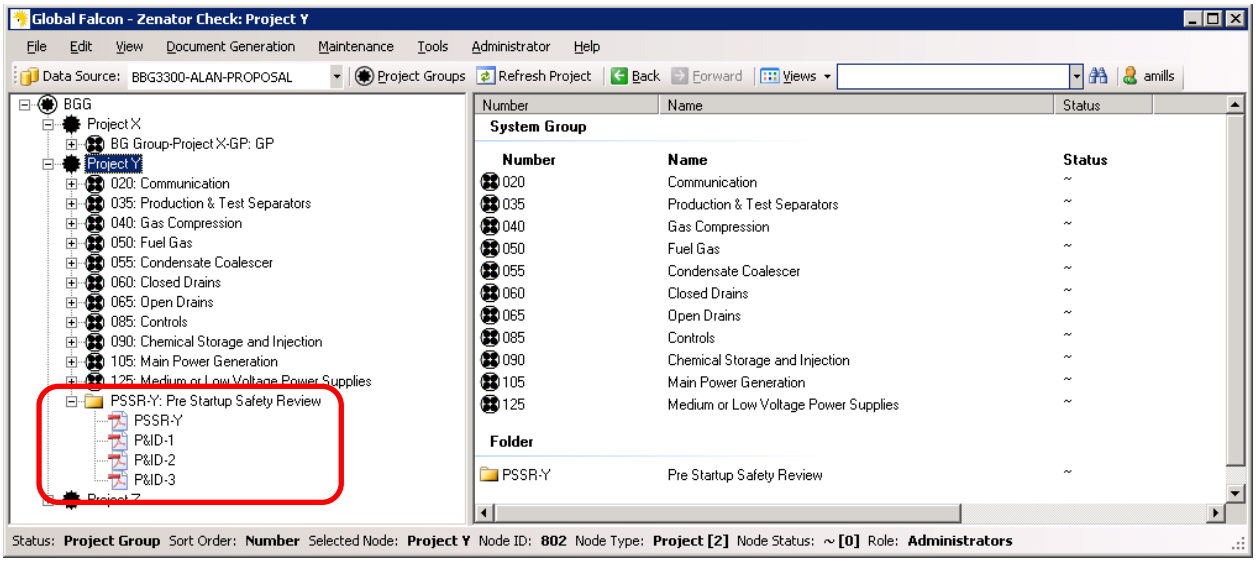
Conducting a Pre-Startup Safety Review a requirements of the Process Hazard Analysis (PHA, US) and Hazard Operability studies (HAZOP, UK) as well as being a likely component of an Operator's Safety Management system, and thereby deemed to be utilized on projects in countries outside the US and UK.

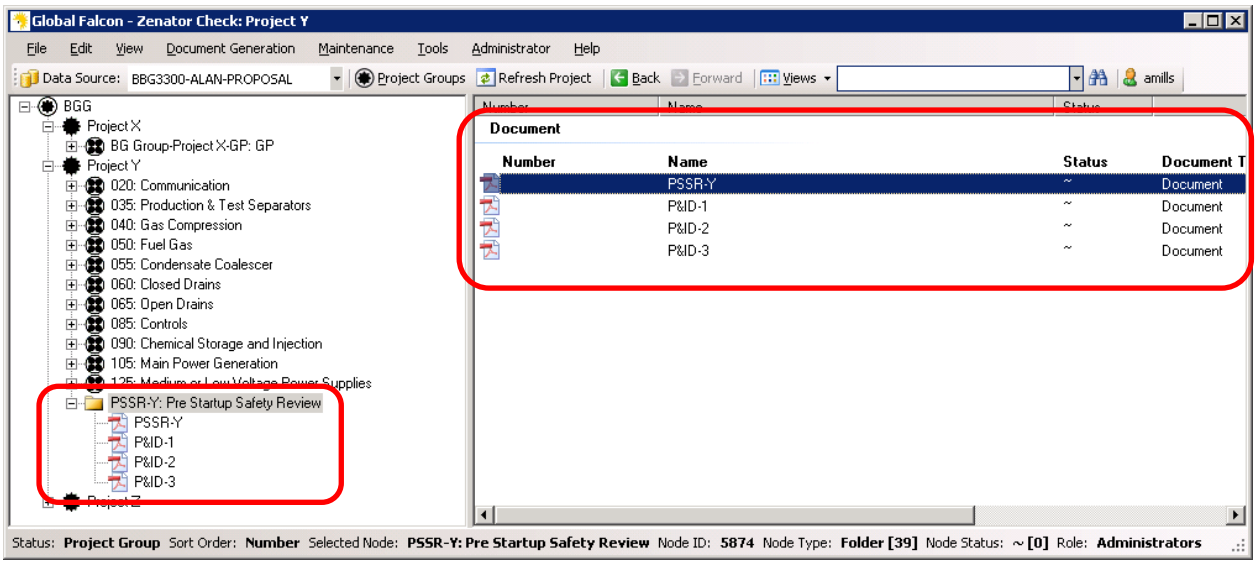
As previously described the WBS activities with their traffic light coding and direct relationship to the (Primavera) project schedule are a logical means of tracking the readiness of a facility or part of a facility to undergo a Pre-Startup Safety Review.

PSSR formats are usually specific and proprietary to each Operating company. We include in this section a generic example, courtesy of Wiley Online Library.

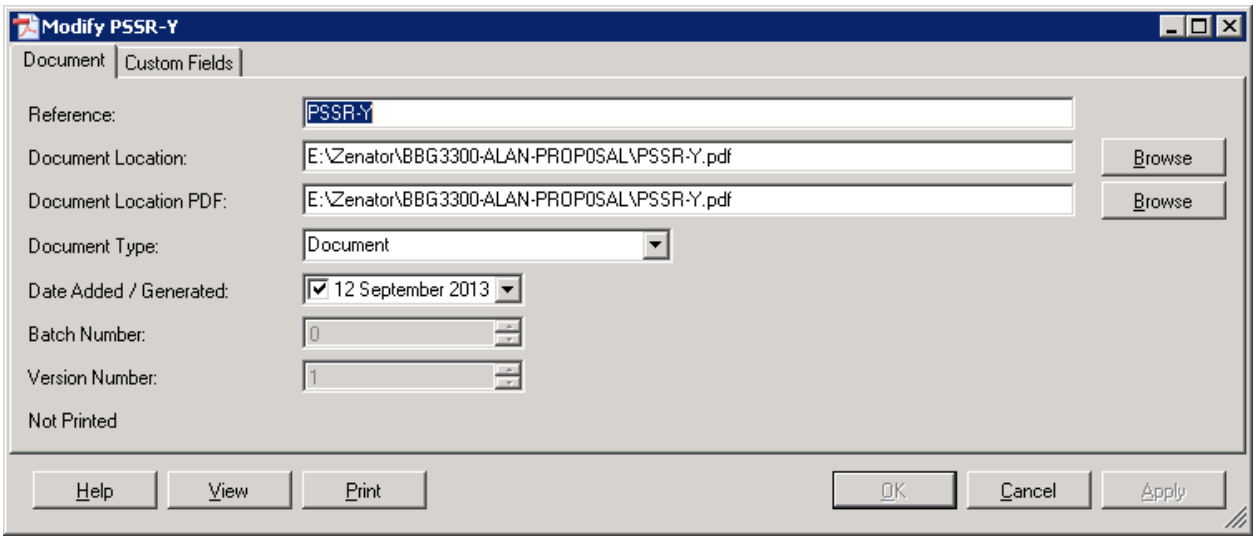
In Zenator, the PSSR can be attached directly to any System Group node or the Project itself. However, as the PSSR will typically have many reference documents, we recommend attaching a folder to the desired nodes (System Group or Project) giving this the PSSR document name and document number and filling the folder with the relevant reference documents.

PSSR Folder attached to Project Y





Attaching the PSSR into the designated Folder attached to Project Y



Cover page of Generic PSSR, reproduced here, courtesy of Wiley Online Library

Guidelines for Performing Effective Pre-Startup Safety Reviews
by Center for Chemical Process Safety

APPENDIX A – PSSR CHECKLIST EXAMPLES

Effective pre-startup safety review programs can use many different approaches to their checklist design. Several examples follow. Compare these against each other and evaluate their similarities and differences.

These examples can also serve as a reference for the various types of checklist items a facility might use as example to populate their own PSSR checklists, PSSR templates, or electronic PSSR software database items.

PSSR Checklist Example A-1

Description of System/Area Under Review	Date	Time

List of Participants	Circulation: those present plus...

Comments

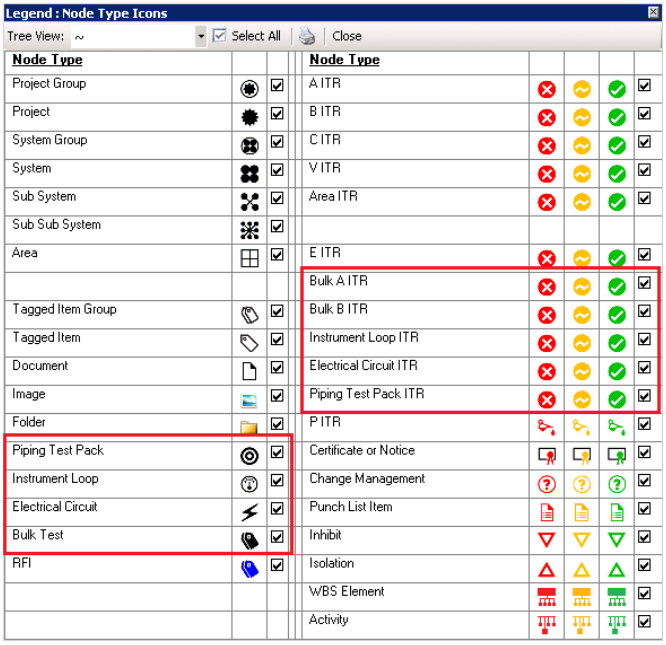
Item No.	Recommendation (Type Action Below or 'not applicable')	Department / Responsible Person	Completed Date
1.	Review HAZOP list for applicable actions		

1.29 Piping Test Packs, Instrument Loops, Electrical Circuits & Bulk Tests

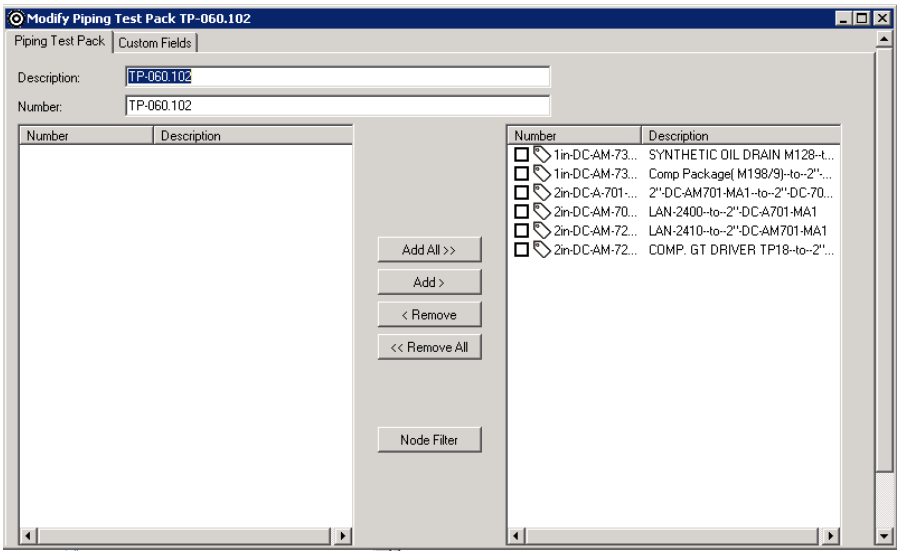
The software needs to have the ability to support the activities involved in Piping Test Packs, Instruments Loops and Electrical Circuits.

***Zenator** has a number of node / record types dedicated to support the above activities. These are:*

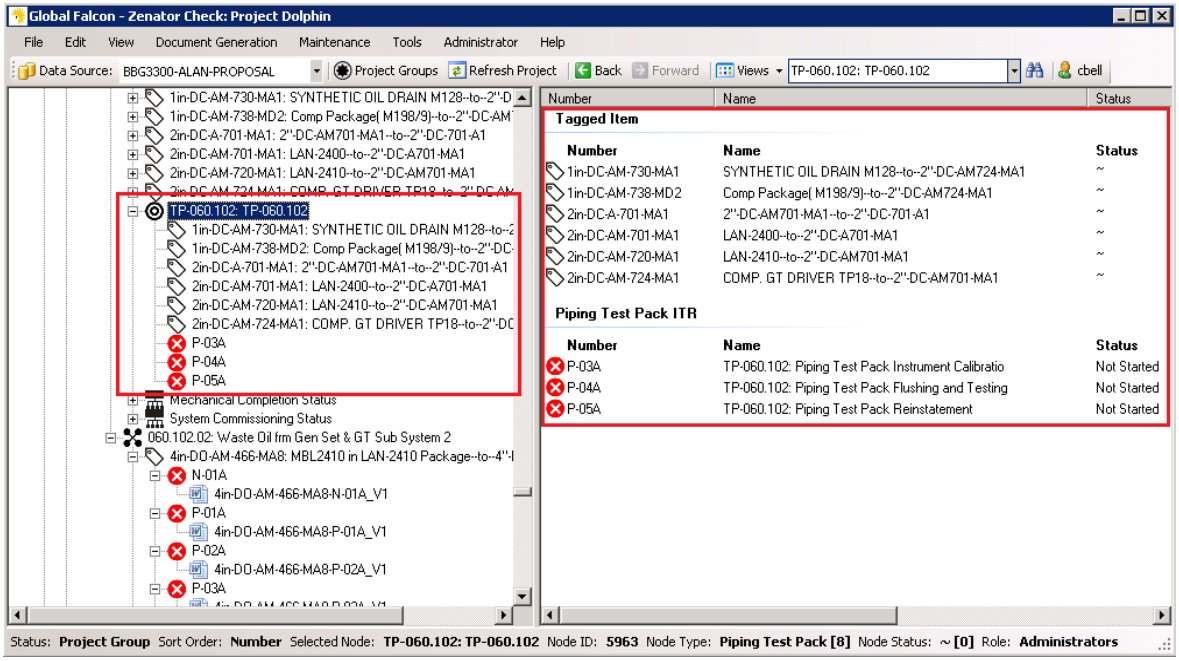
- *Piping Test Pack and its associated Piping Test Pack ITR*
- *Instrument Loop and its associated Instrument Loop ITR*
- *Electrical Circuit and its associated Electrical Circuit ITR*
- *Bulk Test and its associated Bulk AITR & Bulk BITR*



***Zenator** has specific functionality for the above node types as follows. Creation of Piping Test Packs, Instrument Loops, Electrical Circuits or Bulk Tests occurs in an easy to use screen which allows the user to search for the tags that are to be placed into the Piping Test Pack, Instrument Loop, Electrical Circuit or Bulk Test.*



The end result (for a Test Pack) in the project tree looks as follows:



These specific ITR nodes have an ITR Status in the normal way and can be reviewed on a variety of standard reports.

All the available ITR functionality exists to allow for the maintenance of these specialized records. This includes:

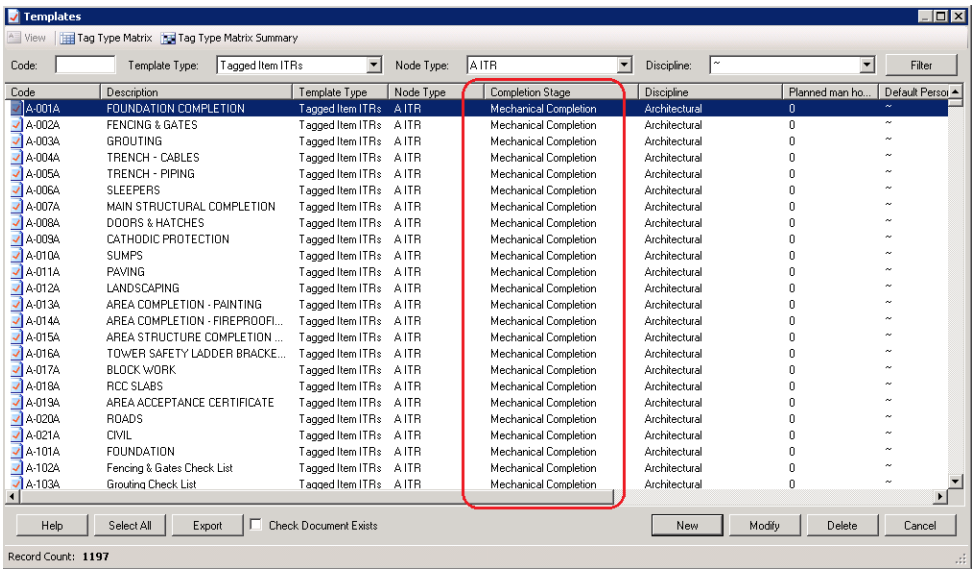
- *TLCB Wizard – Allows for the bulk ITR allocation and document generation for Test Packs, Instrument Loops, Electrical Circuits and Bulks.*
- *ITR Bulk Management screen*
- *Document Bulk Management screen*

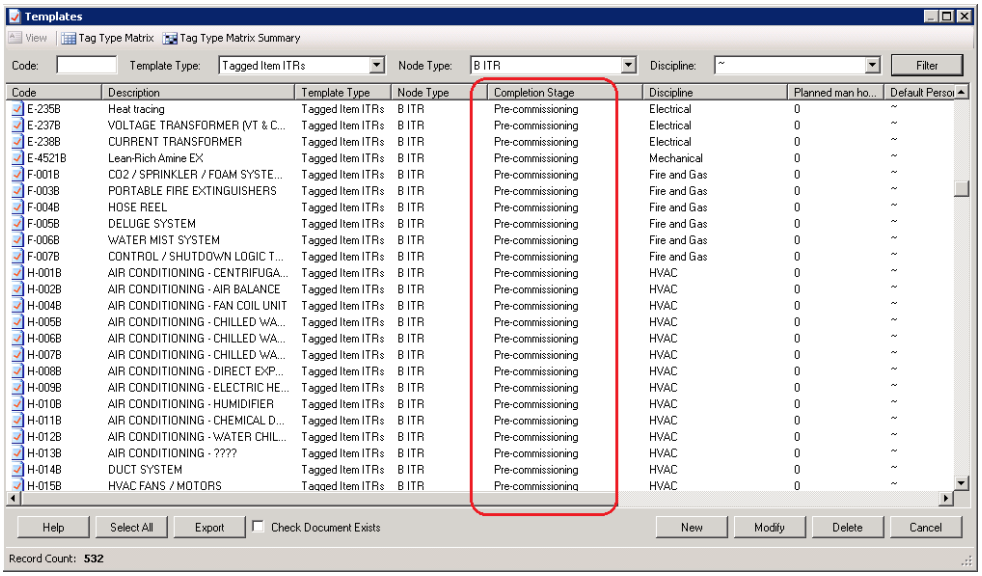
1.30 Certificate Allocation and Management

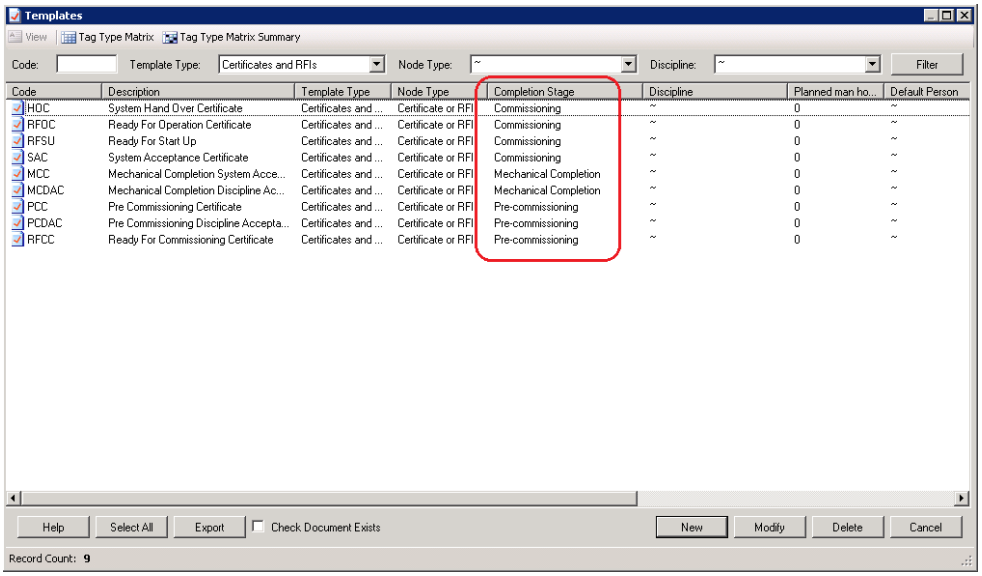
Zenator also contains a Certificate Wizard which allows certificates to be allocated to the project structure based on project defined certification rules.

Project Milestone / Completion Stage Configuration *is a pre-defined lookup which lays out the various project milestones (also known as completion stages). FGL or the project can adjust the names of these project milestones to match the projects definition. These project milestones can be assigned to all appropriate Zenator document templates by the project to match their required project stages. A typical example of this is as follows:*

- *AITRs – Mechanical Completion*
- *BITRs – Pre-commissioning (Static Commissioning)*
- *CITRs – Commissioning (Dynamic Commissioning)*
- *Piping Test Pack ITRs – Mechanical Completion / Pre-commissioning (Static Commissioning) as appropiate*
- *Instrument Loop ITRs – Mechanical Completion / Pre-commissioning (Static Commissioning) as appropiate*
- *Electrical Circuit ITRs – Mechanical Completion / Pre-commissioning (Static Commissioning) as appropiate*
- *Certificate Templates – these will be assigned across all the project stages as appropiate*

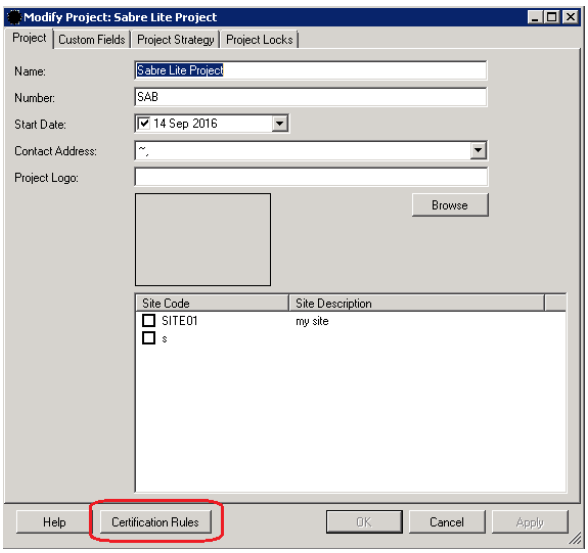




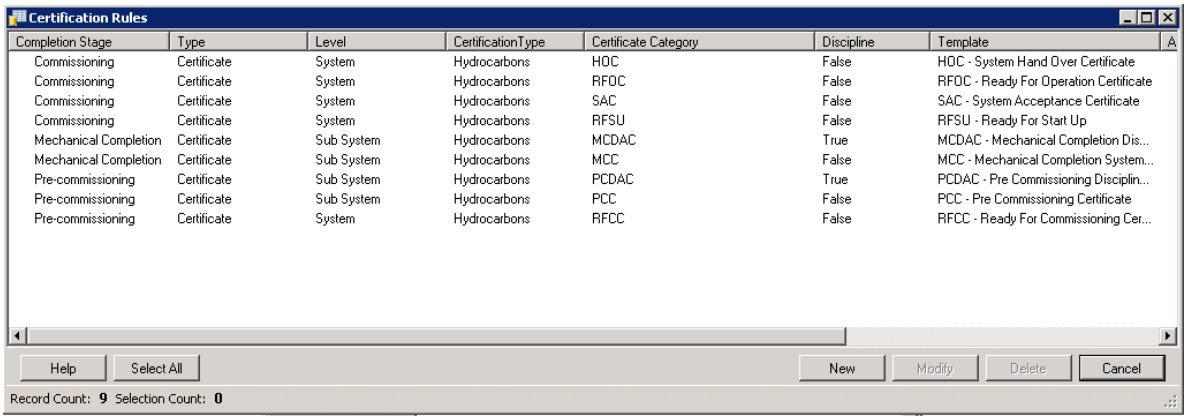


Certification Rules Configuration

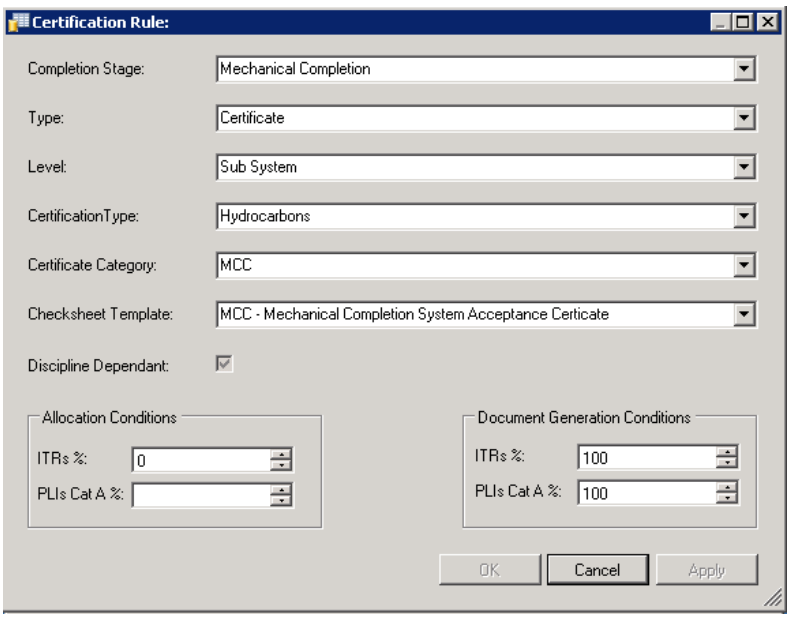
A project specific set of rules can be defined against each project within Zenator.



These user defined rules allow a project to defined rules which will allocate certificates as follows:



Each rule is as follows:



- *Project Milestone / Completion Stage – This is the specific completion stage to which the certificate is linked. During the evulation of ITR rules the completion stage links to the corresponding ITRs.*
- *Type – The certificate type lookup defines the possible values (for example "Certificate" and "Notices").*
- *Level – The level within the project tree to which the rule will be applied and to which the certificate will be allocated. Possible values are:*
  - *System Group*
  - *System*
  - *Sub System*
  - *Sub Sub System*
  - *Area*
- *Certification Type – The certification type lookup defines the possible values (for example "Hydrocarbons" and "Non Hydrocarbons"). This allows a project to separate the project struction intodifferent categories from a certification purpose.*
- *Certificate Category – The certificate category type lookup defines the possible values (for example "MCC" and "MCDAC"). These categories define if the related certificates are discipline or non discipline dependant.*

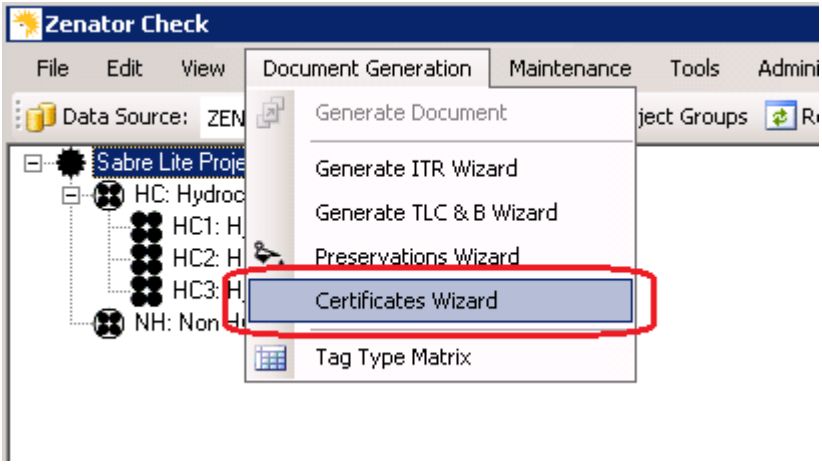
- *Checksheet Template – the actual certificate cemplate to be allocated by the rule.*
- *Discipline – a display only field derived from the certoificate category indicating if the certificate is discipline dependant or not.*
- *Allocate Conditions ITRs % – the ITR rule which controls when the certificate will be allocated into the project tree. This is a numeric value. When the number of ITRs for the indicated Completion Stage under the indicated Level is greater than this value then the certificate will be allocated. A value of zero will allocate when the first ITR is created under the relevant level.*
- *Allocate Conditions PLIs A % – the PLI rule which controls when the certificate will be allocated. This is a numeric value. When the number of PLIs for the indicated Completion Stage under the indicated Level is greater than this value then the certificate will be allocated. A value of blank disables this portion of the rule.*
- *Document Generation Conditions ITRs % – the ITR rule which controls when the certificate can be generate for issue. This is a numeric value. When the percentage closed of ITRs for the indicated Completion Stage under the indicated Level is greater than this value then the certificate document can be generated.*
- *Document Generation Conditions PLIs Cat A % – the PLI rule which controls when the certificate can be generate for issue. This is a numeric value. When the percentage closed of category A PLIs under the indicated Level is greater than this value then the certificate documet can be generated.*

For the above screen shot and the MCC – Mechanical Completion System Acceptance Certificate, the rules work as follows:

- *Allocation Conditions – this certificate will be allocated to Sub Systems when the first Mechanical Completion Checksheet are assigned to Sub Systems. A blank value here ensures that PLI will have no effect on the allocation of certificates.*
- *Document Generation Conditions – this certificate can have its document generated for issuing when both the percentage completion for ITRs and Category A PLIs gets to 100% complete.*

Certificate Wizard

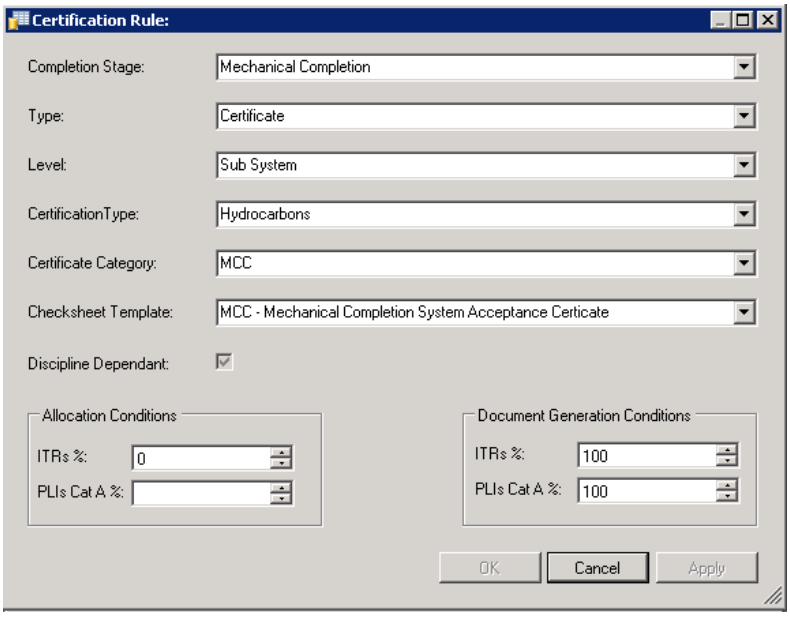
The Certificate Wizard when executed will evaluate all the project rules against the project tree and underlying data. As ITRs are created the wizard will Allocate certificates against the project tree structure.



Certification Management - Closing

Certificates once generated can be closed using the normal Zenator processes using Zenator Allocator or closing manually within the project tree or Bulk Management Certificate screen.

Once a Certificate is closed the rules controlling the Generation of the Certificate will also act to lock down the Systems or Sub Systems that the Closed Certificate belongs to.



For the above screen shot and the MCC – Mechanical Completion System Acceptance Certificate, a closed Certificate will cause the following lockdown against that Sub System:

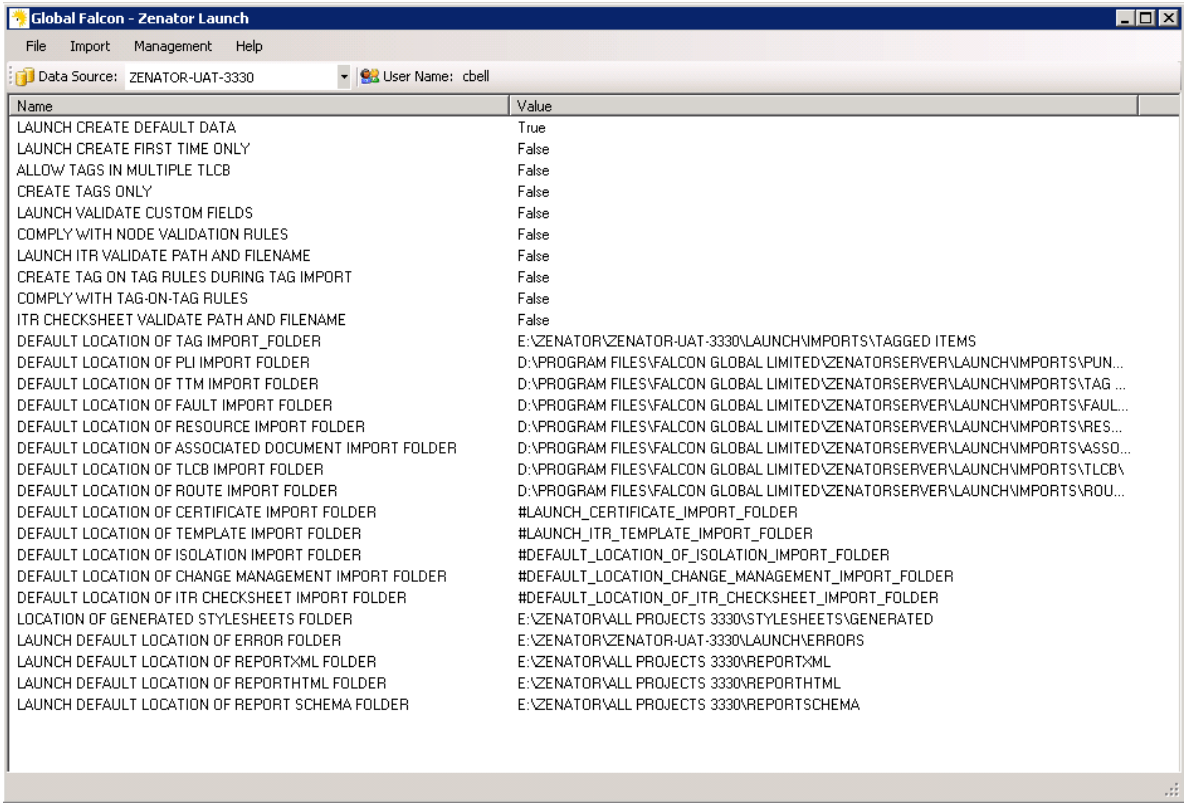
- *Zenator will not allow any further Mechanical Completion ITRs to be created within the Sub System including any Sub Sub Systems within it.*
- *Zenator will not allow any further Category A Punch List Items to be created within the Sub System including any Sub Sub Systems within it.*

Security controls within the Role Security Wizard allow the Zenator Administrator to control who can override the above rules.

1.31 Zenator Launch – Data Importing

The software needs to have the ability to import relevant data into the database such as Tagged Item Engineering data, Punch List data, Linked Documents, etc.

***Launch** is supplied with Zenator Systems and is used to perform all the data importing through the life of a project.*

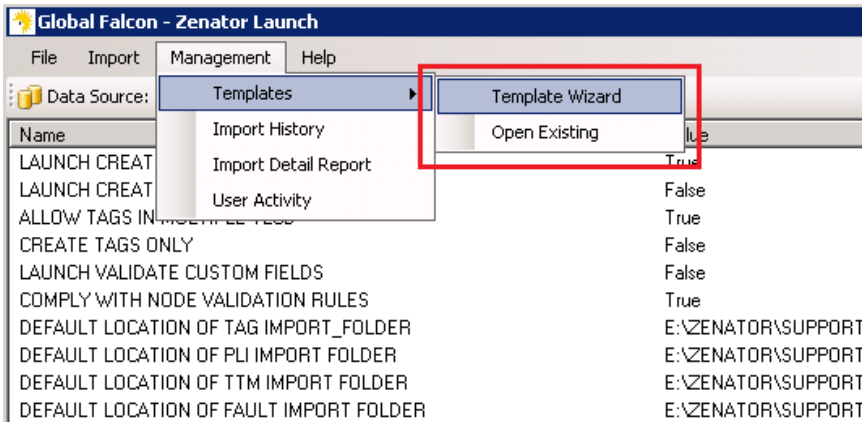


Name	Value
LAUNCH CREATE DEFAULT DATA	True
LAUNCH CREATE FIRST TIME ONLY	False
ALLOW TAGS IN MULTIPLE TLCB	False
CREATE TAGS ONLY	False
LAUNCH VALIDATE CUSTOM FIELDS	False
COMPLY WITH NODE VALIDATION RULES	False
LAUNCH ITR VALIDATE PATH AND FILENAME	False
CREATE TAG ON TAG RULES DURING TAG IMPORT	False
COMPLY WITH TAG-ON-TAG RULES	False
ITR CHECKSHEET VALIDATE PATH AND FILENAME	False
DEFAULT LOCATION OF TAG IMPORT_FOLDER	E:\ZENATOR\ZENATOR-UAT-3330\LAUNCH\IMPORTS\TAGGED ITEMS
DEFAULT LOCATION OF PLI IMPORT FOLDER	D:\PROGRAM FILES\FALCON GLOBAL LIMITED\ZENATORSERVER\LAUNCH\IMPORTS\PUN...
DEFAULT LOCATION OF TTM IMPORT FOLDER	D:\PROGRAM FILES\FALCON GLOBAL LIMITED\ZENATORSERVER\LAUNCH\IMPORTS\TAG ...
DEFAULT LOCATION OF FAULT IMPORT FOLDER	D:\PROGRAM FILES\FALCON GLOBAL LIMITED\ZENATORSERVER\LAUNCH\IMPORTS\FAUL...
DEFAULT LOCATION OF RESOURCE IMPORT FOLDER	D:\PROGRAM FILES\FALCON GLOBAL LIMITED\ZENATORSERVER\LAUNCH\IMPORTS\RES...
DEFAULT LOCATION OF ASSOCIATED DOCUMENT IMPORT FOLDER	D:\PROGRAM FILES\FALCON GLOBAL LIMITED\ZENATORSERVER\LAUNCH\IMPORTS\ASSO...
DEFAULT LOCATION OF TLCB IMPORT FOLDER	D:\PROGRAM FILES\FALCON GLOBAL LIMITED\ZENATORSERVER\LAUNCH\IMPORTS\TLCB\
DEFAULT LOCATION OF ROUTE IMPORT FOLDER	D:\PROGRAM FILES\FALCON GLOBAL LIMITED\ZENATORSERVER\LAUNCH\IMPORTS\ROU...
DEFAULT LOCATION OF CERTIFICATE IMPORT FOLDER	#LAUNCH_CERTIFICATE_IMPORT_FOLDER
DEFAULT LOCATION OF TEMPLATE IMPORT FOLDER	#LAUNCH_ITR_TEMPLATE_IMPORT_FOLDER
DEFAULT LOCATION OF ISOLATION IMPORT FOLDER	#DEFAULT_LOCATION_OF_ISOLATION_IMPORT_FOLDER
DEFAULT LOCATION OF CHANGE MANAGEMENT IMPORT FOLDER	#DEFAULT_LOCATION_CHANGE_MANAGEMENT_IMPORT_FOLDER
DEFAULT LOCATION OF ITR CHECKSHEET IMPORT FOLDER	#DEFAULT_LOCATION_OF_ITR_CHECKSHEET_IMPORT_FOLDER
LOCATION OF GENERATED STYLESHEETS FOLDER	E:\ZENATOR\ALL PROJECTS 3330\STYLESHEETS\GENERATED
LAUNCH DEFAULT LOCATION OF ERROR FOLDER	E:\ZENATOR\ZENATOR-UAT-3330\LAUNCH\ERRORS
LAUNCH DEFAULT LOCATION OF REPORTXML FOLDER	E:\ZENATOR\ALL PROJECTS 3330\REPORTXML
LAUNCH DEFAULT LOCATION OF REPORTHTML FOLDER	E:\ZENATOR\ALL PROJECTS 3330\REPORTHTML
LAUNCH DEFAULT LOCATION OF REPORT SCHEMA FOLDER	E:\ZENATOR\ALL PROJECTS 3330\REPORTSCHEMA

The following imports are available for use:

- *Tagged Items Import (Engineering data)*
- *Tagged Items Update Import*
- *Punch List Import*
- *Tag Type Matrix Import*
- *Piping Test Pack Import*
- *Instrument Loop Import*
- *Electrical Circuit Import*
- *ITR Checksheet Import*
- *Certificate Import*
- *Document Import*
- *Route Import (Planning Information)*
- *Resource Import*
- *Punch List Fault Code Import*
- *Checksheet Template Import*

All imports are from Microsoft Excel. Options within Launch allow the creation of Import Templates which describe to Launch the layout of the import files.



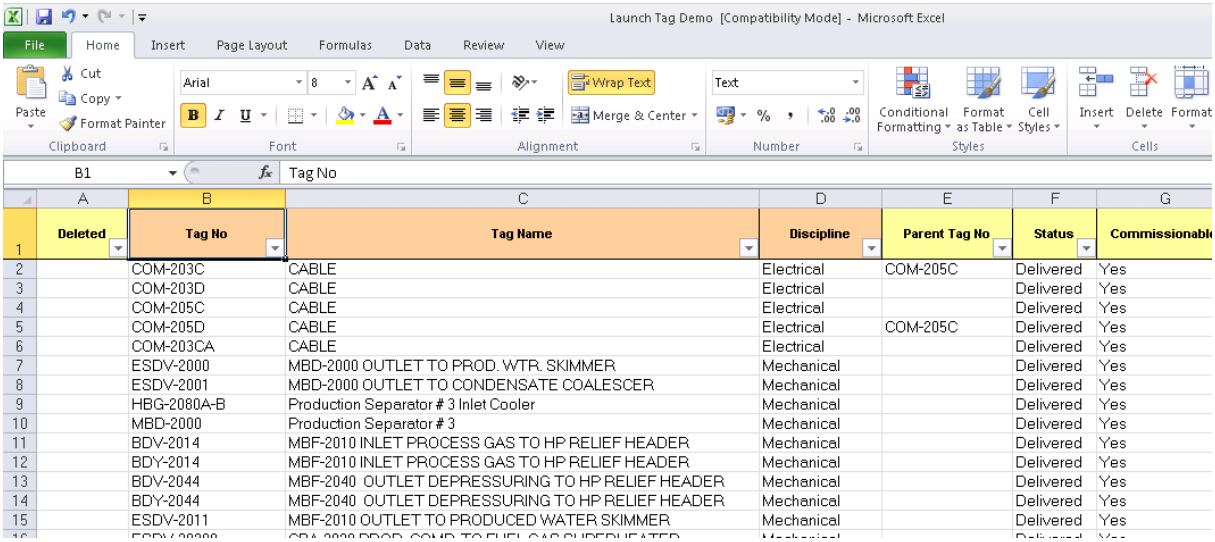
Processing a Tagged Item Import

A typical Tag Import from an Excel spreadsheet would allow the import of the following fields:

- *Tag Number (Mandatory)*
- *Tag Name (Mandatory)*
- *Discipline (Mandatory)*
- *Parent Tag Number*
- *Status*
- *Commissionable*
- *Location*
- *Module*
- *Service*
- *Is Maintainable Indicator*
- *Production Critical Indicator*
- *Safety Critical Indicator*
- *Serial Number*
- *Purchase Order Number*
- *Manufacturer*
- *Replacement Value*
- *Primary Drawing Reference*
- *Loop Number*
- *Test Pack Number*
- *Circuit Number*
- *Tag Type Main (Mandatory)*
- *Tag Type (Mandatory)*
- *System Group Name (Mandatory)*
- *System Group Number (Mandatory)*
- *System Name (Mandatory)*
- *System Number (Mandatory)*
- *Sub System Name*
- *Sub System Number*
- *Sub Sub System Name*

- *Sub Sub System Number*
- *Project Group (Mandatory)*
- *Project Group Number (Mandatory)*
- *Project (Mandatory)*
- *Project Number (Mandatory)*
- *From Tag*
- *To Tag*
- *Any Additional User Define Custom Fields*

The Excel file would look similar to the following:



Launch Tag Demo [Compatibility Mode] - Microsoft Excel

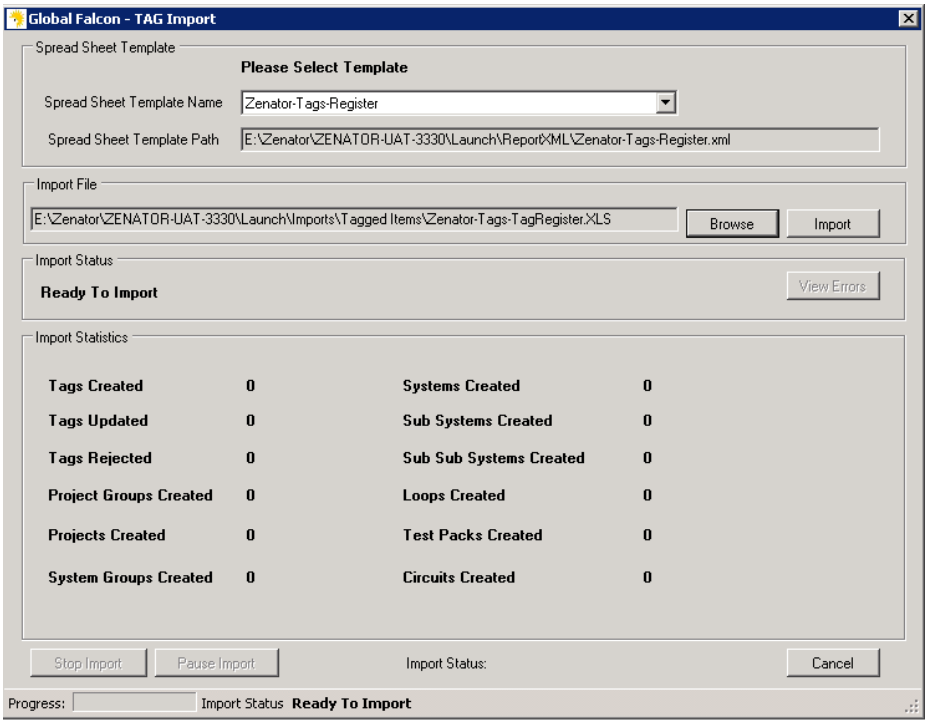
File | Home | Insert | Page Layout | Formulas | Data | Review | View

Cut, Copy, Format Painter, Paste — Clipboard | Arial, 8, Wrap Text, Merge & Center — Font, Alignment | Text — Number | Conditional Formatting, Format as Table, Cell Styles — Styles | Insert, Delete, Format — Cells

B1 | Tag No

	A	B	C	D	E	F	G
1	Deleted	Tag No	Tag Name	Discipline	Parent Tag No	Status	Commissionabl
2		COM-203C	CABLE	Electrical	COM-205C	Delivered	Yes
3		COM-203D	CABLE	Electrical		Delivered	Yes
4		COM-205C	CABLE	Electrical		Delivered	Yes
5		COM-205D	CABLE	Electrical	COM-205C	Delivered	Yes
6		COM-203CA	CABLE	Electrical		Delivered	Yes
7		ESDV-2000	MBD-2000 OUTLET TO PROD. WTR. SKIMMER	Mechanical		Delivered	Yes
8		ESDV-2001	MBD-2000 OUTLET TO CONDENSATE COALESCER	Mechanical		Delivered	Yes
9		HBG-2080A-B	Production Separator # 3 Inlet Cooler	Mechanical		Delivered	Yes
10		MBD-2000	Production Separator # 3	Mechanical		Delivered	Yes
11		BDV-2014	MBF-2010 INLET PROCESS GAS TO HP RELIEF HEADER	Mechanical		Delivered	Yes
12		BDY-2014	MBF-2010 INLET PROCESS GAS TO HP RELIEF HEADER	Mechanical		Delivered	Yes
13		BDV-2044	MBF-2040 OUTLET DEPRESSURING TO HP RELIEF HEADER	Mechanical		Delivered	Yes
14		BDY-2044	MBF-2040 OUTLET DEPRESSURING TO HP RELIEF HEADER	Mechanical		Delivered	Yes
15		ESDV-2011	MBF-2010 OUTLET TO PRODUCED WATER SKIMMER	Mechanical		Delivered	Yes

*To import the above file the user would select the **Imports / Tag** menu option, selects the appropriate Import Template, selects the import file and starts the import:*



Global Falcon - TAG Import

Spread Sheet Template

Please Select Template

Spread Sheet Template Name: Zenator-Tags-Register

Spread Sheet Template Path: E:\Zenator\ZENATOR-UAT-3330\Launch\ReportXML\Zenator-Tags-Register.xml

Import File

E:\Zenator\ZENATOR-UAT-3330\Launch\Imports\Tagged Items\Zenator-Tags-TagRegister.XLS | Browse | Import

Import Status

Ready To Import | View Errors

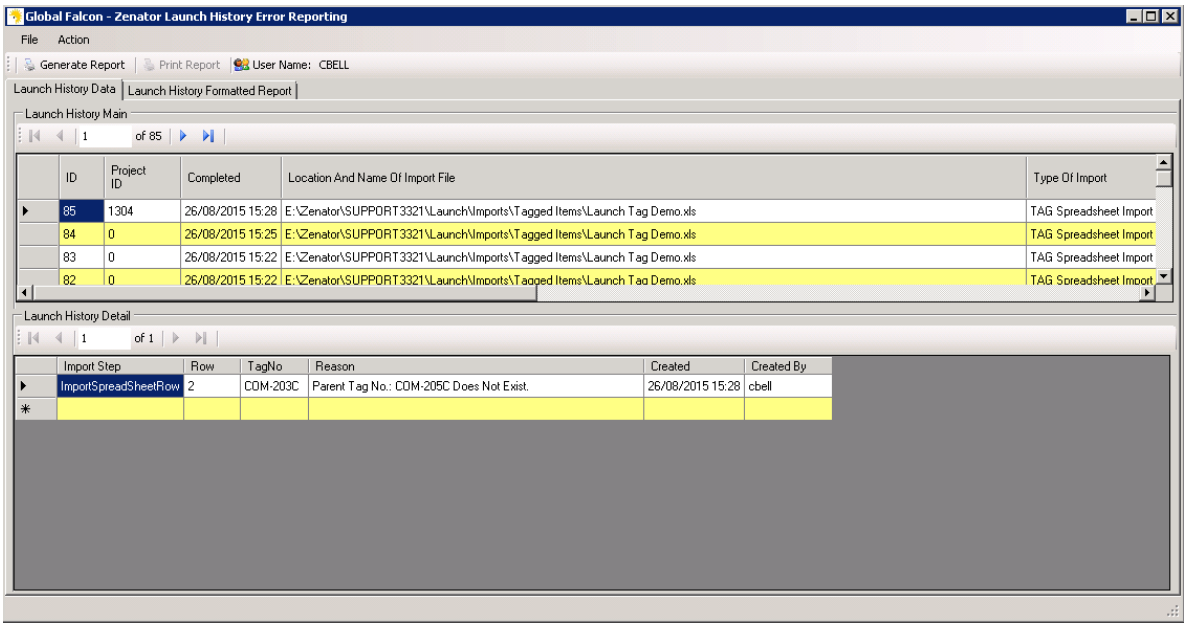
Import Statistics

Tags Created	0	Systems Created	0
Tags Updated	0	Sub Systems Created	0
Tags Rejected	0	Sub Sub Systems Created	0
Project Groups Created	0	Loops Created	0
Projects Created	0	Test Packs Created	0
System Groups Created	0	Circuits Created	0

Stop Import | Pause Import | Import Status: | Cancel

Progress: | Import Status Ready To Import

The import process will provide a status count of its progress during the import process. Data is validated during the import. Valid records will be created within the specified project and invalid records will be rejected. A detailed import report is created detailing all the rejected record with the reason for the rejection.

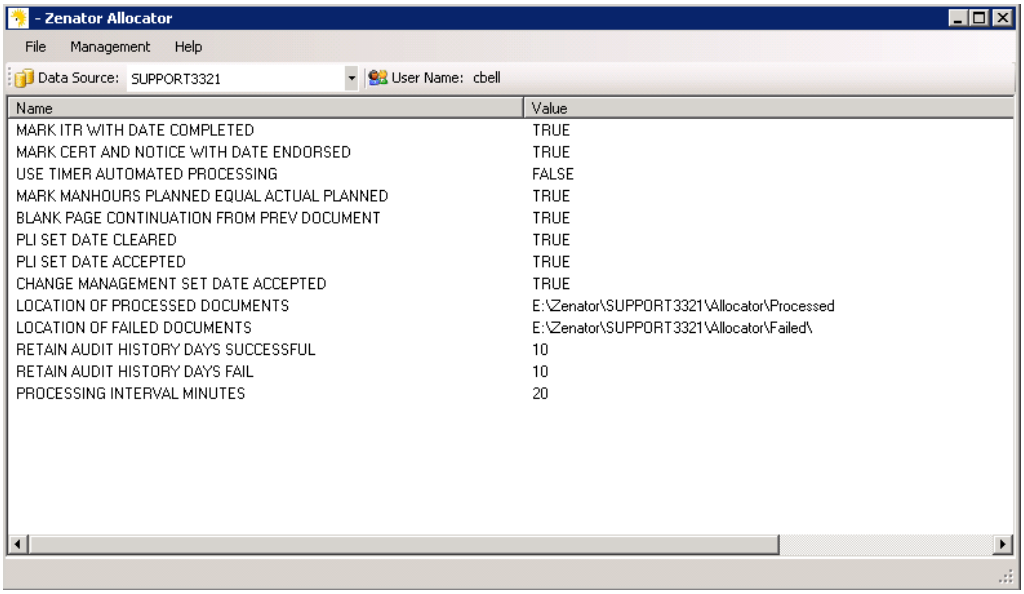


All imports within Launch work in a similar manner providing an easy to use data import method.

1.32 Zenator Allocator – Completed Document Processing

The software needs to have the ability to process completed documents (Checksheets, Certificates, etc) in an easy and automated manner.

Allocator *is supplied with Zenator Systems and is used to process all completed Zenator generated documents. All Zenator generated documents contain a barcode to allow for easy processing of the completed documents. Allocator is designed to process PDF files whither from the result of scanning physical paper ITRs or the electronically completed ITRs.*



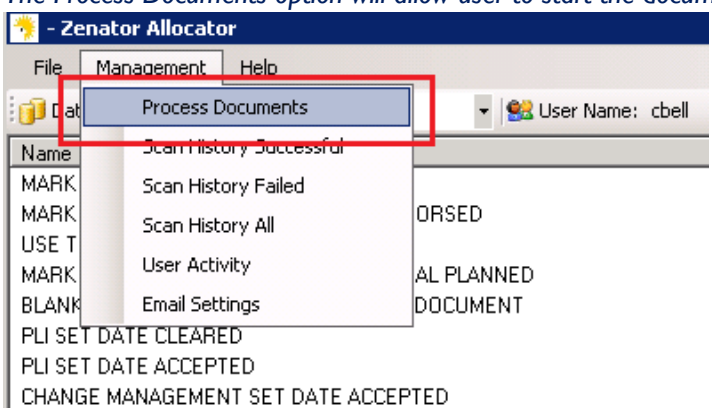
Completed Document Preparation

Documents (ITR Checksheets, Certificates, etc.) in paper form once completed and signed off should be scanned to PDF. This normally occurs in batches and can occur in either Color or Black & White depending on the project requirements. Scanned batches can contain any mixed combinations of documents (AITRs, BITRs, CITRs, Certificates, etc.).

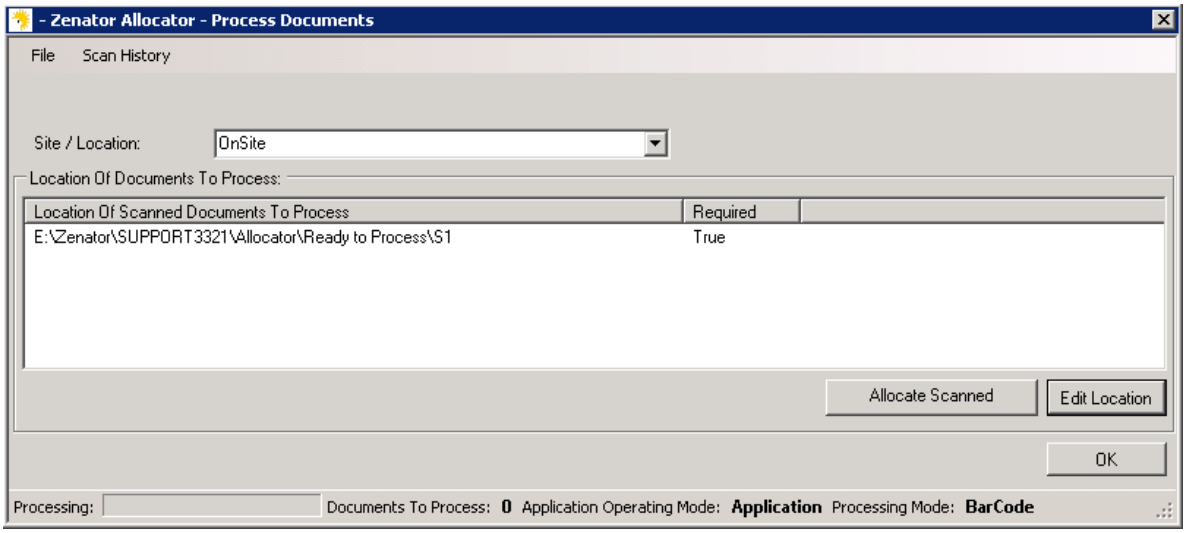
The resulting PDF files are then copied into a dedicated folder reserved for that project / location. In the case of remote locations accessing Zenator via Citrix scripting can be used to automate the transfer from the local location over a WAN connection.

Scanned Document Processing

The Process Documents option will allow user to start the document processing within Allocator.

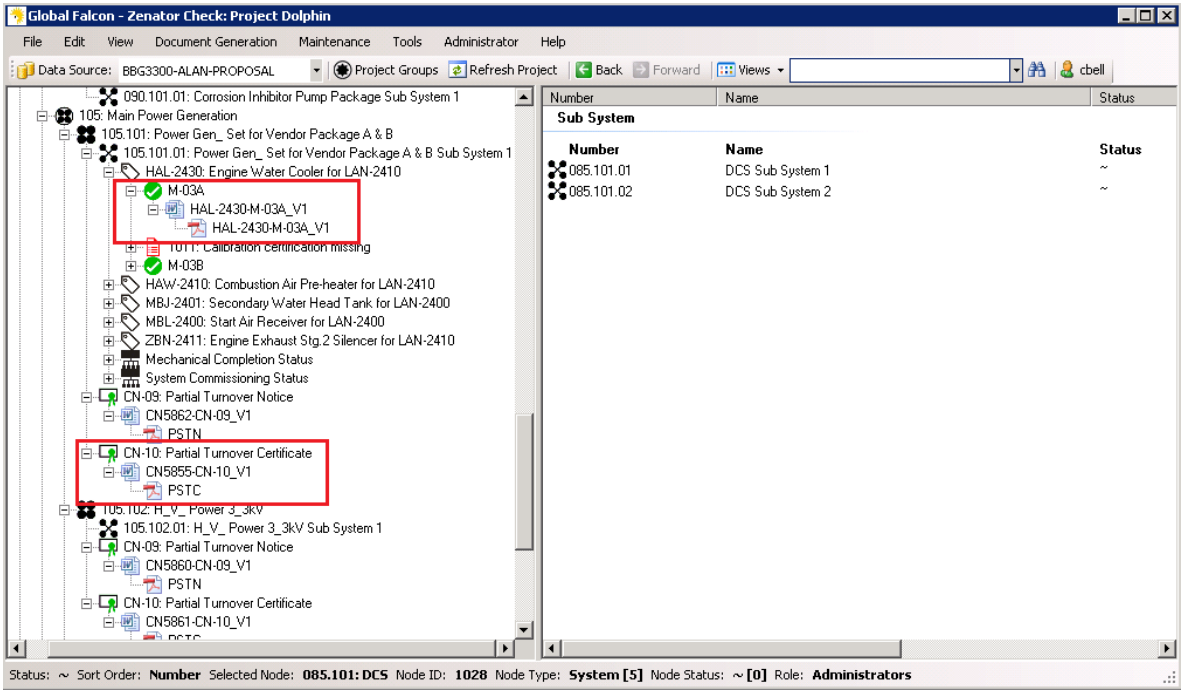


*The Process Documents window supports multiple Sites / Locations and each location supports multiple folder locations. Clicking on the **Allocate Scanned** button will process all PDF files within all listed folders for the select site / location.*



*The Process Documents window supports multiple Sites / Locations and each location supports multiple folder locations. Clicking on the **Allocate Scanned** button will process all PDF files within all listed folders for the select site / location.*

Using the Zenator barcode within each document Allocator will split up the PDF as required into each separate AITR, BITR, CITR, etc. and link the resulting document to the project tree. Depending on the configuration settings for Allocator ITRs, certificates, etc. can be marked automatically as complete.



1.33 Zenator Reports Plus – Reporting Examples

The software needs to have a standard suite of project reports appropriate to the Oil and Gas work environment, providing reporting capabilities of equipment, sub-systems and systems calibration, testing & certification status, readiness state and overall progress.

(1) allow projects to run their own reporting template and also define a minimum content of each check sheet and associated report

(2) include KPIs and associated performance against KPIs plus.

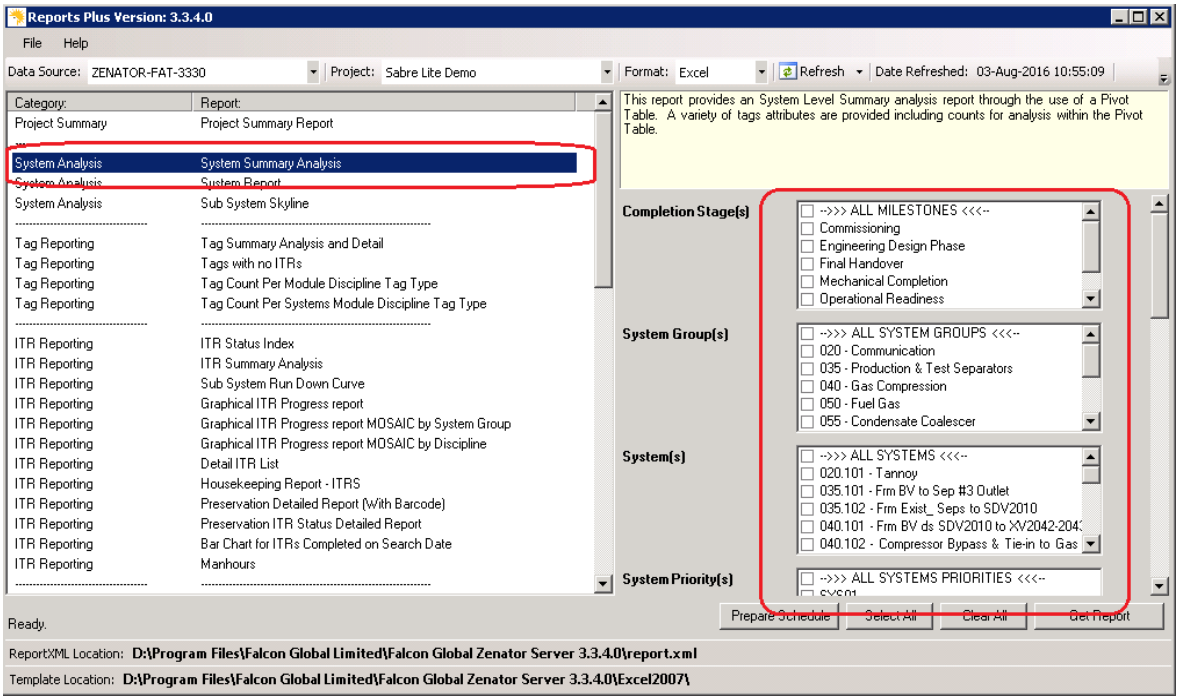
Reports Plus *is supplied with Zenator Systems. All reports are produced in Excel with xls, xlsx and xlsm formats supported.*

Report types are tabular, graphical and pivot table with detailed and summary tabs.

All reports are configurable and contain filters.

Depending on project requirements, users with requisite privileges can:

- *produce reports from 41 formats making configurable selections (basic)*
- *modify the reporting templates supplied with Zenator to suit project requirements (intermediate)*
- *produce custom reporting templates to suit project or customer requirements (advanced – knowledge of SQL needed)*



The following report samples are just a small sample of the total suite of standard reports to show the following styles:

- *Pivot Table Analysis*
- *Graphical*
- *Detailed Listing*

An example of a management report using an Excel Pivot table. *The pivot table allows the core statistical counts to be analyzed by a large number of file attributes such as:*

- *Project Group*
- *Project Name*
- *System Group*
- *System*
- *System Priority (Milestone)*
- *Sub System*
- *Sub System Priority (Milestone)*
- *Sub Sub System*
- *Sub Sub System Priority (Milestone)*
- *Discipline*
- *Module*
- *Tag Type Main*
- *Tag Type*
- *Checksheet Code*
- *Resource*
- *ITR Status*

KPI Report of Contractor Performance to Scope – Report 1

ITR Analysis Summary Report

Project Group	BGG
Project Name	Project Y
Status	(All)

Resource	Node Type	Total	Not Started	% Not Started	Started	% Started	Completed	% Completed	Planned Hrs	Actual Hrs	% Actual Hrs
Contractor A											
	AITR	128	63	49.22%	28	21.88%	37	28.91%	156	65	41.67%
	BITR	30	10	33.33%	6	20.00%	14	46.67%	36	20	55.56%
Contractor B											
	AITR	128	73	57.03%	17	13.28%	38	29.69%	145	55	37.93%
	BITR	96	36	37.50%	26	27.08%	34	35.42%	123	61	49.59%
Contractor C											
	AITR	191	151	79.06%	6	3.14%	34	17.80%	207	40	19.32%
	BITR	20	4	20.00%	8	40.00%	8	40.00%	28	16	57.14%
Grand Total		593	337	56.83%	91	15.35%	165	27.82%	695	257	36.98%

ITR Comparative Analysis | **ITR Analysis Summary** | Historical Data

KPI Report of Contractor Performance to Scope – Report 2

ITR Analysis Summary Report

Project Group	BGG
Project Name	Project Y
Status	(All)

Resource	Node Type	System	Total	Not Started	% Not Started	Started	% Started	Completed	% Completed	Planned Hrs	Actual Hrs	% Actual Hrs
Contractor A												
	AITR											
		040.101-Frm BV ds SDV2010 to XV2042-2043	4	0	0.00%	4	100.00%	0	0.00%	6	3	50.00%
		040.103-Compressor & Gas Turbine Vendor Package	46	15	32.61%	9	19.57%	22	47.83%	55	31	56.36%
		040.104-Compressor & GT Ancillaries	60	29	48.33%	17	28.33%	14	23.33%	77	31	40.26%
		050.105-Frm Exist FG Scrubber to LP&HP Relief HDR	4	4	100.00%	0	0.00%	0	0.00%	4	0	0.00%
		060.101-New Equipment Drainage	6	6	100.00%	0	0.00%	0	0.00%	6	0	0.00%
		060.102-Waste Oil frm Gen Set & GT	8	8	100.00%	0	0.00%	0	0.00%	8	0	0.00%
	AITR Total		128	62	48.44%	30	23.44%	36	28.13%	156	65	41.67%
	BITR											
		040.103-Compressor & Gas Turbine Vendor Package	9	2	22.22%	1	11.11%	6	66.67%	10	7	70.00%
		040.104-Compressor & GT Ancillaries	21	8	38.10%	5	23.81%	8	38.10%	26	13	50.00%
	BITR Total		30	10	33.33%	6	20.00%	14	46.67%	36	20	55.56%
Contractor B												

ITR Comparative Analysis | **ITR Analysis Summary** | Historical Data

KPI Report of Contractor Performance to Scope – Report 3

Project Group	BGG
Project Name	Project Y
Status	(All)

Resource	Node Type	System Group	System	Total	Not Started	% Not Started	Started	% Started	Completed	% Completed	Planned Hrs	Actual
Contractor A												
	AITR											
		040-Gas Compression										
			040.101-Frm BV ds SDV2010 to XV2042-2043	4	0	0.00%	4	100.00%	0	0.00%	6	
			040.103-Compressor & Gas Turbine Vendor Package	46	15	32.61%	9	19.57%	22	47.83%	55	
			040.104-Compressor & GT Ancillaries	60	29	48.33%	17	28.33%	14	23.33%	77	
		040-Gas Compression Total		110	44	40.00%	30	27.27%	36	32.73%	138	
		050-Fuel Gas										
			050.105-Frm Exist FG Scrubber to LP&HP Relief HDR	4	4	100.00%	0	0.00%	0	0.00%	4	
		050-Fuel Gas Total		4	4	100.00%	0	0.00%	0	0.00%	4	
		060-Closed Drains										
			060.101-New Equipment Drainage	6	6	100.00%	0	0.00%	0	0.00%	6	
			060.102-Waste Oil frm Gen Set & GT	8	8	100.00%	0	0.00%	0	0.00%	8	
		060-Closed Drains Total		14	14	100.00%	0	0.00%	0	0.00%	14	
	AITR Total			128	62	48.44%	30	23.44%	36	28.13%	156	
	BITR											
		040-Gas Compression										
			040.103-Compressor & Gas Turbine Vendor Package	9	2	22.22%	1	11.11%	6	66.67%	10	
			040.104-Compressor & GT Ancillaries	21	8	38.10%	5	23.81%	8	38.10%	26	

ITR Comparative Analysis | **ITR Analysis Summary** | Historical Data

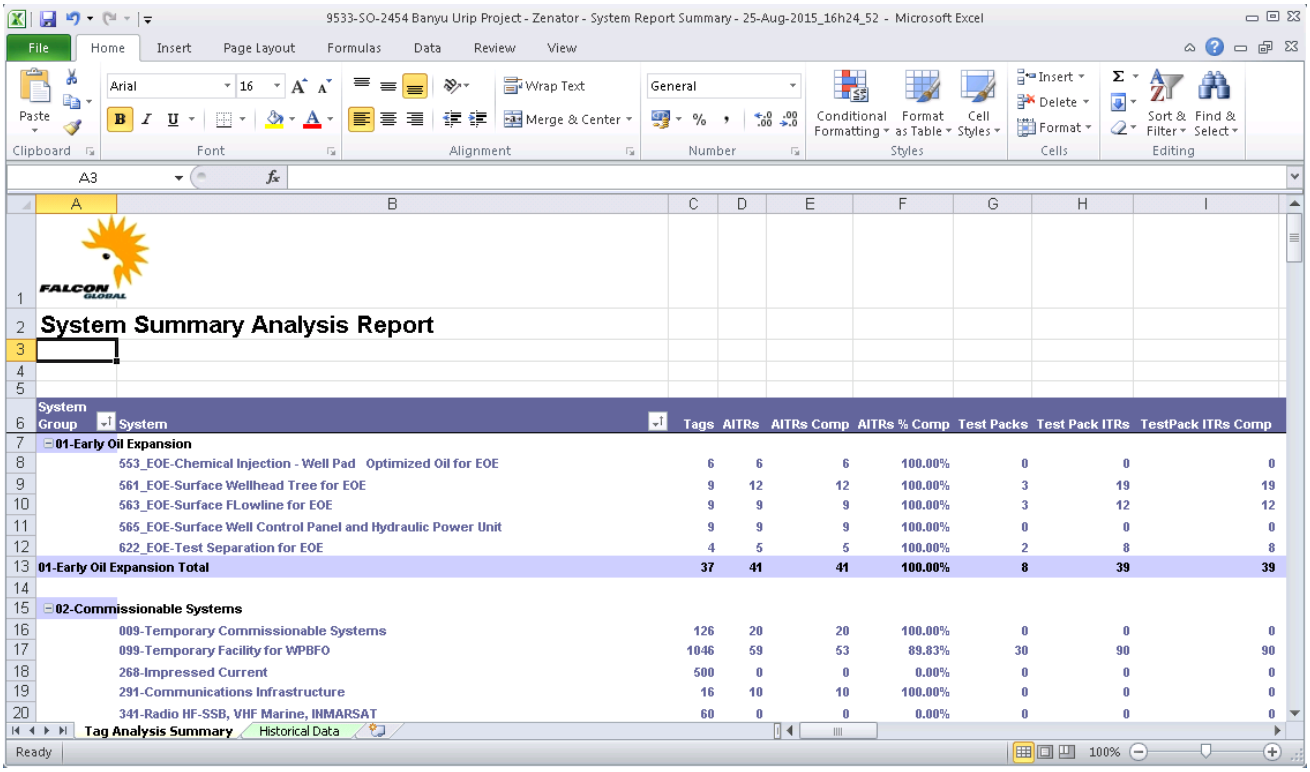
KPI Report of Contractor Performance to Scope – Report 4

Project Group	BGG
Project Name	Project Y
Status	(All)

System	Resource	Total	Not Started	% Not Started	Started	% Started	Completed	% Completed	Planned Hrs	Actual Hrs	% Actual Hrs
035.101-Frm BV to Sep #3 Outlet											
	Contractor B	7	0	0.00%	0	0.00%	7	100.00%	7	2	28.57%
035.101-Frm BV to Sep #3 Outlet Total		7	0	0.00%	0	0.00%	7	100.00%	7	2	28.57%
035.102-Frm Exist_ Seps to SDV2010											
	Contractor B	3	2	66.67%	1	33.33%	0	0.00%	4	1	25.00%
035.102-Frm Exist_ Seps to SDV2010 Total		3	2	66.67%	1	33.33%	0	0.00%	4	1	25.00%
040.101-Frm BV ds SDV2010 to XV2042-2043											
	Contractor A	4	0	0.00%	4	100.00%	0	0.00%	6	3	50.00%
	Contractor B	36	0	0.00%	36	100.00%	0	0.00%	43	28	65.12%
	Contractor C	10	0	0.00%	10	100.00%	0	0.00%	10	4	40.00%
040.101-Frm BV ds SDV2010 to XV2042-2043 Total		50	0	0.00%	50	100.00%	0	0.00%	59	35	59.32%
040.102-Compressor Bypass & Tie-in to Gas Filter Seps_ & S											
	Contractor B	9	4	44.44%	2	22.22%	3	33.33%	11	5	45.45%
	Contractor C	50	8	16.00%	6	12.00%	36	72.00%	56	42	75.00%
040.102-Compressor Bypass & Tie-in to Gas Filter Seps_ & S Total		59	12	20.34%	8	13.56%	39	66.10%	67	47	70.15%
040.103-Compressor & Gas Turbine Vendor Package											
	Contractor A	55	17	30.91%	10	18.18%	28	50.91%	65	38	58.46%

ITR Comparative Analysis | **ITR Analysis Summary** | Historical Data

System Summary Analysis – Report 5



9533-SO-2454 Banyu Urip Project - Zenator - System Report Summary - 25-Aug-2015_16h24_52 - Microsoft Excel

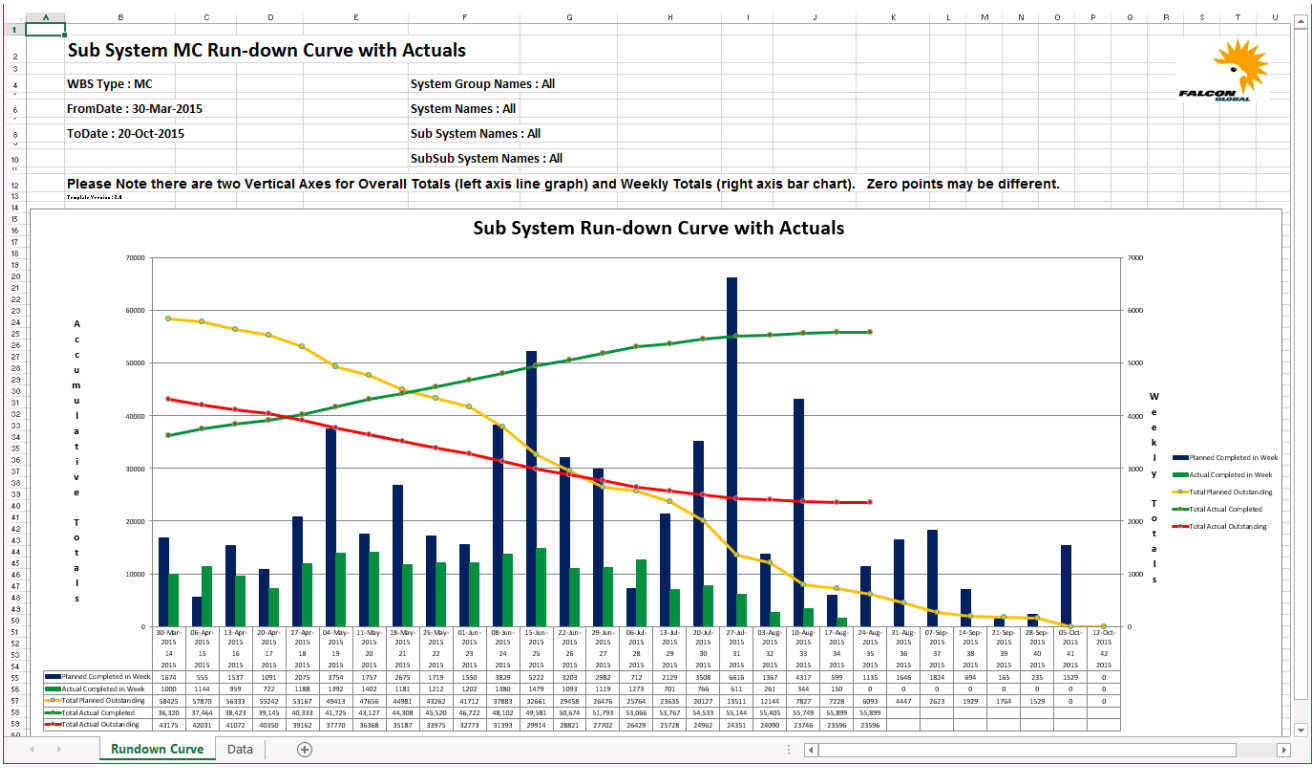
System Summary Analysis Report

System Group	System	Tags	AITRs	AITRs Comp	AITRs % Comp	Test Packs	Test Pack ITRs	TestPack ITRs Comp
01-Early Oil Expansion								
	553_EOE-Chemical Injection - Well Pad Optimized Oil for EOE	6	6	6	100.00%	0	0	0
	561_EOE-Surface Wellhead Tree for EOE	9	12	12	100.00%	3	19	19
	563_EOE-Surface FLowline for EOE	9	9	9	100.00%	3	12	12
	565_EOE-Surface Well Control Panel and Hydraulic Power Unit	9	9	9	100.00%	0	0	0
	622_EOE-Test Separation for EOE	4	5	5	100.00%	2	8	8
01-Early Oil Expansion Total		37	41	41	100.00%	8	39	39
02-Commissionable Systems								
	009-Temporary Commissionable Systems	126	20	20	100.00%	0	0	0
	099-Temporary Facility for WPBFO	1046	59	53	89.83%	30	90	90
	268-Impressed Current	500	0	0	0.00%	0	0	0
	291-Communications Infrastructure	16	10	10	100.00%	0	0	0
	341-Radio HF-SSB, VHF Marine, INMARSAT	60	0	0	0.00%	0	0	0

Tag Analysis Summary | Historical Data | Ready | 100%

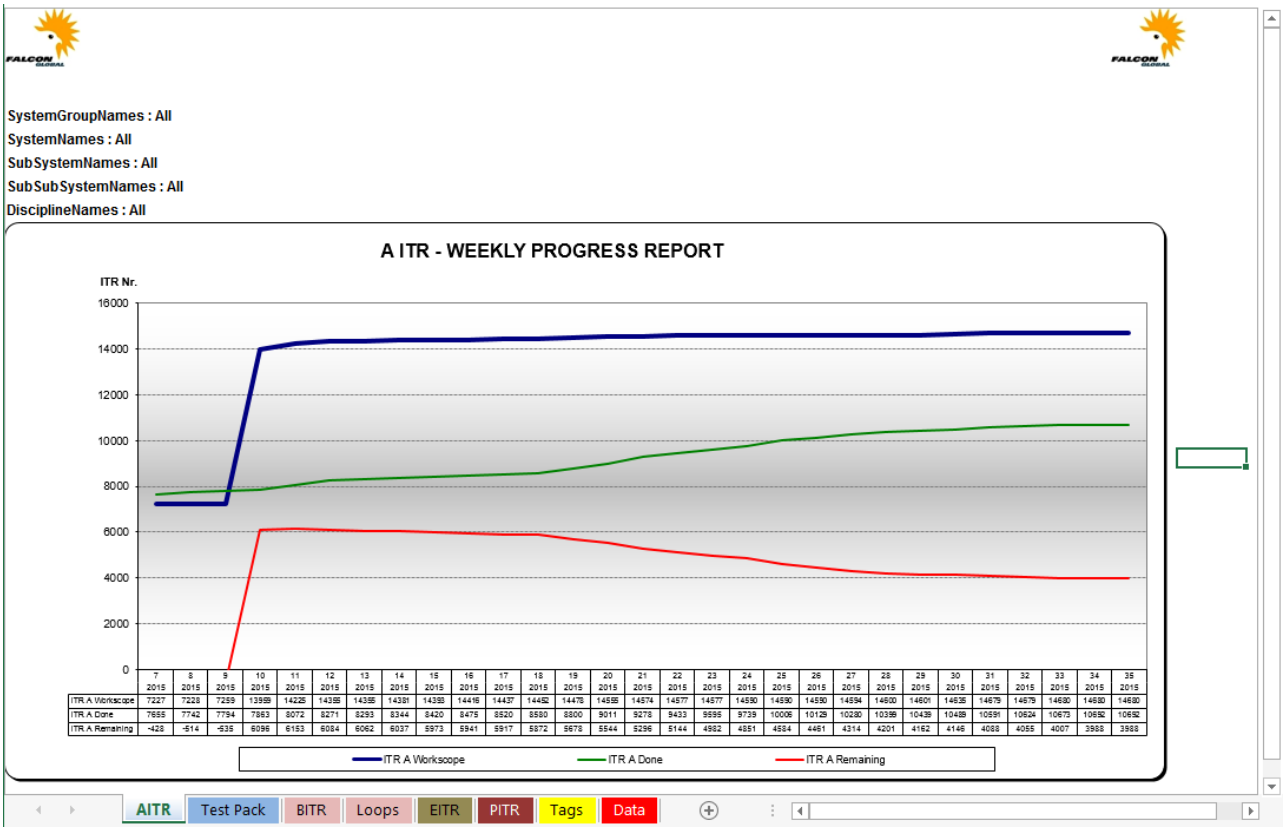
MC Rundown Curve – Report 6

Through the use of the Route (Planning Interface) Zenator can be configured to monitor key milestones such as MC (Mechanical Completion), SC (Commission Completion), etc.



Graphical ITR Weekly Progress – Report 7

A worksheet exists on this report for each type of ITR (AITRs, Test Packs, BITRs, Loops, EITRs & PITRs).



Sub System Skyline – Report 8

Sub System Skyline Report For MC : Created @ 25 August 2015 17:04

System Groups = All
Systems = All
SubSystems = All
Date Range : From 2015-06-01 To 2015-08-30

						999-01C							
						999-01B							
						976-06							
						951-04							
						886-09A							
						886-01A							
						883-01A							
						864-26D							
					992-03	864-10							
					956-05	864-09							
					952-04	864-06							
					886-15	863-29C							
					866-14	863-11							
					864-25	863-10							
					863-28	863-06A							
			965-01		861-07Z	862-15							
			954-02		833-05	862-14				992-01	883-06		
			881-18		801-18	861-12				975-00	863-30		
			864-08		785-03	833-03B				883-16	863-01		
951-05		864-05			785-01	833-03				883-14	735-03		881-12
886-05		863-17			681-02	801-14				883-13	735-01	976-04	881-11
886-04		863-07			625-02	801-12				883-12	653-04	956-03	862-22
883-05		863-06			624-02	801-09				881-15	612-04	886-18	837-02
883-04		861-09			623-04	801-08				881-14	565-14	886-17	801-21
881-07		861-08			622-03	661-03				881-13	565-07	886-16	801-10
881-05	965-02	828-12			565-53	661-02				866-13	565-03	886-14	801-01
866-18	954-01	826-12			565-52	661-01				866-12	565-02	886-11	656-03A
865-31	882-01	822-13			565-51	991-04	654-08	991-02		864-01	565-01	884-06	438-12
865-30	865-28	801-11			565-50	862-0	654-07	952-02		828-01	563-01A	881-16	426-05
865-25	865-11	801-06	886-08		565-49	801-17	654-06	861-11		826-14	563-01	865-02	426-04
865-12	864-11	681-03	883-15		565-48	801-07	654-03	826-06	951-02	656-01A	562-01	863-22	426-03
865-08	863-12	681-01	864-03		565-47	801-05	653-05	826-01	833-01A	654-02A	561-01	735-02	426-02
863-09	862-16	642-03	863-21		565-46	801-03	653-03	823-02	833-01	438-04	554-01A	565-13	426-01
861-01	861-10	642-02	861-06		565-45	401-21	653-01	822-06	828-06	426-11	554-01	565-11	425-02
826-16	861-07	642-01	801-20		565-44	401-20	642-04	822-01	801-13	426-07	553-02	565-10	425-01
793-02	833-02	633-01	684-05		565-43	401-16	554-03	801-15	739-01	423-14	553-01A	565-09	423-15
739-03	675-04	625-01	612-06		565-42	401-15	552-02	714-00	738-01	423-13	553-01	565-08	423-09
738-03	675-02	624-01	563-03		565-41	401-13	472-02	668-05	668-02	423-12	552-01A	565-06	423-08
684-04	674-00	623-05	562-03		553-08	401-12	472-01A	668-04	667-02	423-11	552-01	565-05	423-07
675-01	673-02	623-03	561-05		552-04	401-11	418-18A	668-03	667-01	423-10	551-01A	565-04	423-05
656-02	673-01	622-02	553-05		418-19	401-10	268-09	668-01	656-03	423-06	551-01	438-15	423-04
654-05	672-00	612-03	551-03		401-06	401-09	201-13	667-03	656-01	423-02	426-12	438-01	423-03
613-01	662-03	553-04	404-09		401-05	401-08	200-13	661-04	654-04	421-18	426-06	426-10	421-13
612-01	662-02	438-03	268-03		401-04	401-07	200-12	654-08A	654-01A	421-17	423-01	426-09	421-12
551-02	662-01	418-03	200-01		401-03	200-2	200-09	654-07A	421-08	421-16	421-07	426-08	080-04
341-01	623-02	414-02	069-26		401-02	200-0	080-13	654-02	418-01	421-15	421-06	421-02	080-03
200-15	623-01	413-04	069-24		401-01	200-0	080-12	654-01	200-16	421-14	421-05	404-07	069-18
069-09	622-01	200-06	066-10		268-05	200-0	080-09	653-02	200-10	421-11	421-04	391-02	069-17
069-08	438-07	200-02	064-03		200-05	080-0	063-08	274-33	200-08	421-10	421-03	391-01	069-14
069-05	404-02	050-07	064-02		080-05	080-0	050-13	201-21	063-15	421-09	421-01	342-03	056-28
069-04	268-06	050-06	064-01		050-02	080-0	050-12	063-07	063-05	401-19	341-05	342-01	050-21
050-15	268-04	050-05	063-02		050-01	069-16	050-09	063-06	063-04	342-02	080-21	341-04	050-04

Not Started	Date	8	15	22	29	6	13	20	27	3	10	17	24	31
Started	Month	Jun-15	Jun-15	Jun-15	Jun-15	Jul-15	Jul-15	Jul-15	Jul-15	Aug-15	Aug-15	Aug-15	Aug-15	Aug-15
Completed	Sub System	33	27	37	23	44	25	52	25	22	36	36	32	33
Critical Path	Accum Sub System	33	60	97	120	164	189	241	266	288	324	360	392	425

Graphical Mosaic ITR Progress report by Discipline – Report 9

A worksheet exists on this report for each type of ITR (AITRs, Test Packs, BITRs, Loops, EITRs & PITRs).

Detailed Tag List – Report 10

All fields within the detailed listing style reports have Filtering on allowing for further easy analysis by the user.

	C	D	E	F	G	H	
1							
2	SystemGroup	System	System Priority	SubSystem	Sub System Priority	SubSubSystem	Sub
3	01-Early Oil Expansion	561_EOE-Surface Wellhead Tree for EOE	~	561-06 - Wellheads Attached Instruments at Wellpad C (EOE)	E	~	~
4	01-Early Oil Expansion	561_EOE-Surface Wellhead Tree for EOE	~	561-06 - Wellheads Attached Instruments at Wellpad C (EOE)	E	~	~
5	01-Early Oil Expansion	561_EOE-Surface Wellhead Tree for EOE	~	561-06 - Wellheads Attached Instruments at Wellpad C (EOE)	E	~	~
6	01-Early Oil Expansion	561_EOE-Surface Wellhead Tree for EOE	~	561-06 - Wellheads Attached Instruments at Wellpad C (EOE)	E	~	~
7	01-Early Oil Expansion	561_EOE-Surface Wellhead Tree for EOE	~	561-06 - Wellheads Attached Instruments at Wellpad C (EOE)	E	~	~
8	01-Early Oil Expansion	622_EOE-Test Separation for EOE	~	622-04E - Primary Separation Test Manifold (EOE)	E	~	~
9	01-Early Oil Expansion	565_EOE-Surface Well Control Panel and Hydraulic Power Unit	~	565-61 - Wellpad C WHCP for Carbonate Production Well (WHCP565309) EOE	M11	~	~
10	01-Early Oil Expansion	565_EOE-Surface Well Control Panel and Hydraulic Power Unit	~	565-61 - Wellpad C WHCP for Carbonate Production Well (WHCP565309) EOE	M11	~	~
11	01-Early Oil Expansion	565_EOE-Surface Well Control Panel and Hydraulic Power Unit	~	565-61 - Wellpad C WHCP for Carbonate Production Well (WHCP565309) EOE	M11	~	~
12	01-Early Oil Expansion	565_EOE-Surface Well Control Panel and Hydraulic Power Unit	~	565-62 - Wellpad C WHCP for Carbonate Production Well (WHCP565310) EOE	M11	~	~
13	01-Early Oil Expansion	565_EOE-Surface Well Control Panel and Hydraulic Power Unit	~	565-62 - Wellpad C WHCP for Carbonate Production Well (WHCP565310) EOE	M11	~	~
14	01-Early Oil Expansion	565_EOE-Surface Well Control Panel and Hydraulic Power Unit	~	565-62 - Wellpad C WHCP for Carbonate Production Well (WHCP565310) EOE	M11	~	~
15	01-Early Oil Expansion	565_EOE-Surface Well Control Panel and Hydraulic Power Unit	~	565-63 - Wellpad C WHCP for Clastic Production Well (WHCP565311) EOE	M11	~	~
16	01-Early Oil Expansion	565_EOE-Surface Well Control Panel and Hydraulic Power Unit	~	565-63 - Wellpad C WHCP for Clastic Production Well (WHCP565311) EOE	M11	~	~
17	01-Early Oil Expansion	565_EOE-Surface Well Control Panel and Hydraulic Power Unit	~	565-63 - Wellpad C WHCP for Clastic Production Well (WHCP565311) EOE	M11	~	~

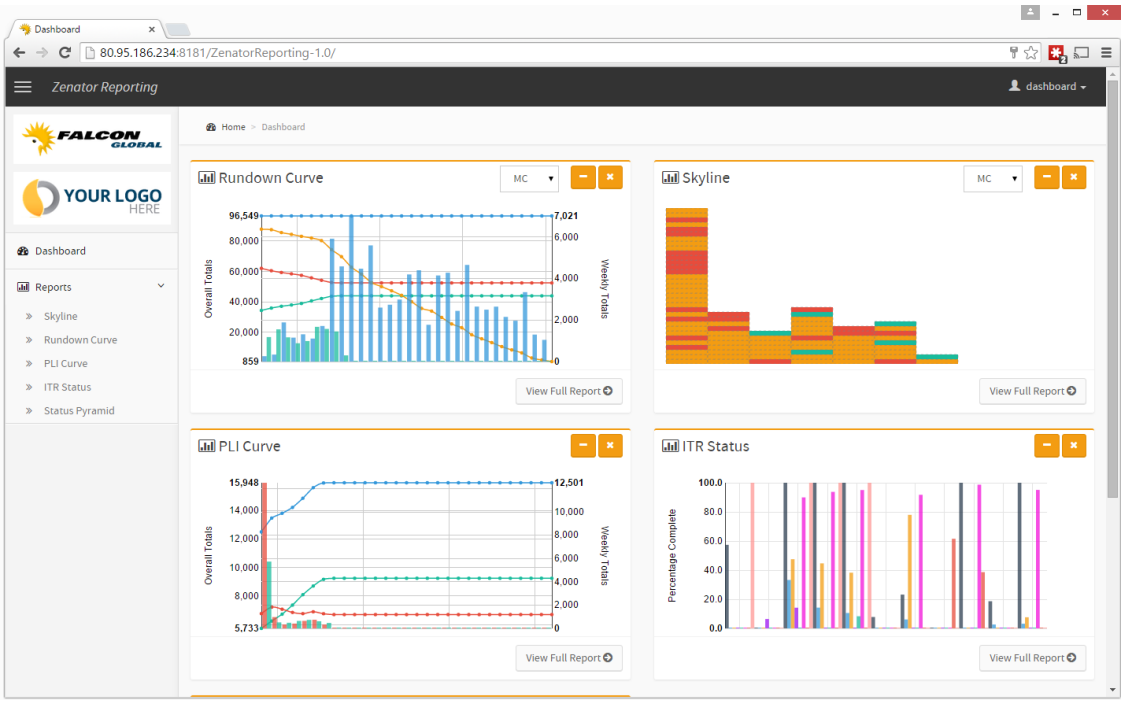
Tag Analysis Summary | Historical Data

Ready 90%

1.34 Zenator Reporting Dashboard

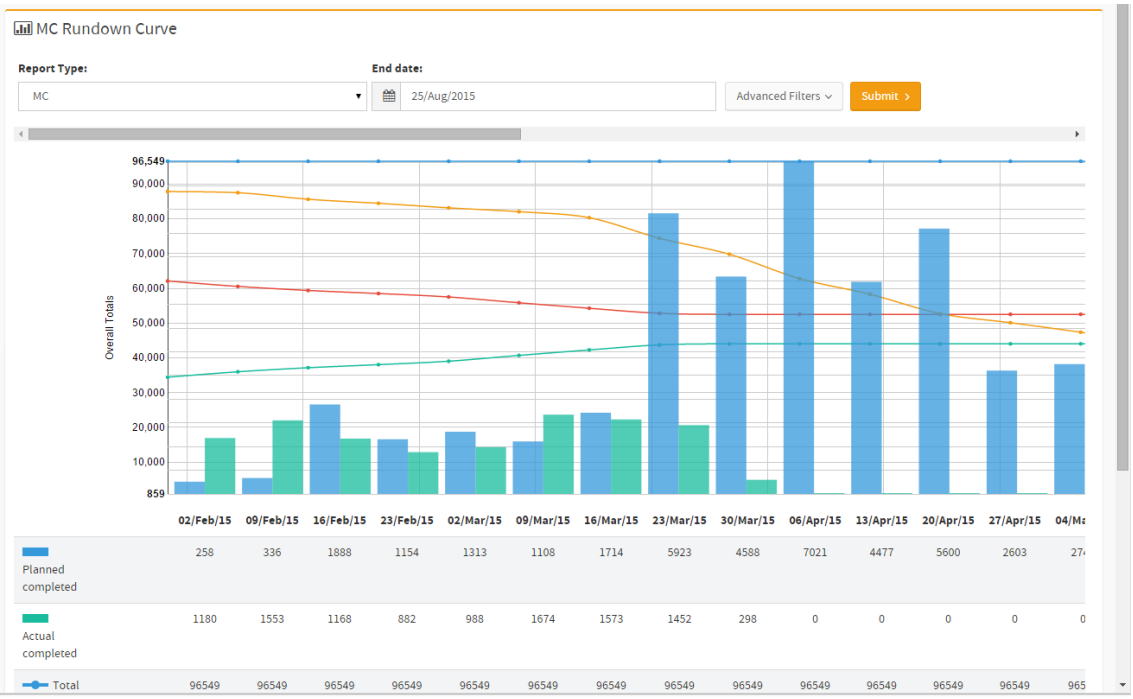
The software needs to have a reporting dashboard to broadcast project progress.

Zenator Dashboard is a browser based reporting tool which allows user to view key performance indicators for the project. With the appropriate access control users can access the dashboard from a variety of devices (PCs, Phones or Tablets).

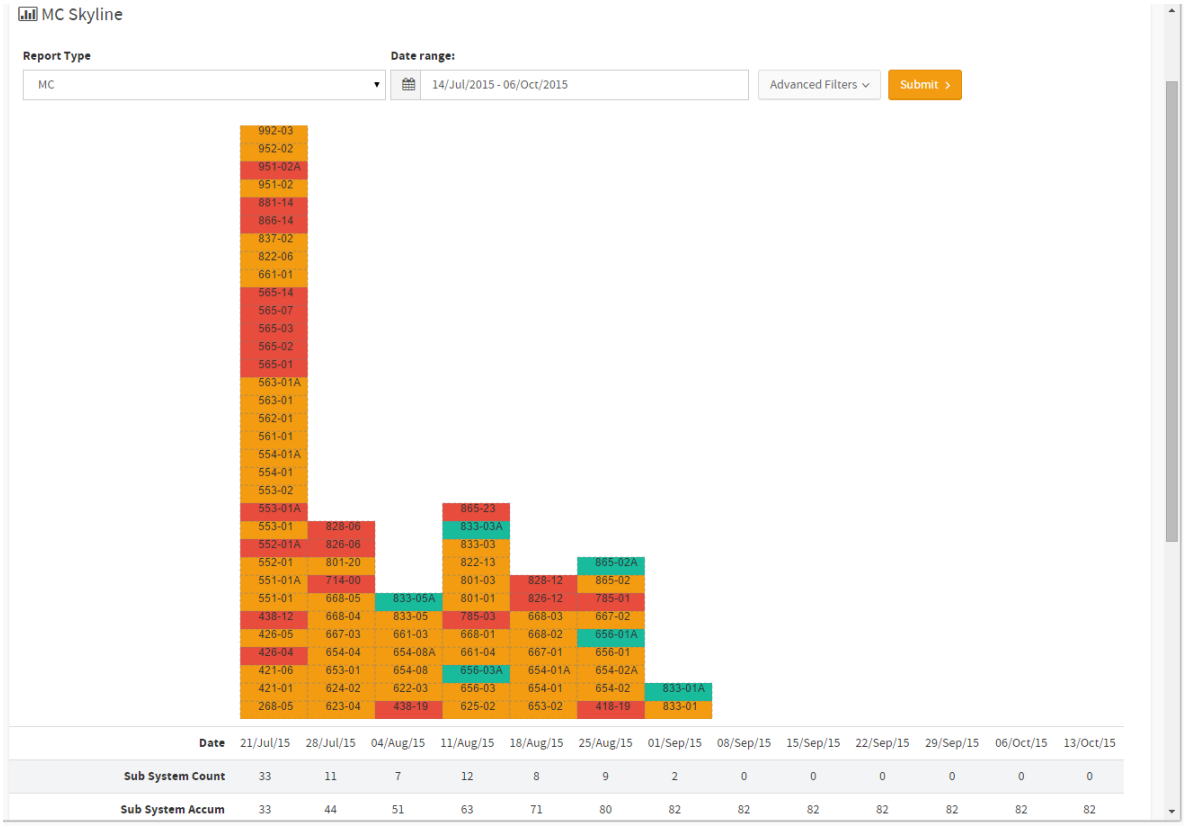


The current reports within the dashboard are:

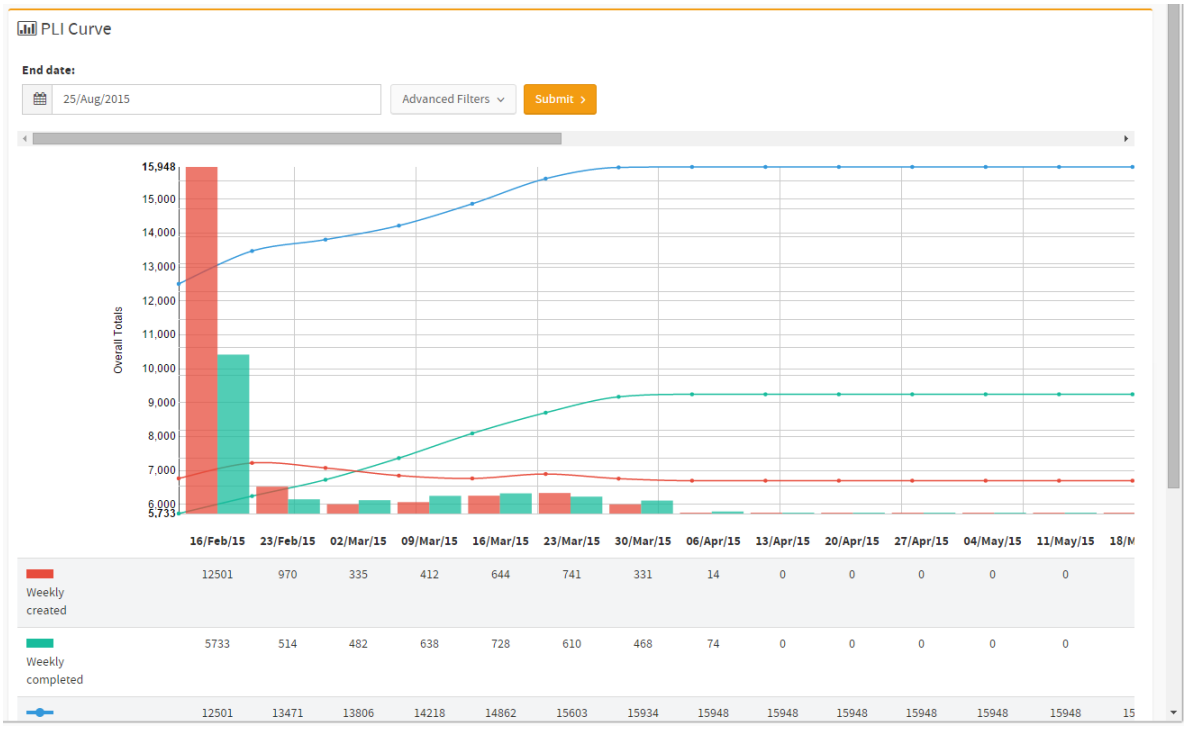
Rundown Curve. *Provides a multiple rundown curves such as MC or SC according to the set-up within Zenator.*



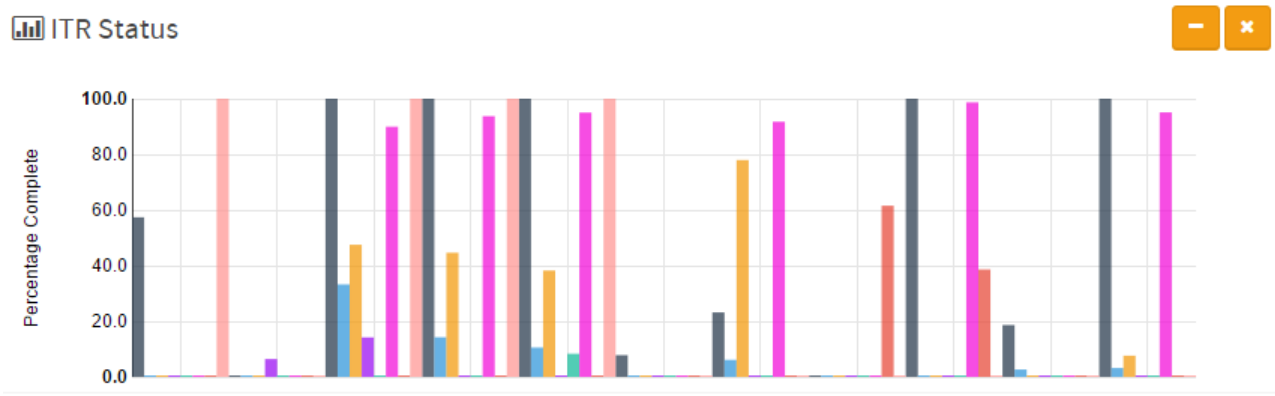
Skyline. *Provides a Skyline report for MC or SC according to the set-up within Zenator.*



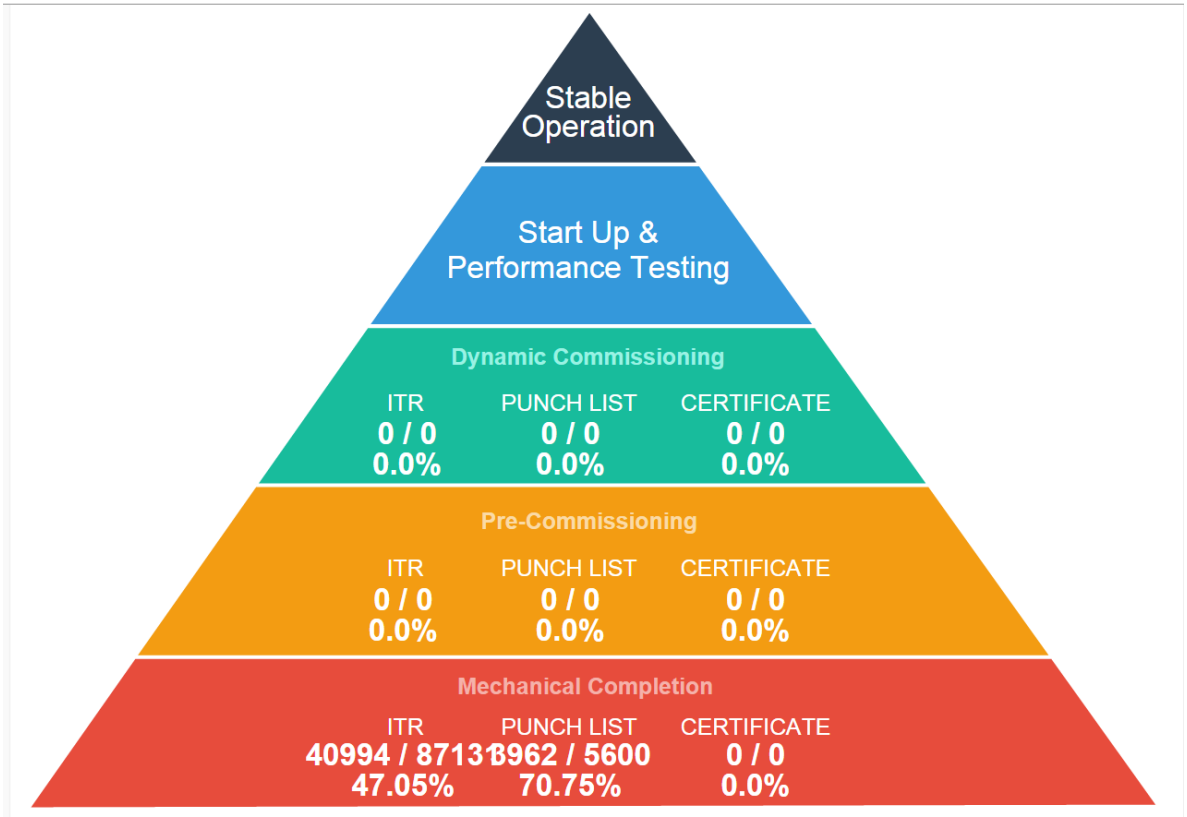
Skyline. *Provides a Skyline report for MC or SC according to the set-up within Zenator.*



ITR Status. *Provides an ITR Status report broken down by ITR Type and Discipline.*



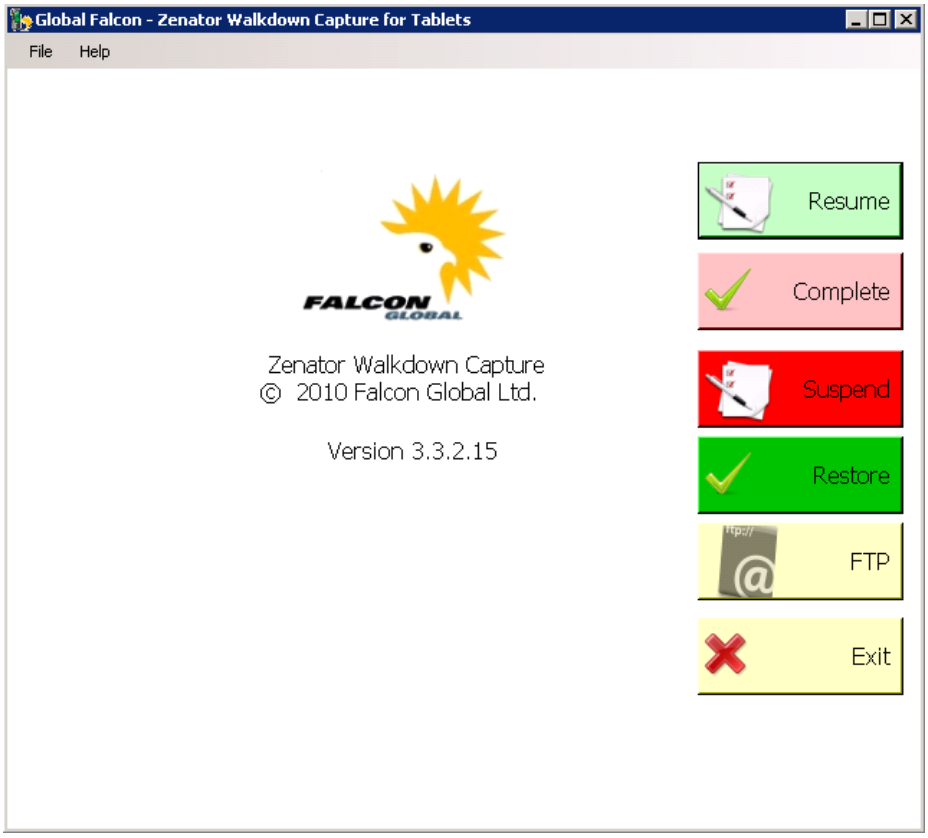
Status Pyramid. *Provides a high level status pyramid according to the planning setup within Zenator.*



1.35 Zenator Walkdown Capture

The software needs to have a tool to assist with the capture of punch list items.

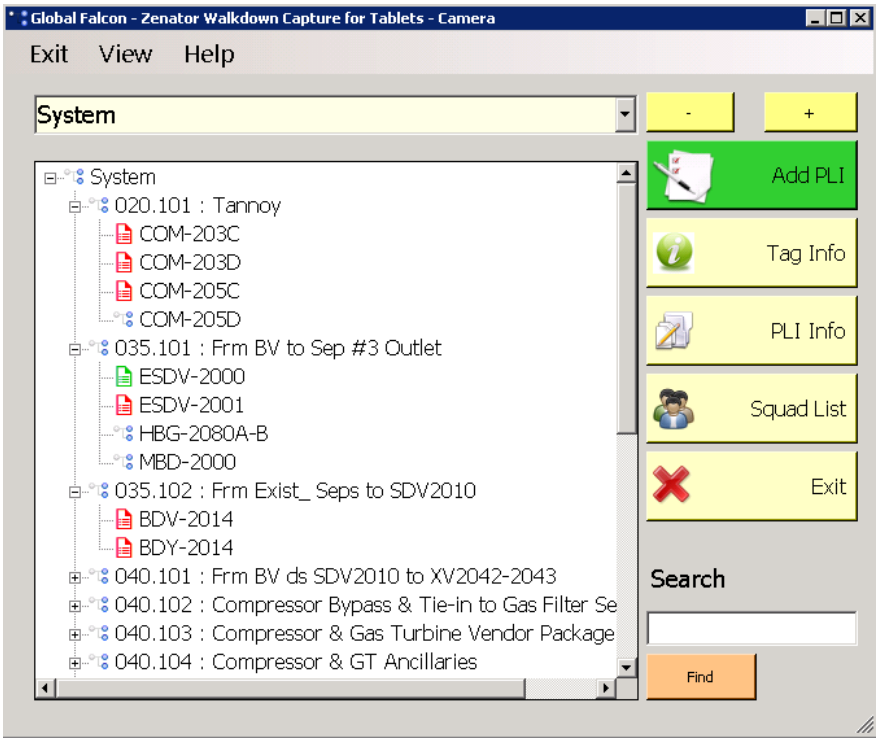
Zenator Walkdown Capture is a standalone tool which operates on Windows 7 and Windows 8 tablet devices to allow the capture of punch list items during system walk downs, the tool working in an off line mode from the main database.



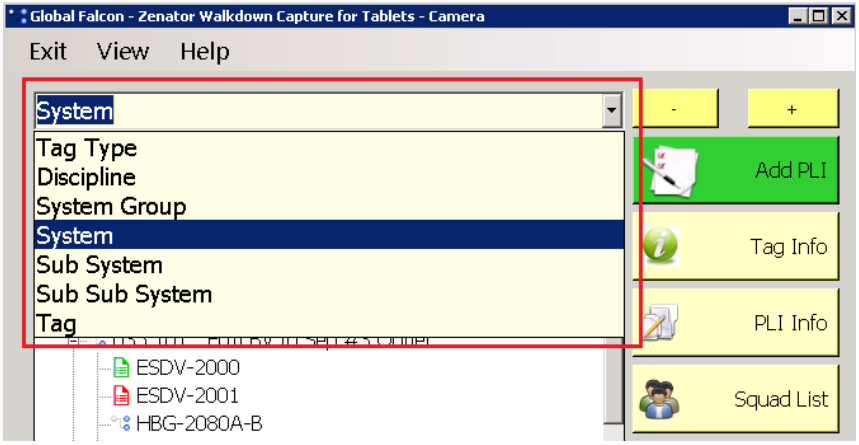
Walkdown Capture is designed to be use on a touch screen device so the buttons and options are large for ease of use.

A server side component CheckSynch is used to register & manage tablet devices, prepare data files to send to a device and also import completed Walkdown events.

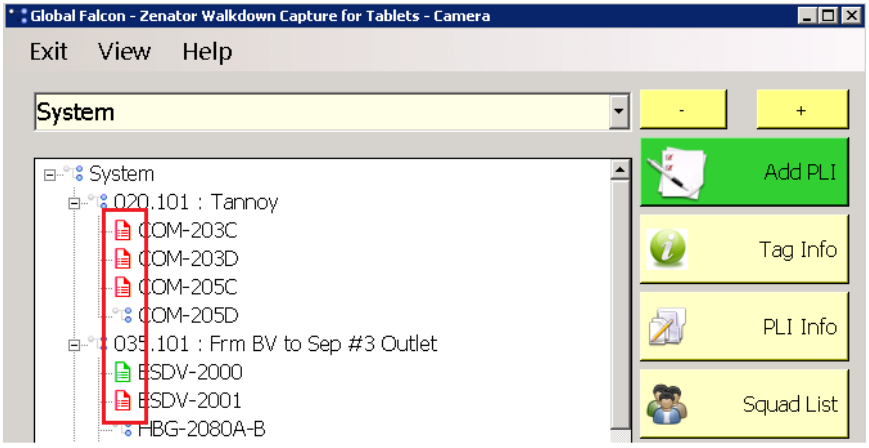
In addition to the capture of new punch list items it can also be used for the verification / closure of existing punch list items.



The main screen allows tags to be viewed within a tree structure with the ability to adjust the view to display as follows:



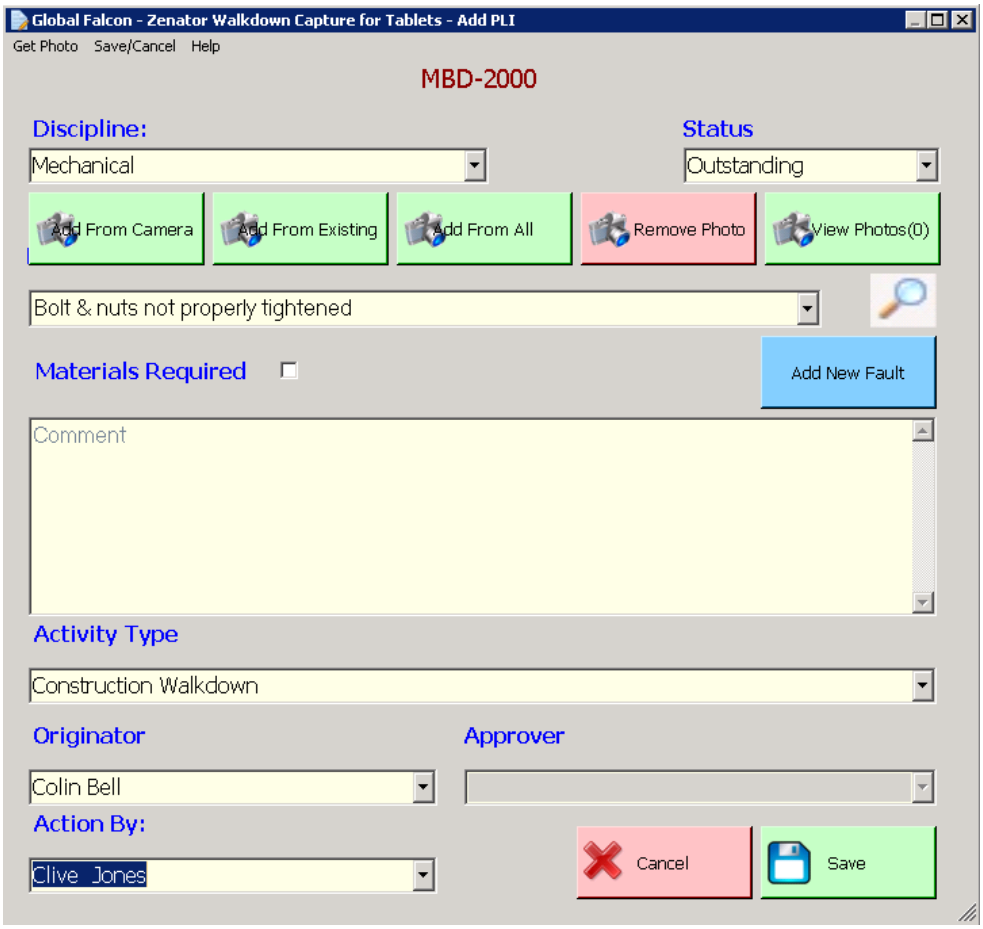
Within the tree color coded icons on the tag indicate if punch list records already exist



The user can use the following options:

- *Add PLI, which will allow a new punch list record to be added to the existing Tag, System, Sub System or Sub Sub System.*
- *Tag Info, which allows a summary of the tag attributes to be viewed.*
- *PLI Info, which allows a summary of the PLI attributes to be viewed.*
- *Squad List, which allows the walkdown team members to be viewed.*
- *Find, which allows the user to key in tag numbers (full or partial) to use to search the tree.*

When adding a new punch list record the following screen is displayed:



The above screen is designed so that minimum data entry is required to enter a new punch list record. Available fields are:

- *Discipline – defaults to the discipline of the tag but can be altered as required.*
- *Status – defaults to the initial user defined status but can be altered as required.*
- *Fault – allows the user to pick from a predefined set of standard fault description. The user can search and also add new fault descriptions if required. Please note the Fault defaults the underoying Punch List Category.*
- *Materials Required – a simple checkbox allowing the user to indicate it Materials will be required to correct the issue.*
- *Comment – allows the user to enter addition comments in addition to the fault description.*
- *Activity Type – a user defined list of Walkdown Activities to indicate the type of walkdown event.*
- *Originator – defaults the indicated originator but can be altered as required.*
- *Action By – allows the user to indicated who will action this punch list item ot be responsible for it.*

- *Approver – allows the user to indicate who has approved the punch list item as completed if using Walkdown Capture to close out punch list items.*

For each punch list record the various Photograph buttons can be used to capture photos of the issue:

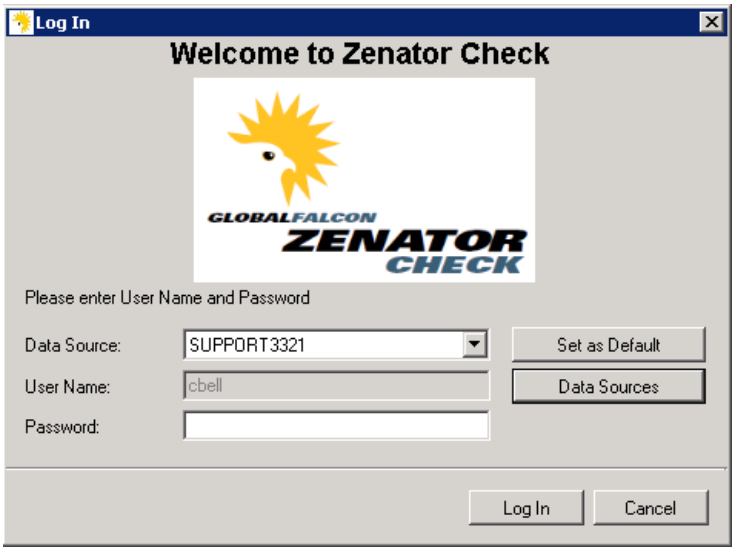
- *Add From Camera – switches on the camera to allow a new photograph to be captured.*
- *Add From Existing – from existing photos captured during this walkdown event.*
- *Add From All – from all photos on punch lists items new or existing.*
- *Remove Photo – allows the user to remove photo.*
- *View Photo – allows the user to view a phtot.*

1.36 Security, Permissions and Access Controls

Access to the toolset (software and hardware) shall be secure and require specific, individual approval for each user.

- ***What is the authentication mechanism?***
  - *Windows Authentication via the Zenator Authentication Database.*
- ***Can the solution authentication be delegated to any external component, if so, describe the supported components.***
  - *Zenator has been designed to perform all of its authentication within the application.*
  - *This is advantageous in environments where an otherwise tedious number of requests have to be made to create users*
  - *Authentication is also performed faster, as the access request is made and granted, or denied, locally.*
- ***What is the authorisation mechanism, (roles, users, items, activities, etc.)?***
  - *Users are set Access Rights via Roles.*
- ***What is the level of authorisation and access segregation allowed for administrative access?***
  - *Built in Administrator Role are completely unrestricted.*
  - *Custom built Administrator Roles can also be created with specific access if required.*
- ***Does the solution have audit log (transactions and accomplished events), if so, describe the log information (Example: Date, time, operation, user, etc..), coverage and configuration level (all transactions, record transactions or custom), the storage format and the availability?***
  - *Field level auditing on Updates & Deletes*
  - *Record level on Inserts.*
- ***Describe the mechanism to view the audit log?***
  - *Audit records can be viewed from within the Zenator Check application which also provides access to the Windows Event Log.*
  - *Refer to screenshots on following pages and also to 1.37*

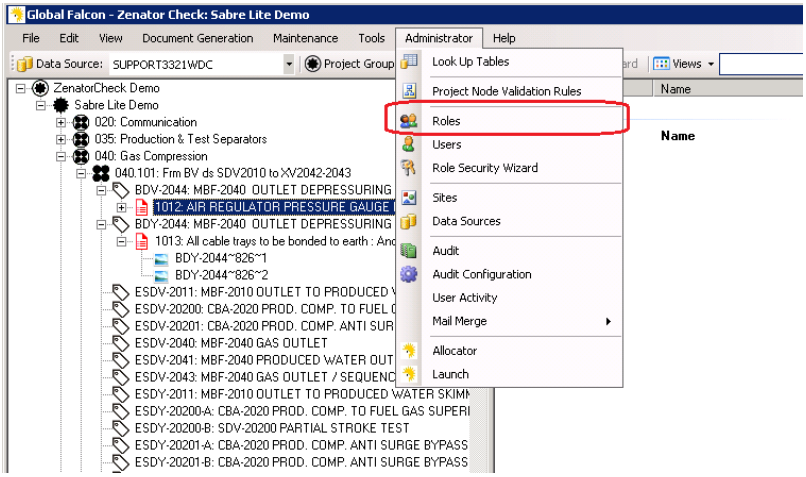
Each Zenator applications presents the user with a login windows requiring a Username and Password to be entered as follows:



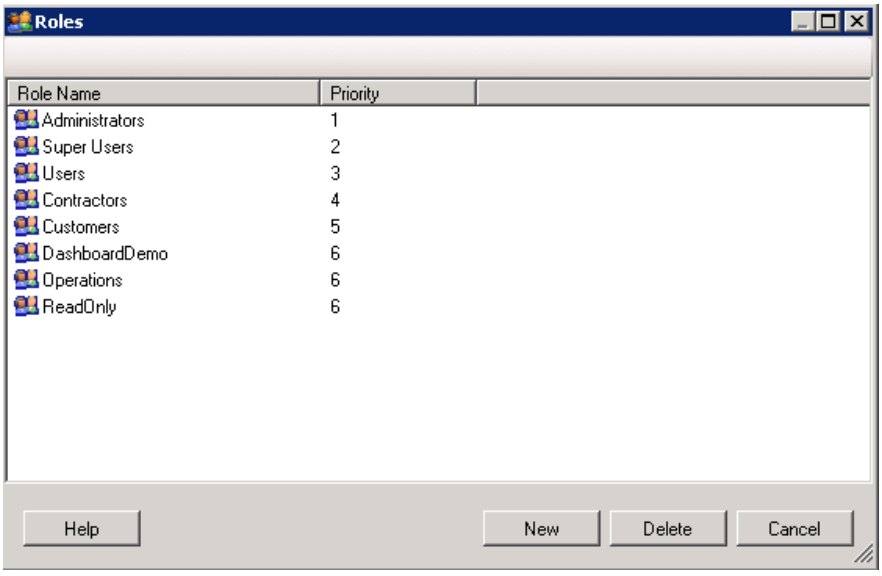
Once a user has been authenticated Zenator provides a detailed security matrix which allows comprehensive security settings to be applied to that user. This is achievied in the following manner.

Step 1 – Define the Roles

The first step is to defined the roles (or job functions) that are required on the project. This is achieved using the following option ***Administrator > Roles.***

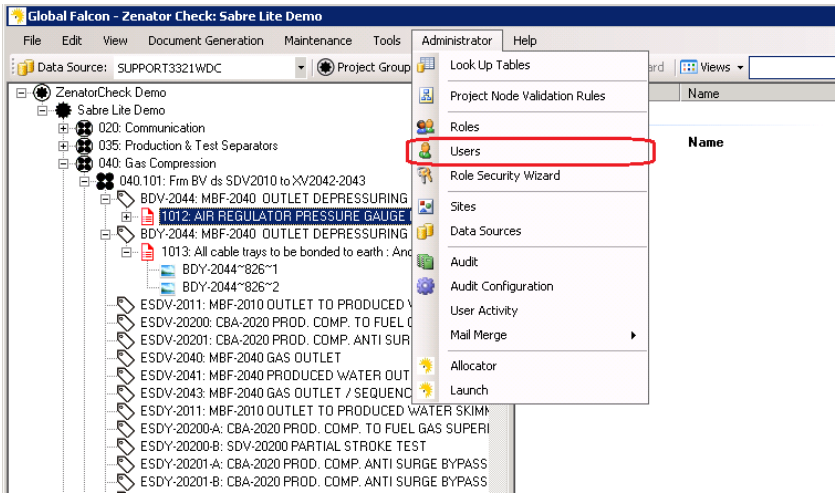


Zenator comes with a number of pre-defined roles however a user can created as many roles as are required for the project.

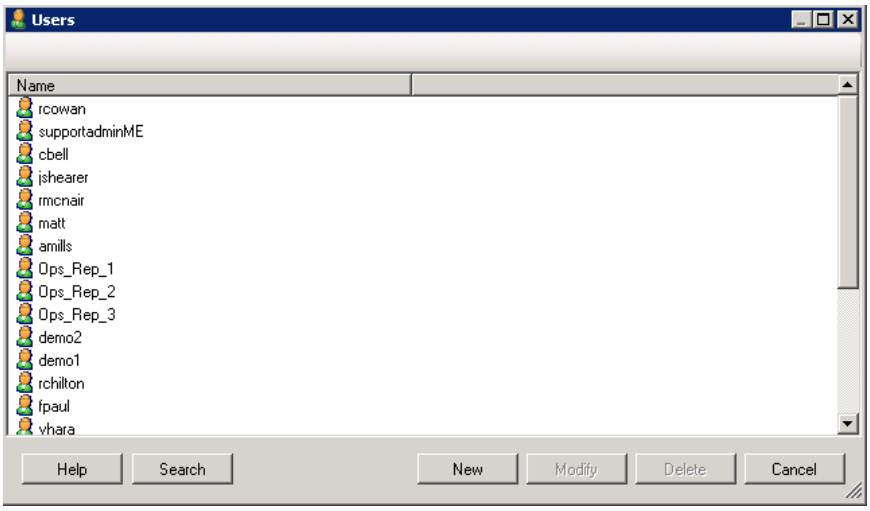


Step 2 – Define the Users

The next step is to defined the usernames that are authorised to access Zenator. These are usernames that are already setup on the Windows Server. This is achieved using the following option ***Administrator > Users***

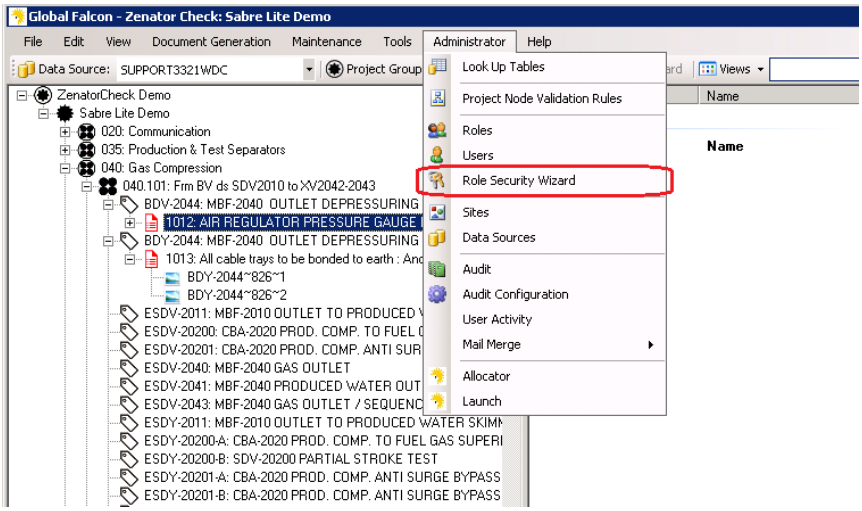


As Zenator uses Windows Authentication the usernames should match those already set up on the Windows Server hosting Zenator.

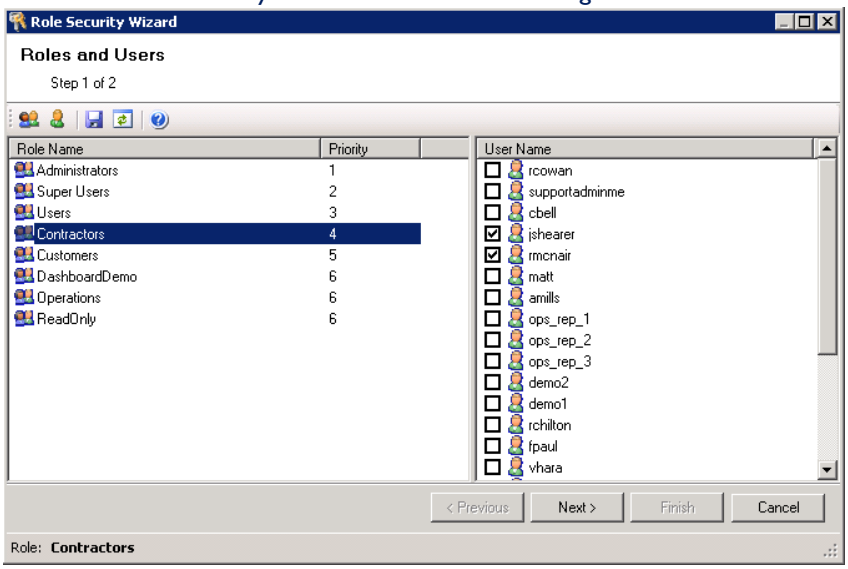


Step 3 – Define the Security Matrix for each Role

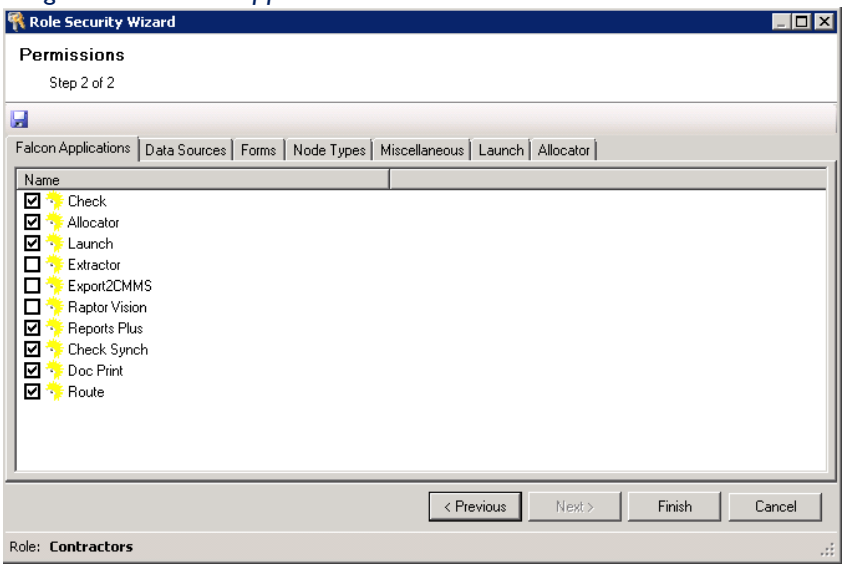
The final step is to defined the security matrix for each defined role. This is achieved using the following option ***Administrator > Role Security Wizard***



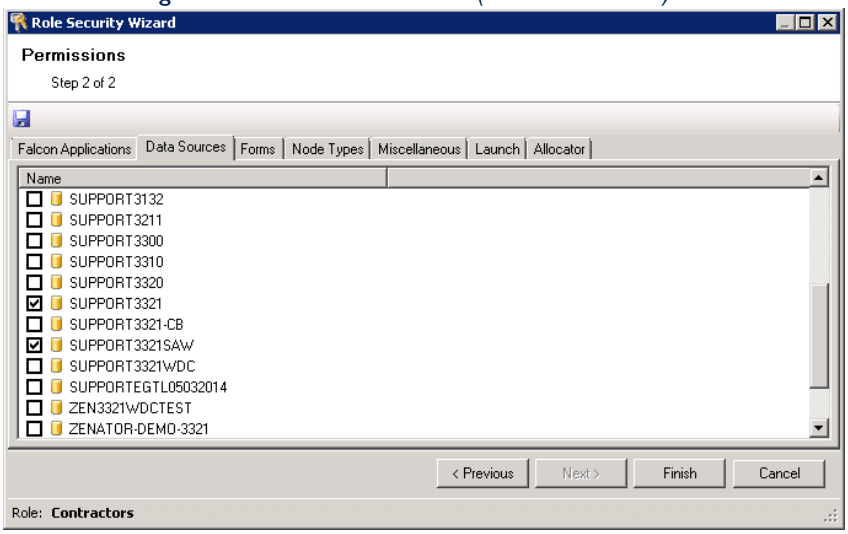
Within the Role Security Wizard usernames are assigned to roles.



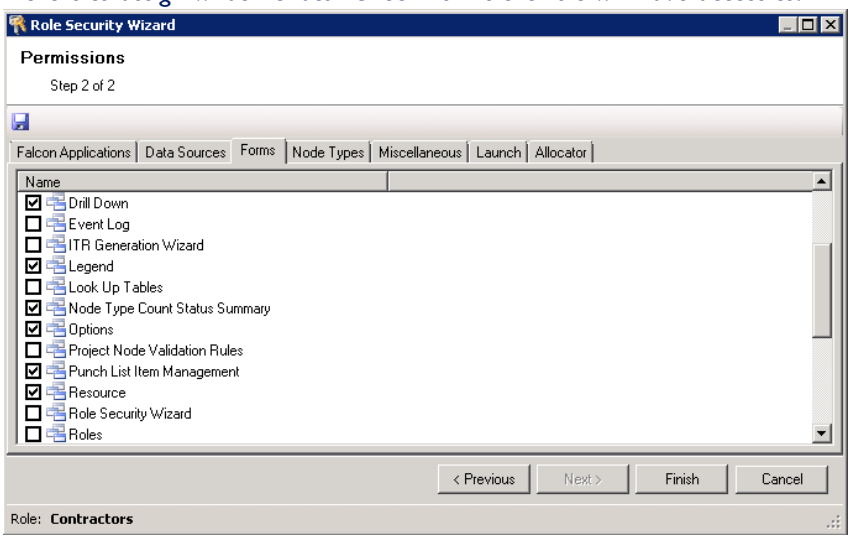
The security matrix can then be assigned to the role through a series of steps. The first of these is to assign what Zenator Applications the role will have access to.



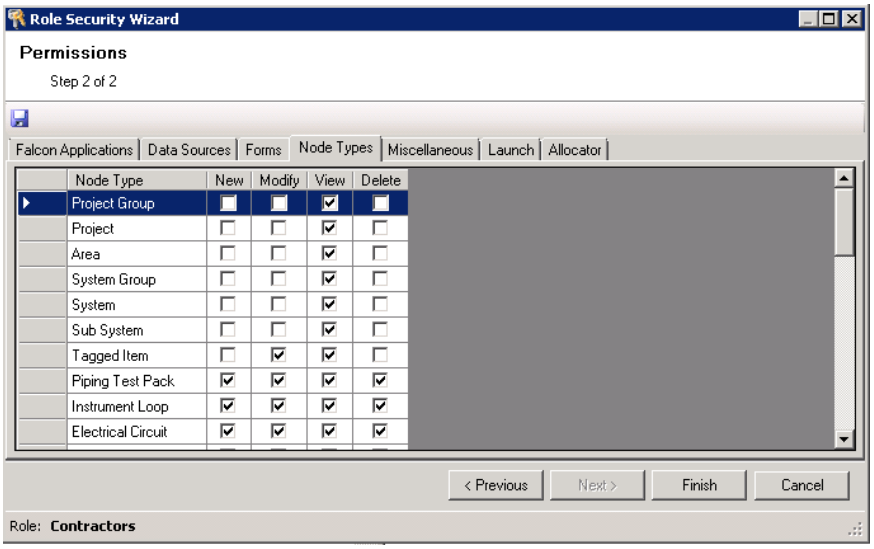
Next is to assign what Zenator Databases (or Data Sources) the role will have access to.



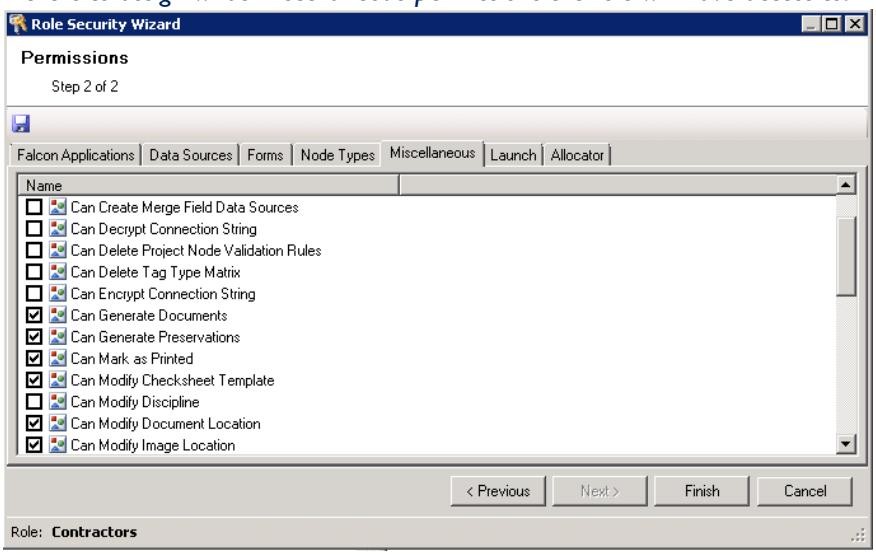
Next is to assign what Zenator Check Forms the role will have access to.



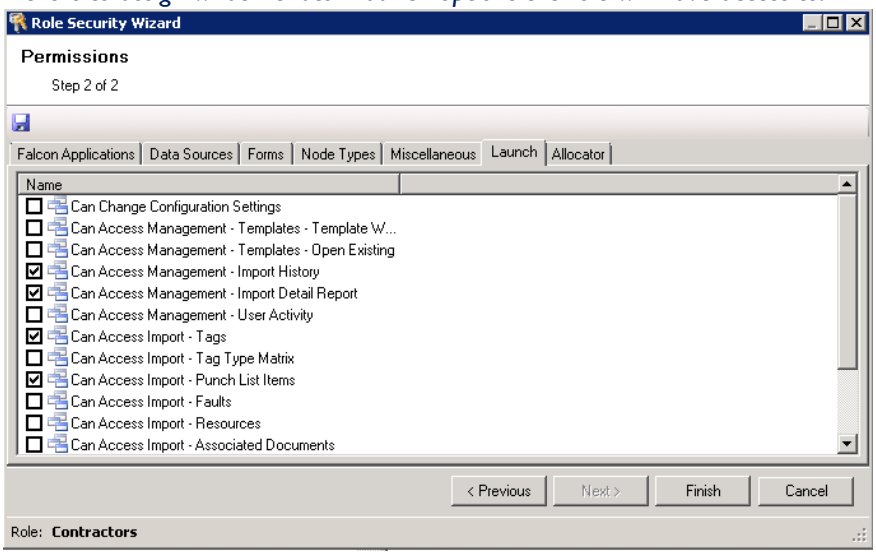
Next is to assign what Node Type the role will have access to (this is broken down into "New", "Modify", "View" and "Delete".



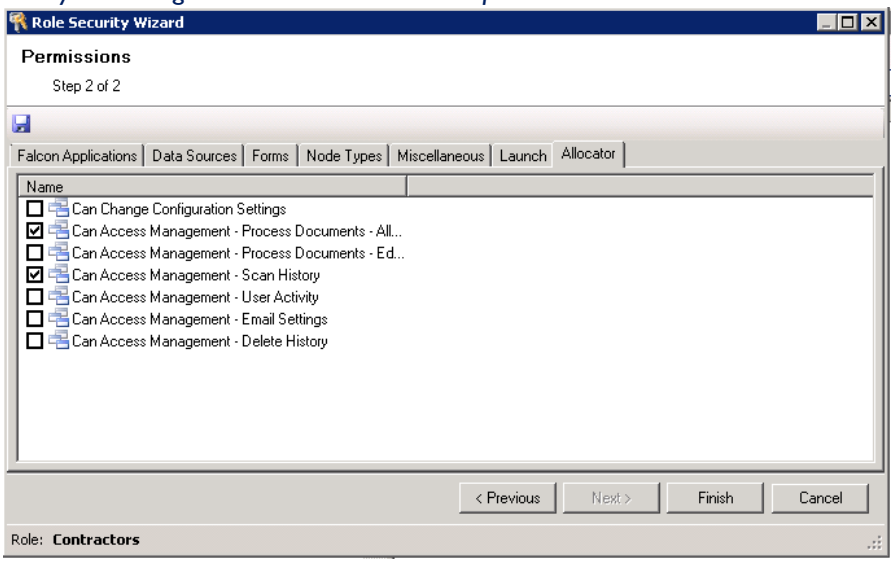
Next is to assign what miscellaneous permissions the role will have access to.



Next is to assign what Zenator Launch options the role will have access to.



Finally is to assign what Zenator Allocator options the role will have access to.

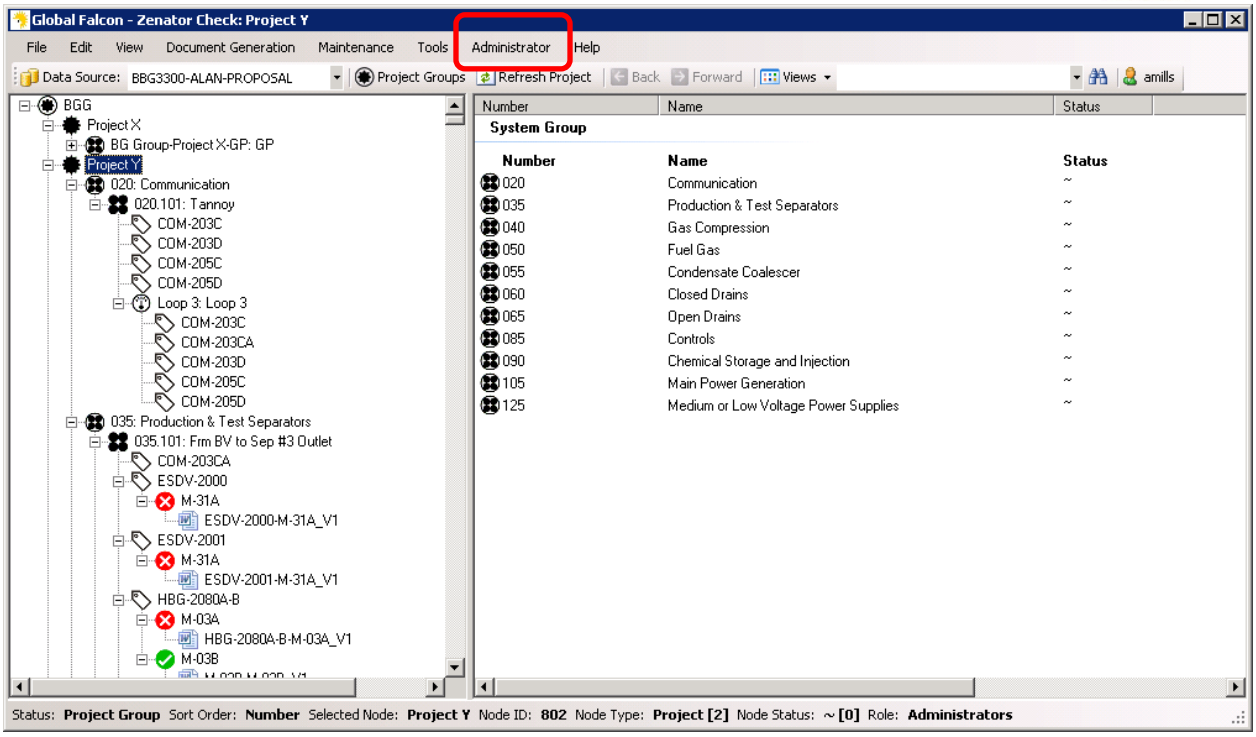


1.37 Read Only Access to Operations (worked example)

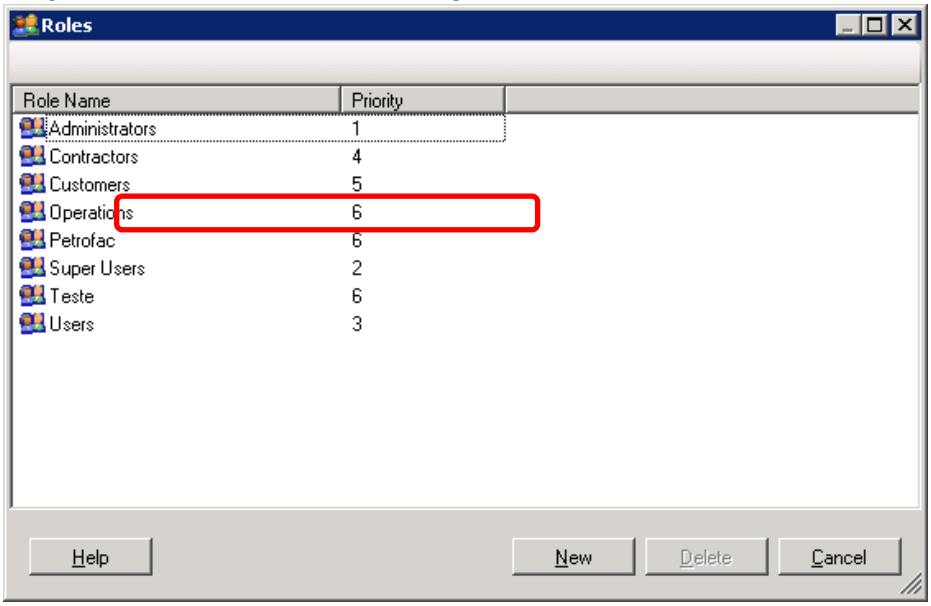
Provide functionality to share commissioning information with operations on a Read Only basis.

The example shows in a series of steps how a Power User can set up Read Only permissions for Operations to access Zenator on a Read Only basis.
Note, at the end of Project, following final Handover to Operations, a read-only Zenator database of all Commissioning history and events is provided

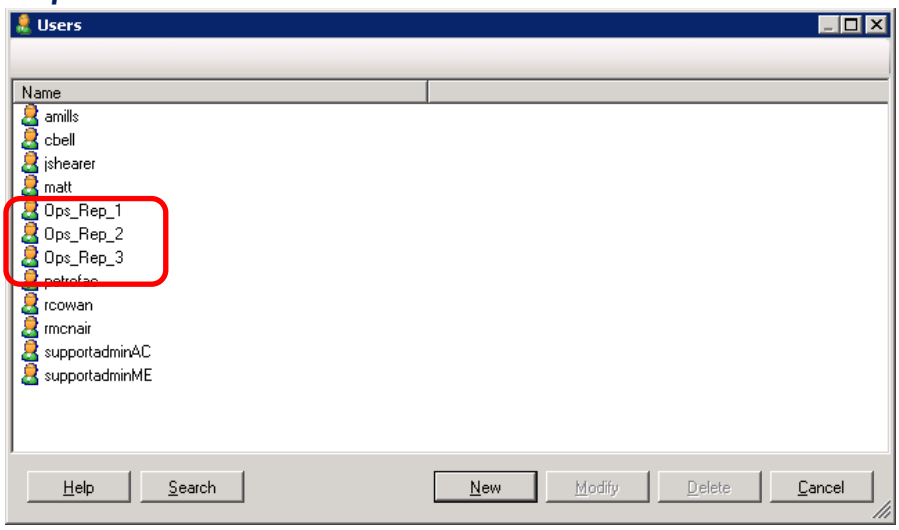
Step 1 Select Administrator > Roles



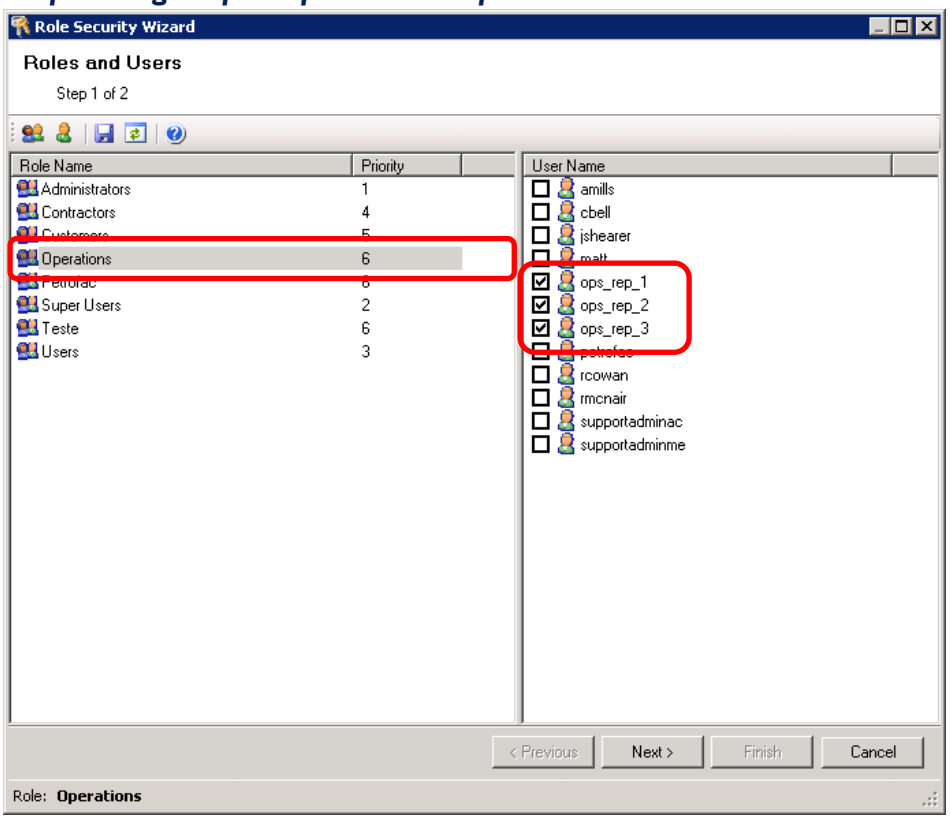
Step 2 Create a New Role for Operations



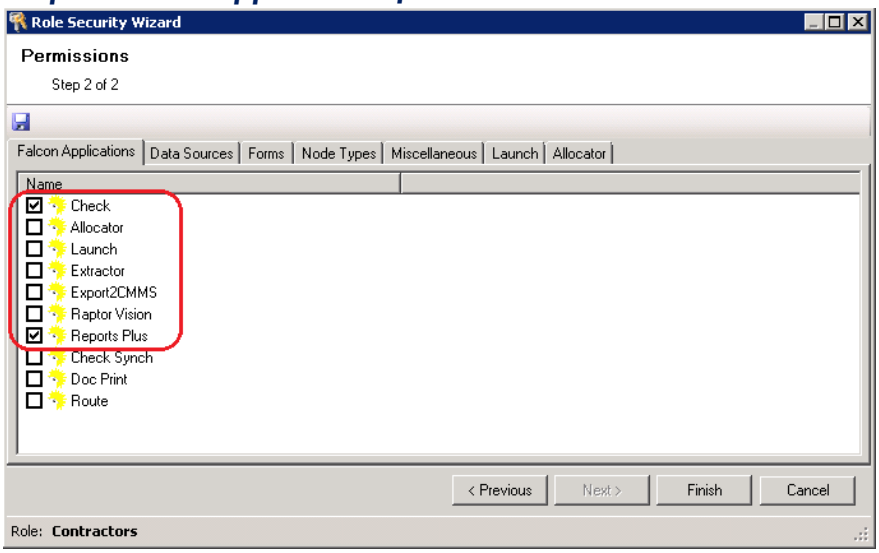
Step 3 Create New Users



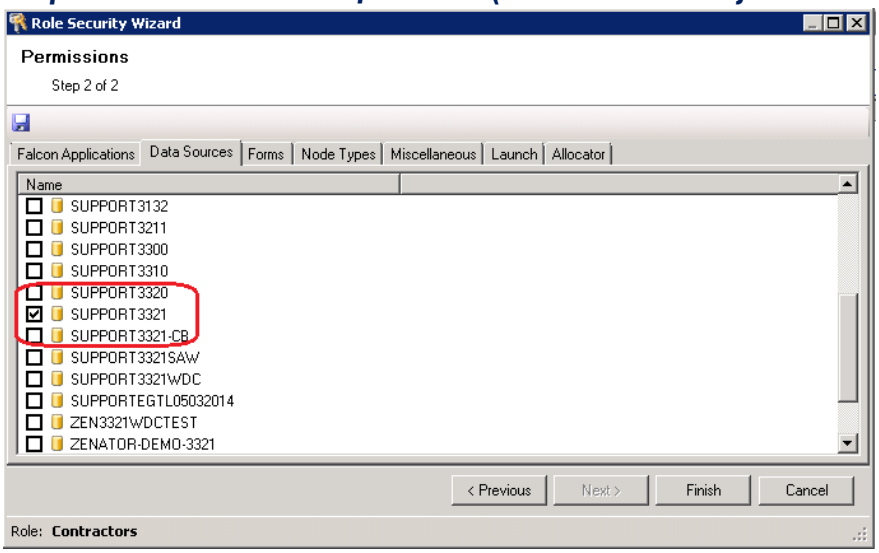
Step 4 Assign Ops-Rep Users to Operations Role



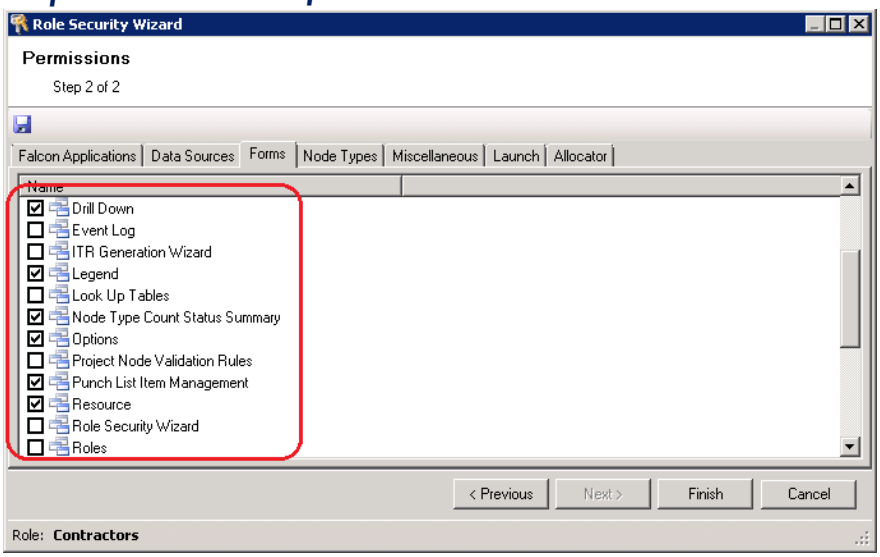
Step 5 Choose Applications for Users



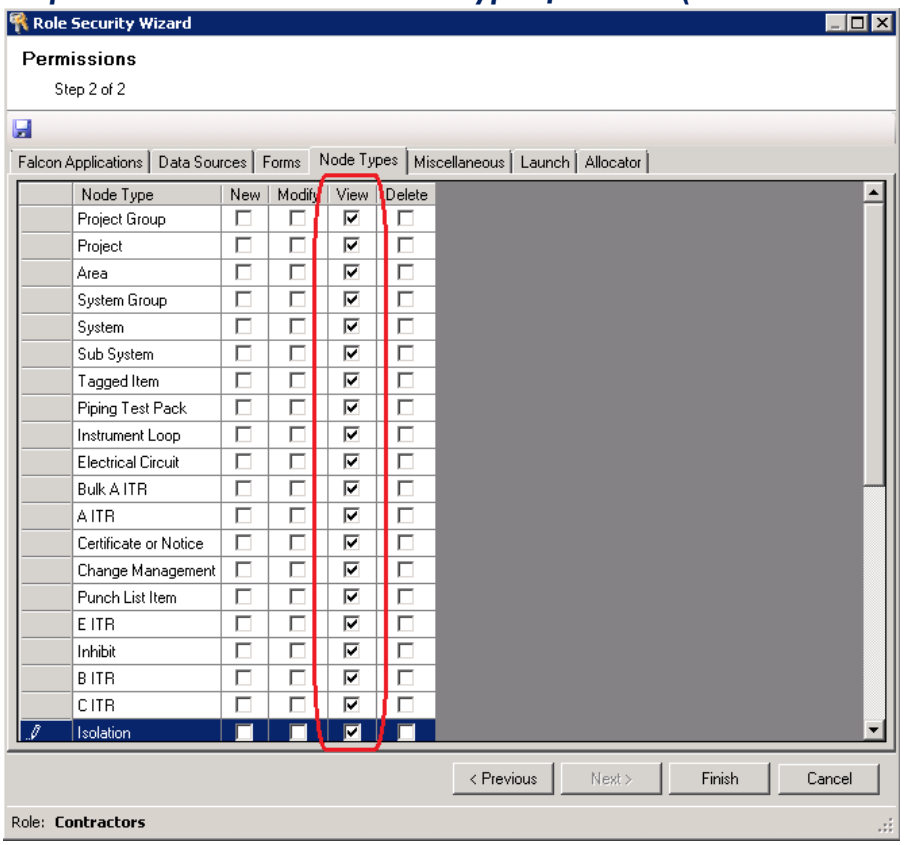
Step 6 Choose Database for Users (could be one Project or several in a database)



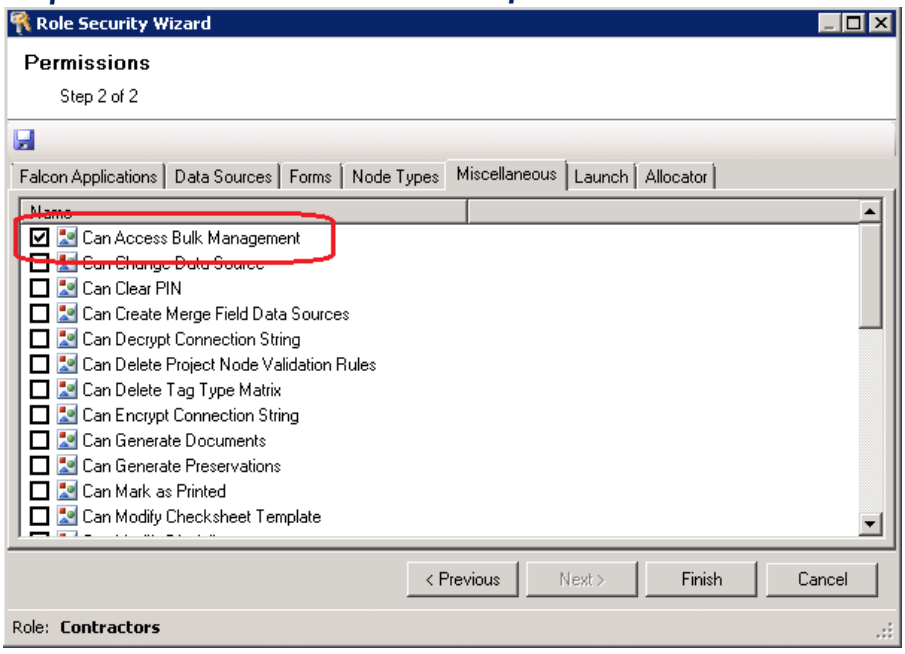
Step 6 Choose Forms for Users



Step 7 Choose Actions on Node Types for Users (View to achieve Read-Only)



Step 8 Choose Discrete Permissions for Users



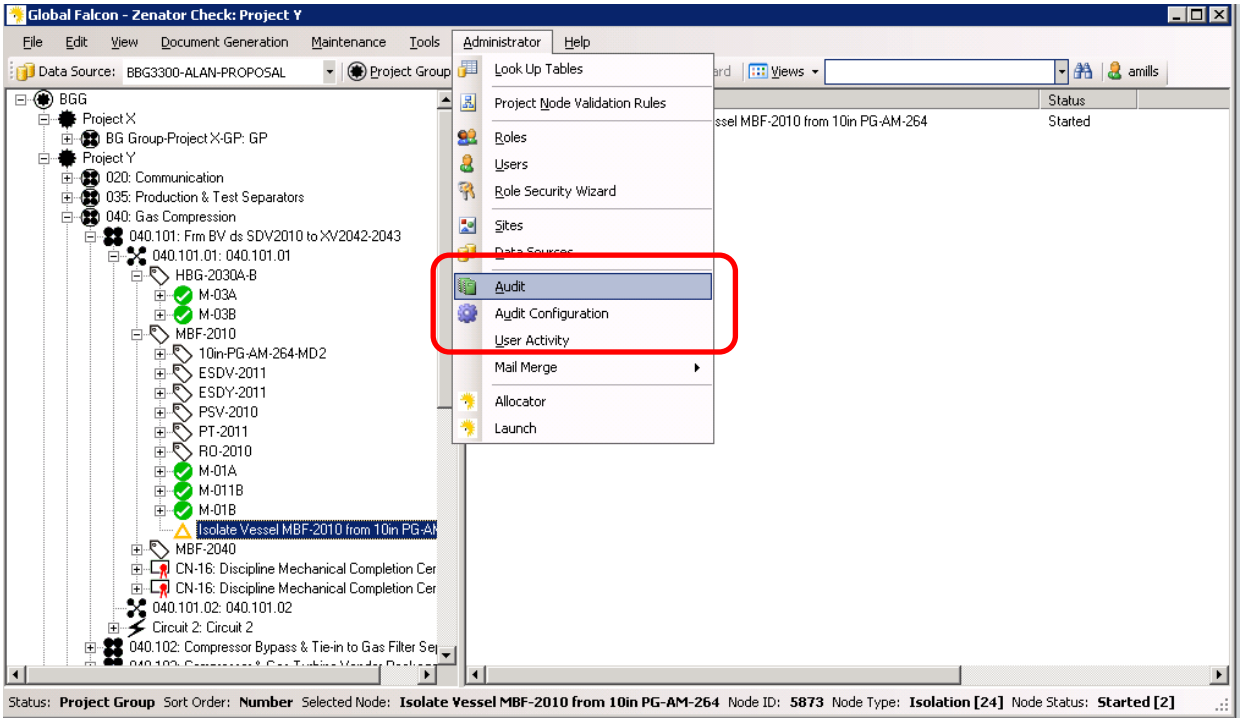
Step 9 Remove and Permissions for Zenator Launch and Zenator Allocator

1.38 User Activity Audit Log

The software needs to provide a daily log capability.

Zenator provides automatic auditing through the use of Database Triggers. All inserts, updates and deletes performed by users using any function within the Zenator products will create detailed auditing information recording the username, date & time, data table name, field name, old value and new value. Auditing works to the individual field level.

Auditing information can be reviewed using the following option ***Administrator > Audit***

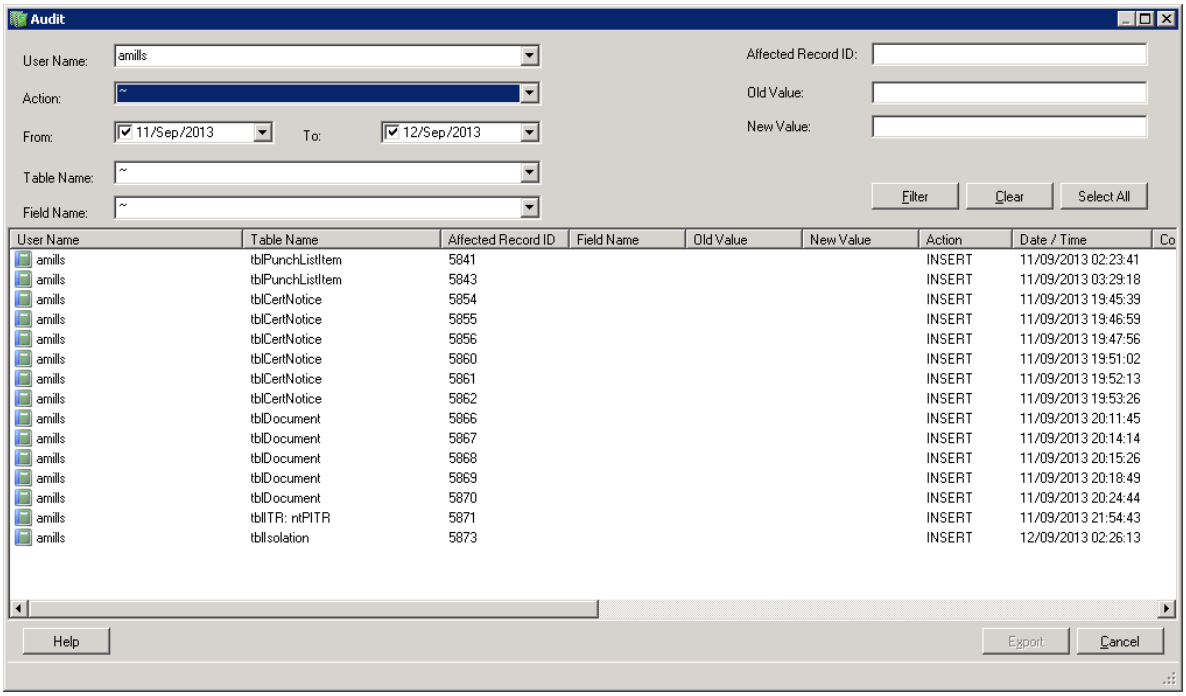


Audit Function

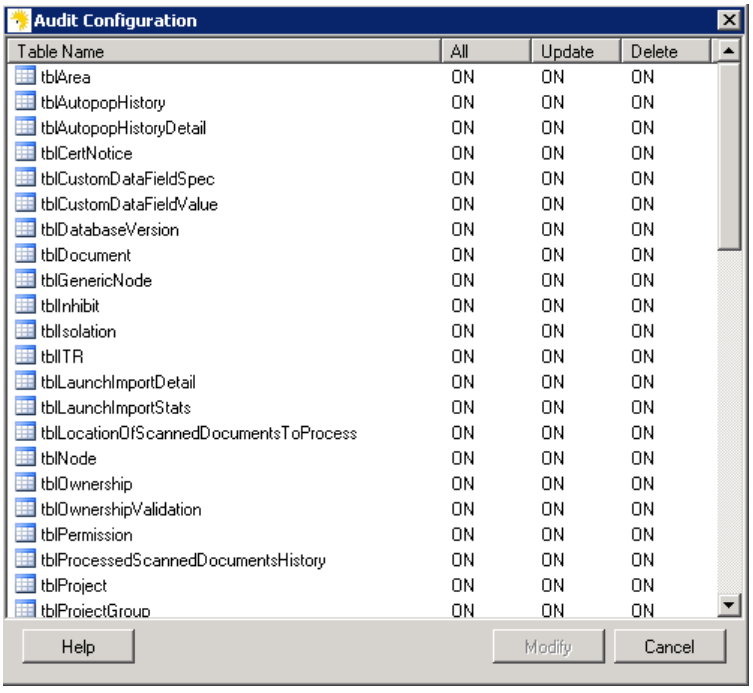
The Audit screen allows the user to filter using one or more attributes (Username, Action, From Date, To Date, Table Name, Field Name, Record ID, Old Value and New Value).

Resulting data can also be export to a CSV (Comma Separated) file which can easily be imported into Microsoft Excel for further investigation.

- *Choose User*
- *Choose Acton – Insert, Modify, Delete - default is for All*
- *Select Date Range – default is for today*
- *Specify Table - default is for All*
- *Specify Field - default is for All*



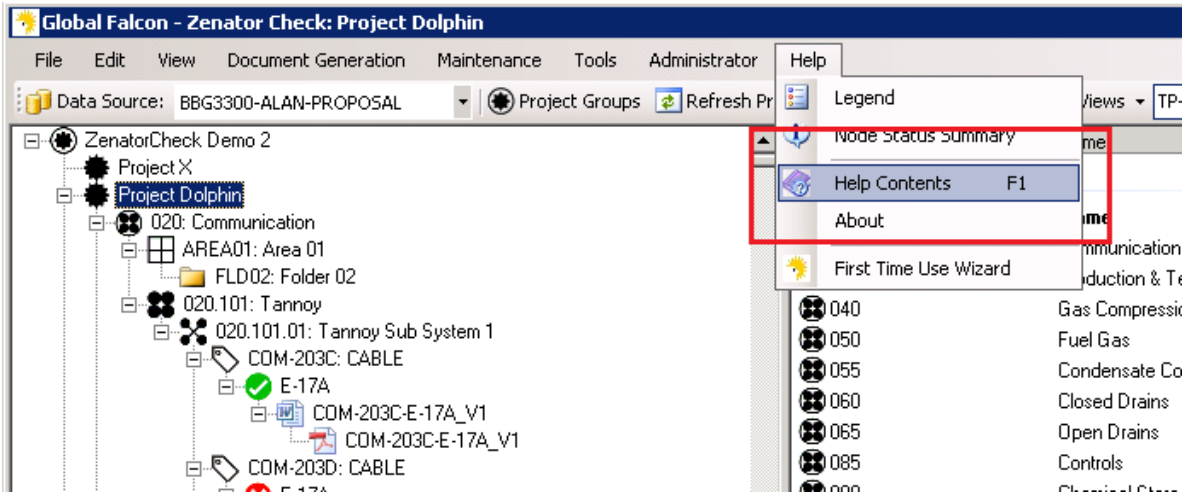
Auditing can be be configured using the following option ***Administrator > Audit Configuration*** *where auditing can be turned off or on as required for each individual table within the database.*



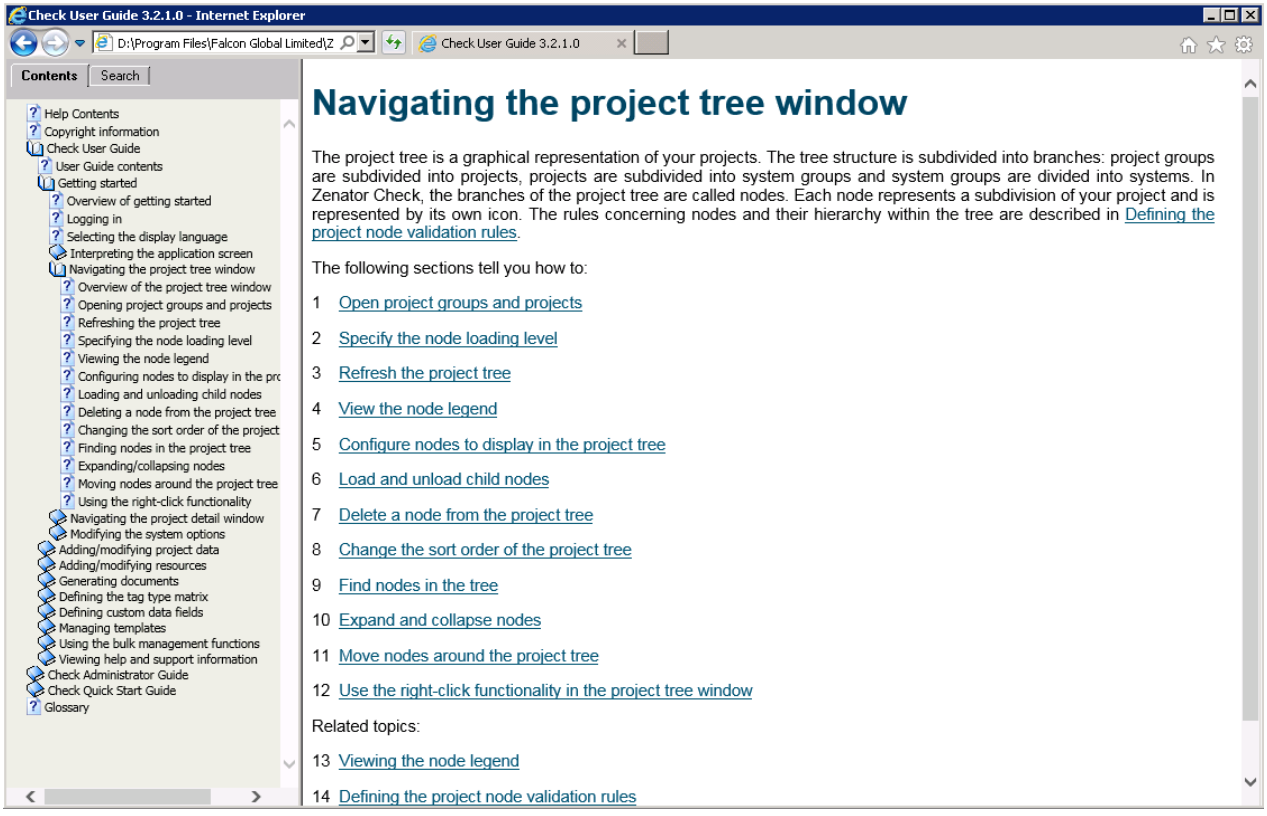
1.39 Zenator Help Functionality

What is the Help Function capability within the CMS software.

*All the Zenator products come with a built in browser based Help function which is accessed via the **Help / Help Contents** menu or the **F1 function key** within each product.*



This displays a browser based help as follows:

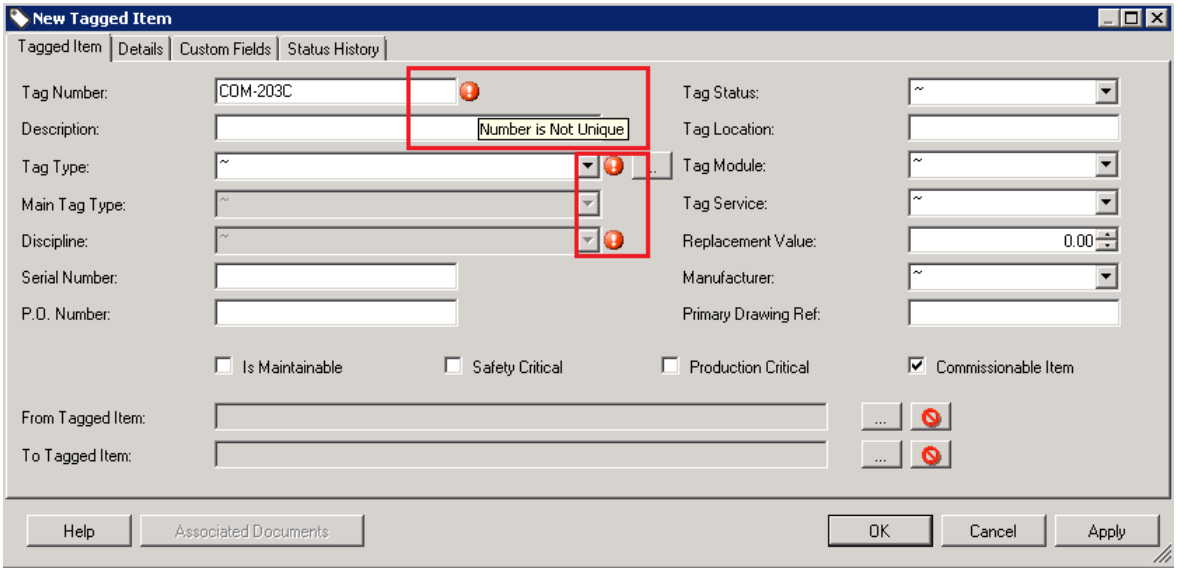


*The help cotains a detailed and extensive manual for Zenator broken down my topic. The user also has a search function available. Within **Zenator Check** the **F1 function key** provides context senstive help.*

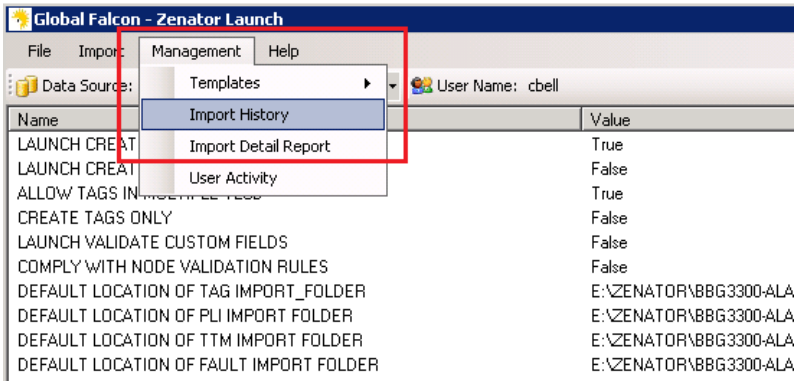
1.40 Zenator Error Handling Functionality

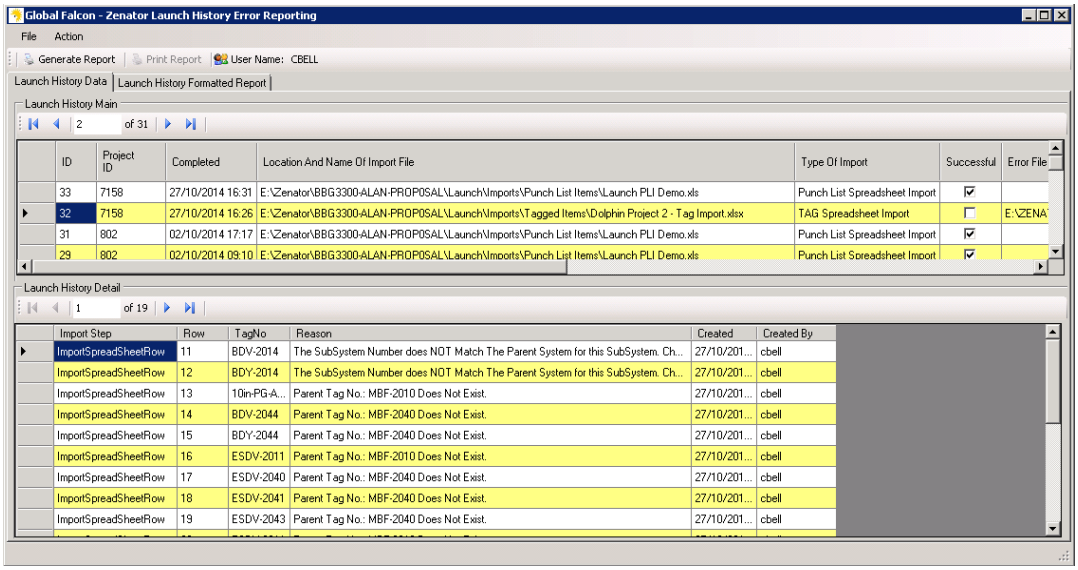
What is the Error Handling capability within the CMS software to help the user.

*Within **Zenator Check** data entry screen error messages are deivered via warning symbols which act as hover points. Hovering over the warning symbol displays the error message.*

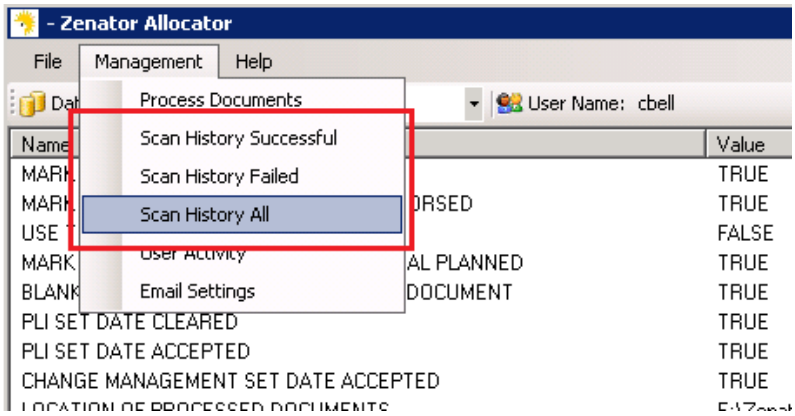


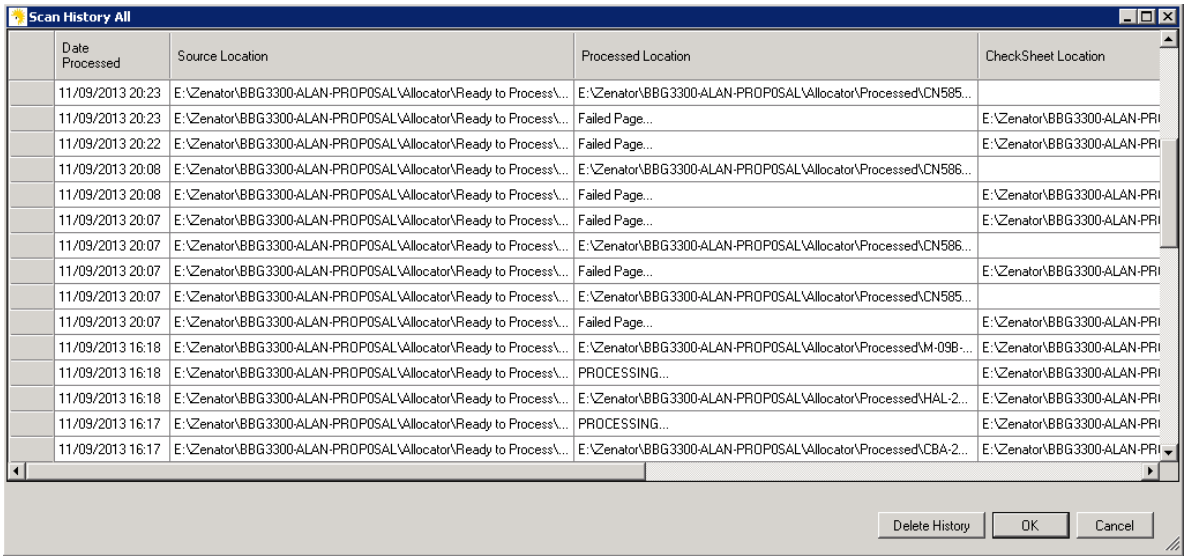
*Within **Zenator Launch** detailed import results are available for each imported datafile.*





*Within **Zenator Allocator** detailed import results are available for each imported PDF file.*





1.41 Technical Support

The Toolset provider shall provide 24/7 support to end users.

- *Worldwide Techncial Support is coordinated from our UK Help Desk*
- *Our Service Level Agreement contains challenging targets which we aspire to always better*
- *Currently supporting 25 projects, including Chevron Gorgon, over 15 time zones*
- *Customers compliment us on our responsive and attentive Technical Support*

1.42 Product Support

The software product provider will be able to access the toolset for support and maintenance issues; this shall be on a controlled basis (the control requiring agreement between Company and the toolset provider).

- *Agreed*

This will ensure consistency of process, format and content which will be mutually planned and agreed regarding changes to the toolset.

- *Agreed*
- *All code is deposited in Source Anywhere (SAW)*
- *Bi-annual deposits are made to our Technology Escrow accounts, depending on customer requirements*

1.43 Multi Site Access

Provide the capability for the Commissioning Management Toolset and associated process to be used in OEM locations and facilities, sub-systems and systems pre-assembly locations and commissioning sites.

It is the normal mode of operation for projects to operate globally with multi-sites all requiring access to Zenator. Each project has its own database so with access controls and permissions, each authorised user can obtain the information they need to perform their job.

Access to Zenator requires a reasonable quality internet connection. An acceptable minumum requirement is the bandwidth provided by a 3G dongle. In challenging environments with limited, patchy or non-existent internet connectivity, a local installation of Zenator in a LAN may be required. In more extreme cases, a local installation on a standalone laptop may be required. This scenario has not arisen since 2009/10.

1.44 Training Programmes

Provide appropriate training programmes at a variety of levels for "super users", "train the trainers", investigation team members and those requiring general overview of the system.

Refer to 1.1 regarding Train the Trainer.
It is critical to the success of the project to have users attend high quality training. To this end Falcon provides the following training courses:

- *Management Training – provides a highlevel introduction to Zenator and all its components.*
- *Read Only User Training – goes beyond the highlevel introduction to Zenator and provides a further level of knowledge on how to access Zenator, search and interogate the system. This will allow a user with read only access the necessary confidence to move around Zenator and find what they need to see quickly and easily.*
- *Power User Training – detailed training in all modules of Zenator, covering all aspects of the functionality.*

The above training can all occur within the same course. The structure of the 5 day Power User course is designed in a way that allows all users to attend the course finishing at different times. This course is normally delivered on site and customised to the needs of the customer / project.

Falcon also offers an additional 1 day course which can be added onto the end of Power User training covering all aspects of the Walkdown Capture module.

In addition to the above training Falcon also offers more advanced training as follows:

- *Commissioning & Start Up Workshops – This is a 5-day intensive training course covering the important phases of Commissioning and initial project Start Up of Onshore Process Plants and Offshore Production Facilities. The course is targeted at Managers, Engineers, Technicians and Operators currently, or soon to be involved in Commissioning.*
- *Super User training is often developed in conjunction with a customer's specific requirements. Our Super User courses are 3, 4 or 5 days and build on the skills a Power User will develop after about 12 months or on completing a project.*

The above training can be delivered on site and customised to the needs ot the customer / project. Public courses are also held a different venues around the globe on a frequence of 2-3 per year.

Power User and Commissioning & Stat Up Workshops are API (American Petroleum Institute) certified.

Training Materials
Falcon has an extensive range of training material to assist with user training. This includes:

- *Detailed Zenator User Manuals*
- *Training Framework / Agenda*
- *Training Practice Session Handouts*
- *On-line Zenator Introduction Videos*
- *On-line Zenator Supplemental Training Videos (available to all users after initial training)*

- *Commissioning & Start Up Workshops Framework / Agenda*
- *Commissioning & Start Up Workshops Course Material*
- *Training Review Forms*
- *Competency / Assessment Material*

Sample Material - Requirements for a Training Workshop

ZENATOR SYSTEMS
Requirements for a User Training Workshop

Table of Contents

www.falconglobal.net Zenator@falconglobal.net September 2013

SPECIFICATION
REQUIREMENTS FOR A
ZENATOR SYSTEMS
USER TRAINING WORKSHOP

Houston, Rio de Janeiro, Belfast, Norwich and Perth
September 2013

ZENATOR SYSTEMS
Requirements for a User Training Workshop

FALCON GLOBAL

Introduction

The following guidelines are provided by Falcon Global Ltd (FGL) to customers of *Zenator Systems* about to stage an on-site User Training Workshop (UTW).

These guidelines will enable you to organise and make the necessary preparations, inform you of the course content, its structure and duration, and explain what users can expect to receive after completing the UTW.

Reference Documents

These guidelines should be read in conjunction with the document, "Requirements for *Zenator Launch*".

These guidelines should be read in conjunction with the Workshop Training Program notes produced by FGL specifically for the UTW. The notes will normally be released a few days before the UTW.

Objective of a User Training Workshop

The philosophy underpinning *Zenator Systems* is to provide customers with a set of tools that satisfies the needs of the widest range of users engaged on a complex project. We understand that their range of needs and requirements can be diverse.

The time available for training will always be limited, especially when a project is "live" and the pressure to meet specific deadlines is real. Therefore *Zenator Systems* must be capable of being assimilated to a reasonable degree of competence by new users within the shortest reasonable period of time.

Zenator Systems has been designed to be intuitive to new users and structured with the breadth of content to meet their needs. *Zenator Systems* achieves this without compromise to security and integrity.

The objective of a UTW is to provide new users with sufficient knowledge of *Zenator Systems* to be able to competently use the software to the extent that is relevant to their needs, immediately following the course. It is not expected that users will become expert in *Zenator Systems* after such a short period.

The content and duration of a UTW must be carefully matched to needs and ability of the users.

It is not intended that a single UTW will be sufficient to provide skills and learning in a limited timeframe across all the organizations using *Zenator Systems*. A UTW may need to be repeated within 21-28 days if the people are working on a rotational basis. Also specific UTWs can be structured and delivered to exactly meet the needs of certain user groups, such as those from an Owner Operator, Sub Contractor or Vendors.

Preparation for the Zenator Systems UTW

FGL will require a minimum of 21 days notice in writing to develop and deliver a UTW. During the preparation period, the customer will send FGL a sample of project data, as discussed in the documents, "Requirements for *Zenator Launch*". FGL will review the data and respond to the customer with written comments on quality and suitability for *Zenator Launch*. For the UTW, FGL will use *Zenator Launch* to populate a sample of suitable data into *Zenator*.

Organising the first UTW is often done during the implementation phase with a new customer. When this is the case, the UTW usually takes place within 28 days of commencing the implementation phase.

Subsequent UTWs can be performed at intervals throughout the project to ensure that enough people are competent users of *Zenator Systems* and are able to meet the needs of the project.

Sufficient time should be allowed for bringing together the people for a UTW.

List of Attendees

As mentioned in Objectives, the people designated to attend a UTW should be carefully selected to ensure group cohesion and that the needs of the project are being met. See Course Content and Structure.

ZENATOR SYSTEMS
Requirements for a User Training Workshop

FALCON GLOBAL

The maximum number of people that can attend a UTW is twelve (12). In practice this may be reduced further depending on the size of venue, facilities and equipment available.

Customers should inform FGL in writing as soon as possible of the list of attendees for the UTW. As a minimum, the information needed is:

- Full Name
- Position
- Company

This information is needed to show that there are similar ranges of ability, need and aptitude within the group. Any major departure from this list will jeopardise group cohesion and the learning experience of all attending the UTW.

FGL will also use the list of attendees to prepare Certificates of Achievement for each participant successfully completing the course.

The Venue

The venue should be of sufficient size to comfortably accommodate the number of people designated to receive training. The training room should be a single room, with no partitions limited interference from noise.

Technical Support Required from IT

An IT person with Administrator privileges is required to give support before and during the UTW.

An essential part of the preparation for the UTW is to prepare the training room and install the equipment needed. This should all be set up and tested not later than the night before the UTW.

There will not be time on the first morning of the UTW to do any set up or installation of equipment.

The designated IT person should be contactable during the UTW to provide support when needed.

Software Installation

The IT designated person should be available to perform the installation of the non-networked version of *Zenator Systems* on PCs or laptops. On completion of the UTW the IT person will be required to uninstall the non-networked version of *Zenator Systems* from PCs or laptops.

Equipment Required

The UTW is run with each person operating *Zenator Systems* on either a stand-alone PC or laptop. Each person attending the UTW course will need a laptop; if the laptop is corporate equipment and not individually owned, the user must ensure they have Administrator rights and permission to make **Remote Desktop Connections**.

Further pieces of equipment required in the training room are:

- Projector and screen
- Scanner with automatic sheet feeder – this is important to train in the user of Allocator
- Software and drivers for the scanner for installation on FGL trainer's laptop
- Whiteboard and markers

The FGL trainer will bring a laptop and be self-sufficient.

Course Content and Structure

As mentioned in Objectives, the content and duration of a UTW must be carefully matched to needs and ability of the users. We strongly recommend the following:

- That the people selected for a UTW have a similar range of needs and are of a similar level of ability.
- For the first UTW, the people selected possess the skill to train and guide other users within their organisations.

Details of actual course content, including the typical agenda for a 3-Day UTW for Power-Users will be supplied one week prior to the course taking place.

Who Should Attend?

For the initial UTW on a new project, we recommend a 5-day programme that will appeal to a wide range of users and combine workshop learning in *Zenator Check, Allocator, Launch, Reports Plus.*

Tentative Training Agenda

Day 1 Overview of *Zenator Systems* (suited to Managers, Snr Engineers, occasional, regular and Power Users)

Day 2 *Zenator Check* Workshop (suited to occasional, regular and Power Users)

Day 3 *Zenator Check, Allocator, Launch & Reports Plus* Workshop (regular and Power Users)

Day 4 *Zenator Check, Allocator, Launch & Reports Plus* Workshop (Power Users)

Day 5 *Zenator Check, Allocator, Launch & Reports Plus* Workshop (Power Users)

Course Duration

For a well-chosen, cohesive group of attendees, the factors affecting course duration are the individual User's:

- Needs
- Ability in English
- Technical Training
- Experience:

Competency Assessment Test

Each person attending the UTW will be asked to sit the Competency Assessment Test. This will take place on the afternoon of the final day.

The test contains 30 multiple choice questions of increasing difficulty and normally takes each person approximately 20-25 minutes to complete. Users are permitted to continue the test until complete, irrespective of the time taken.

The purpose of the test is to assess the extent to which new users have assimilated the use of *Zenator Systems*, understood the generic Commissioning & Completions Philosophy and became familiar with names, terms and work processes.

Results from the test are stored in database and are used by FGL for comparative purposes.

Results and performance figures from the group taking the UTW will be submitted to the customer on request.

ZENATOR SYSTEMS
Requirements for a User Training Workshop

Certificates of Achievement and Continuing Professional Development (CPD)

As mentioned at the List of Attendees, FGL will prepare Certificates of Achievement for each participant successfully completing the UTW. Certificates may be presented to an individual's engineering institution or learned society in furtherance on Continuing Professional Development (CPD), a requirement of many professional institutions.

A sample Certificate is shown below.

www.falconglobal.net Zenator@falconglobal.net September 2013

Sample Training Agenda – Sample Delivered to EJJV, our Asia Partner in Belfast, March 2013

Zenator Systems EJJV Training Agenda

- **1.0 Day 1**
  - **1.1 Introduction**
    - 1.1.1 Welcome and Introductions
    - 1.1.2 Falcon Overview (Powerpoint)
  - **1.2 Zenator Overview**
    - 1.2.1 Zenator Check
    - 1.2.2 Zenator Launch
    - 1.2.3 Zenator Allocator
    - 1.2.4 Zenator ReportsPlus
  - **1.3 Session 1 – Check Introduction**
    - 1.3.1 Logging Into Zenator
      - 1.3.1.1 Citrix
      - 1.3.1.2 Check
    - 1.3.2 First Time User Settings
      - 1.3.2.1 First Time User Wizard
      - 1.3.2.2 Legend
      - 1.3.2.3 Options
      - 1.3.2.4 Zip File Folder Settings
    - 1.3.3 Check Interface
      - 1.3.3.1 Opening a Project
      - 1.3.3.2 Project Tree and Project Hierarchy
      - 1.3.3.3 Right Click Menu
      - 1.3.3.4 Icon Status (traffic lights)
      - 1.3.3.5 Node Type Count
      - 1.3.3.6 Drill Down
    - 1.3.4 Practical Session 1
  - **1.4 Session 2 – Menu Overview**
    - 1.4.1 Help Menu
    - 1.4.2 Administrator Menu
      - 1.4.2.1 Looktups
        - 1.4.2.1.1 Discipline
        - 1.4.2.1.2 Tag Type Main
        - 1.4.2.1.3 Tag Type
      - 1.4.2.2 Project Node Validation Rules
      - 1.4.2.3 Security (Users, Roles & Wizard)
      - 1.4.2.4 Data Source Setup
      - 1.4.2.5 Audits
    - 1.4.3 Tools Menu
      - 1.4.3.1 Options (the rest)
      - 1.4.3.2 Resources
      - 1.4.3.3 Reports
      - 1.4.3.4 Event Log
    - 1.4.4 Maintenance Menu
      - 1.4.4.1 Custom Data

Zenator Systems EJJV Training Agenda

- 1.4.4.2 Templates
- 1.4.4.3 Bulk Management Screens
  - 1.4.4.3.1 Documents
  - 1.4.4.3.2 ITRs
  - 1.4.4.3.3 PLIs
  - 1.4.4.3.4 Tags
- 1.4.5 Document Generation Menu
- 1.4.6 View, Edit and File Menu
- 1.4.7 Practical Session 2

1.5 Session 3 – How to Manually Add New Data

- 1.5.1 General Overview for the Tag Screen
  - 1.5.1.1 Validation
  - 1.5.1.2 OK Button
  - 1.5.1.3 Apply Button
- 1.5.2 How to add new data for each Node Screen
  - 1.5.2.1 Project Group
    - 1.5.2.1.1 Review (modify or new) screen for each node type.
    - 1.5.2.1.2 Highlight the mandatory fields.
    - 1.5.2.1.3 Highlight other rules (uniqueness, etc)
  - 1.5.2.2 Structural Node Types
    - 1.5.2.2.1 Project
    - 1.5.2.2.2 System Group
    - 1.5.2.2.3 System
    - 1.5.2.2.4 Sub System
    - 1.5.2.2.5 Sub Sub System
    - 1.5.2.2.6 Folder
  - 1.5.2.3 Grouping Node Types
    - 1.5.2.3.1 Tagged Item Group
    - 1.5.2.3.2 Area
  - 1.5.2.4 Tagged Item
  - 1.5.2.5 ITR Node Types
    - 1.5.2.5.1 AITR
    - 1.5.2.5.2 BITR
    - 1.5.2.5.3 PITR (Preservations)
    - 1.5.2.5.4 VITR (Vendor)
    - 1.5.2.5.5 E ITR (Equipment Test)
    - 1.5.2.5.6 Area ITR
  - 1.5.2.6 Complex Node Types
    - 1.5.2.6.1 Bulk Test
    - 1.5.2.6.2 Bulk AITR
    - 1.5.2.6.3 Bulk BITR
    - 1.5.2.6.4 Piping Test Pack
    - 1.5.2.6.5 Piping Test Pack ITR
    - 1.5.2.6.6 Electrical Circuit
    - 1.5.2.6.7 Electrical Circuit ITR

Zenator Systems EJJV Training Agenda

- 1.5.2.6.8 Instrument Loop
- 1.5.2.6.9 Instrument Loop ITR
- 1.5.2.7 Other
  - 1.5.2.7.1 Document / File / Image
  - 1.5.2.7.2 Certificate or Notice
  - 1.5.2.7.3 CITR
  - 1.5.2.7.4 Change Management
  - 1.5.2.7.5 Punch List Item
  - 1.5.2.7.6 Inhibit
  - 1.5.2.7.7 Isolation
- 1.5.3 How to Update data
  - 1.5.3.1 Via the Project Tree and Right Click
  - 1.5.3.2 Via the Bulk Management Screens
  - 1.5.3.3 Tag Data via Launch
- 1.5.4 How to delete data
  - 1.5.4.1 Via the Project Tree and Right Click
  - 1.5.4.2 Via the Bulk Management Screens
- 1.5.5 Practical Session 3

2.0 Day 2

- 2.1 Recap and Issues from Day 1
- 2.2 Session 4 – Dealing with Large Project Models
  - 2.2.1 Introduction to Large Project Models
  - 2.2.2 User Control (Options)
    - 2.2.2.1 Loading to All Level
    - 2.2.2.2 Loading to System Level
    - 2.2.2.3 Loading to Sub System Level
  - 2.2.3 The Project Tree
    - 2.2.3.1 Loading / Unloading Child Nodes
    - 2.2.3.2 Project Groups and Clear options
    - 2.2.3.3 Quick Find
    - 2.2.3.4 Advanced Find
  - 2.2.4 MAX_NODE_COUNT setting
  - 2.2.5 Practical Session 4
- 2.3 Session 5 – ITR Creation
  - 2.3.1 Before You Can Generate
    - 2.3.1.1 Lookups
      - 2.3.1.1.1 Disciplines
      - 2.3.1.1.2 Tag Types Mains
      - 2.3.1.1.3 Tag Types
    - 2.3.1.2 Templates
    - 2.3.1.3 Tag Type Matrix
  - 2.3.2 Various Ways to Create ITRs
    - 2.3.2.1 ITR Wizard

Zenator Systems EJJV Training Agenda

- 3.2.2.2 TLC&B Wizard
- 3.2.2.3 Preservation Service
- 2.3.2.4 Manual Creation via Right Click
- 2.3.3 Templates and Documents and Bold to indicate problems
- 2.3.4 Document Versioning and Regeneration
- 2.3.5 Practical Session 5

2.4 Session 6 – Certificates

- 2.4.1 Adding Certificates
- 2.4.2 Generating
- 2.4.3 Printing and Closing
- 2.4.4 Construction Completion
  - 2.4.4.1 Checksheets (AITRs)
  - 2.4.4.2 PLIs (Category A)
- 2.4.5 Commissioning Completion
  - 2.4.5.1 Checksheets (BITRs)
  - 2.4.5.2 PLIs (Category B)

2.5 Session 6 – Printing from Check

- 2.5.1 Individual CheckSheets
- 2.5.2 Multiple Checksheets
- 2.5.3 Using Zip
- 2.5.4 Practical Session 6

3.0 Day 3

3.1 Recap and Issues from Day 2

3.2 Session 7 – Zenator Launch

- 3.2.1 Introduction
- 3.2.2 Logging on
- 3.2.3 Help
- 3.2.4 Configuration Settings
- 3.2.5 Import Templates
  - 3.2.5.1 Launch Specific Mandatory Fields
  - 3.2.5.2 User Mandatory Fields
  - 3.2.5.3 Custom Fields
  - 3.2.5.4 Process
  - 3.2.5.5 Field Type: System, Detail or Custom
- 3.2.6 Template File Creation / Modification
  - 3.2.6.1 Save Templates
  - 3.2.6.2 Create Template Wizard
- 3.2.7 Import History Review
- 3.2.8 Validation Checks and Possible Errors
- 3.2.9 Importing Tags
  - 3.2.9.1 Review a sample File

Zenator Systems EJJV Training Agenda

- 3.2.9.2 Import
- 3.2.9.3 Review of Results
- 3.2.10 Importing TTM
  - 3.2.10.1 Review a sample File
  - 3.2.10.2 Import
  - 3.2.10.3 Review of Results
- 3.2.11 Importing PLI
  - 3.2.11.1 Review a sample File
  - 3.2.11.2 Import
  - 3.2.11.3 Review of Results
- 3.2.12 *Importing Faults*
  - 3.2.12.1 *Review a sample File*
  - 3.2.12.2 *Import*
  - 3.2.12.3 *Review of Results*
- 3.2.13 *Importing Resources*
  - 3.2.13.1 *Review a sample File*
  - 3.2.13.2 *Import*
  - 3.2.13.3 *Review of Results*
- 3.2.14 Practical Session 7

3.3 Session 8 – Zenator Allocator

- 3.3.1 Introduction
- 3.3.2 Logging On
- 3.3.3 Help
- 3.3.4 Structure of the Scanned Document File
- 3.3.5 Configuration Settings
- 3.3.6 Scanning folders
  - 3.3.6.1 Check Boxes and the effect they have on processing
  - 3.3.6.2 Email Exceptions
  - 3.3.6.3 Automatic Timer
- 3.3.7 Viewing Scan History for Successful and Unsuccessful processing
- 3.3.8 Normal Correct Processing of a Document
- 3.3.9 Possible Error Types
- 3.3.10 Quality resources including printer, scanner, paper and toner
- 3.3.11 Resolution of Scanned Documents
- 3.3.12 Practical Session 8

4.0 Day 4

4.1 Recap and Issues from Day 3

4.2 Session 9 – Templates

- 4.2.1 Templates including bar codes and merge fields
- 4.2.2 Adding Templates to Check
- 4.2.3 How to create a new template
- 4.2.4 Font required for bar code creation
- 4.2.5 Practical Session 9

Zenator Systems EJJV Training Agenda

- 5.1.2.3 Scanning
  - 5.1.2.3.1 Quantities / Volume
  - 5.1.2.3.2 File Sizes
  - 5.1.2.3.3 Copy onto the Network
- 5.1.2.4 Printing
  - 5.1.2.4.1 Quantities / Volume
  - 5.1.2.4.2 Direct Print verses Zip & Copy
- 5.1.3 Practical Session 12

5.2 Session 13 – Full Overview of any Problem Areas

5.3 Practical Session 13

- 5.3.1 Tag Import via Launch
- 5.3.2 Data Review via Check
- 5.3.3 ITR Generation via Check
- 5.3.4 ITR Management (Update / Printing) via Check
- 5.3.5 ITR Completion via Allocator
- 5.3.6 PLI Import via Launch
- 5.3.7 Reporting Review via ReportsPlus

5.4 Final Zenator Q&A Session

5.5 Final Session

Zenator Systems EJJV Training Agenda

- **4.3** Session 10 – WalkDownCapture (WDC)
  - 4.3.1 Tablets
  - 4.3.2 Registering a Device
  - 4.3.3 Preparing the data file
  - 4.3.4 Operating the device
  - 4.3.5 Exporting data back to Check
  - 4.3.6 Issues to consider
  - 4.3.7 Practical Session 10
- **4.4** Session 11 – Reports Plus
  - 4.4.1 Introduction
  - 4.4.2 Running from Check
  - 4.4.3 Selecting a Report
  - 4.4.4 Completing Parameters
  - 4.4.5 Producing a Report
  - 4.4.6 Types of Report
    - 4.4.6.1 Pivot Tables
    - 4.4.6.2 Graphical Reports
    - 4.4.6.3 Listing Reports.
  - 4.4.7 New and Modifying Report Templates
  - 4.4.8 Excel Pivot Tables
  - 4.4.9 Creating New Reports
    - 4.4.9.1 Reporting Data Tables
    - 4.4.9.2 Reporting Stored Procedures
    - 4.4.9.3 Excel Report Templates
    - 4.4.9.4 Reporting Control File
    - 4.4.9.5 65,000 cell limitation in MS Excel 2003
  - 4.4.10 Practical Session 11

5.0 Day 5

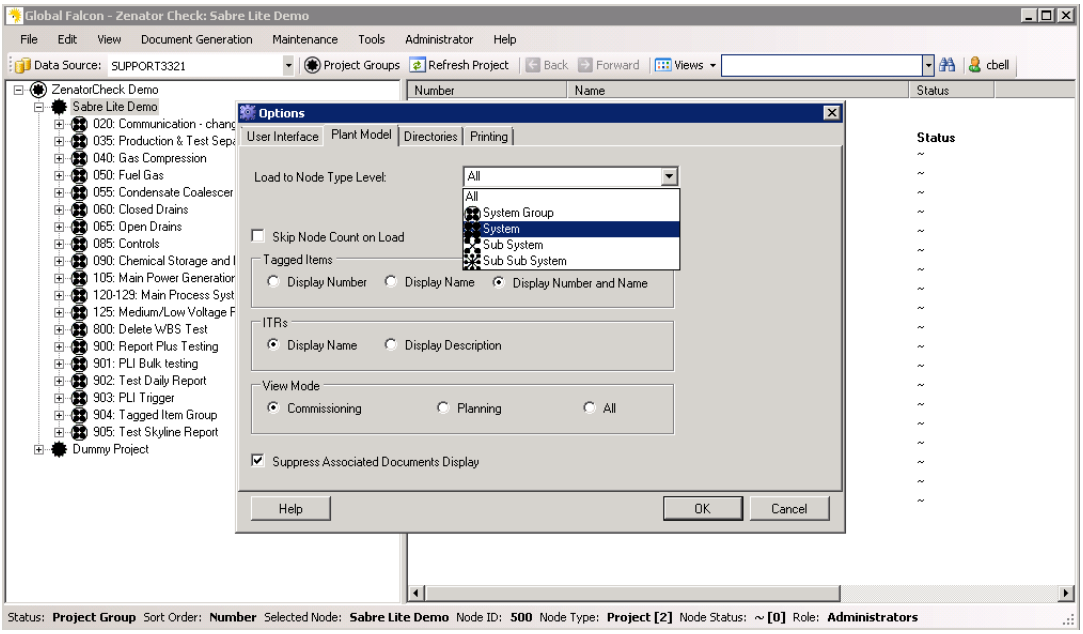
5.1 Session 12 – Advanced Topics

- 5.1.1 Special Services
  - 5.1.1.1 Preservations Service
  - 5.1.1.2 Reporting Service
  - 5.1.1.3 Allocator Service
- 5.1.2 Troubleshooting
  - 5.1.2.1 Application Specific Parameters
    - 5.1.2.1.1 Zenator Check
      - 5.1.2.1.1.1 LOCK_ITR_AND_CHECK_SHEET_GENERATION
      - 5.1.2.1.1.2 LOCK_TLC_AND_CHECK_SHEET_GENERATION
      - 5.1.2.1.1.3 LOCK_BULK_AND_CHECK_SHEET_GENERATION
    - 5.1.2.1.2 Zenator Allocator
      - 5.1.2.1.2.1 ALLOCATOR_IS_PROCESSING
  - 5.1.2.2 RoboCopy
    - 5.1.2.2.1 Copy of MS Word ITR Documents to Site
    - 5.1.2.2.2 Copy of PDF ITR Documents from Site

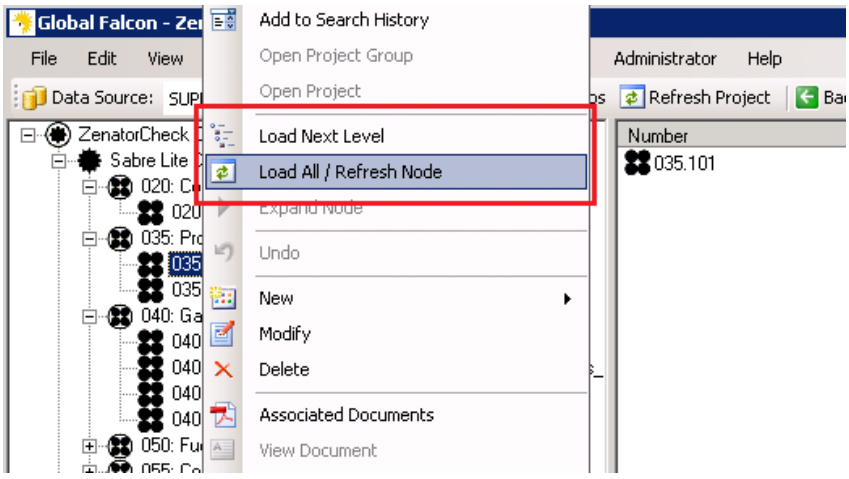
1.45 Scalability

The Zenator Applications have been designed to be scalable as a project grows. Some examples are:

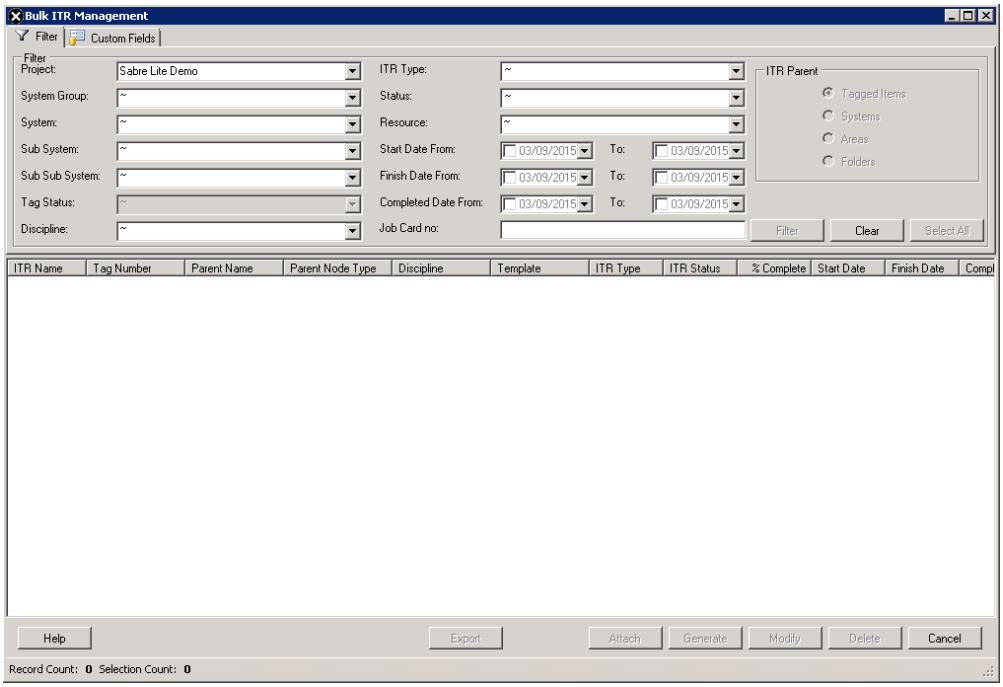
- ***Initial Project Tree Load Options*** *– the user can pick different load modes within the "Load to Node Type Level" to control the level of data that is initially loaded into the Project Tree. Options are:*
  - *Load to System Group level*
  - *Load to System Level*
  - *Load to Sub System Level*
  - *Load to Sub Sub System Level*



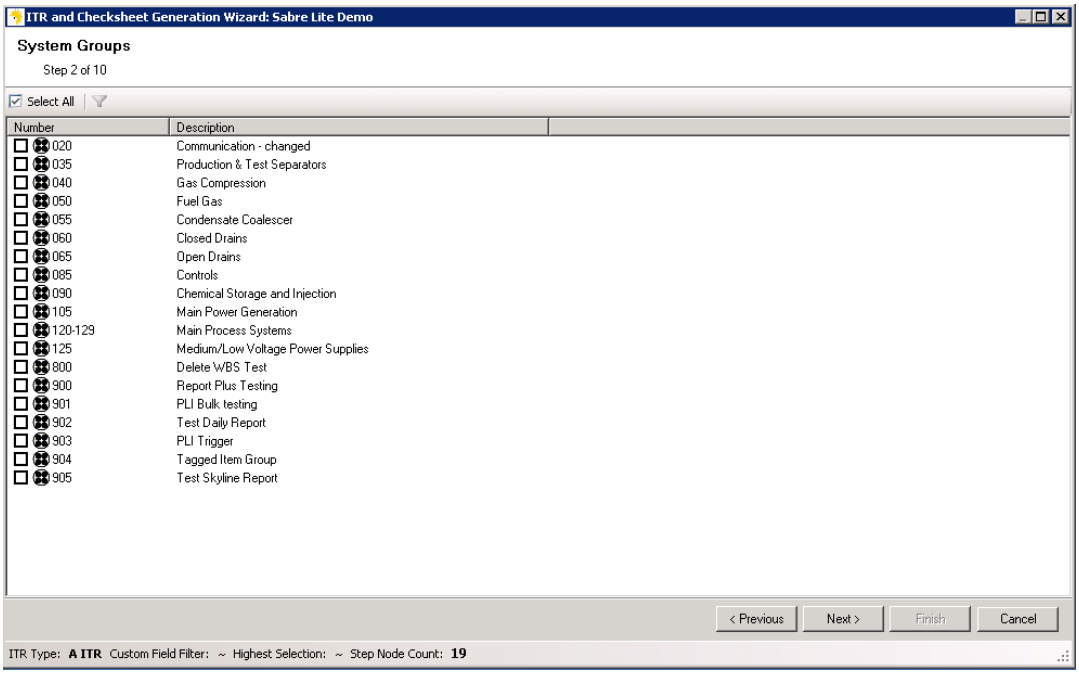
- *Project Tree refresh – within the Project Tree the user is able to refresh selected branches of the tree to ensure maximum speed. This is achived through two possible options "Load Next Level" and "Load All / Refresh Node".*



- *Bulk Management Screen Filtering – within the various Bulk Management screens the user has a wide selection of filtering options to control the level of data that is selected into the screen.*



- *Document Genration Wizards – within the ITR Wizard and TLCB Wizard the ITR allocation and generation processes the user has a wide selection of filtering options to control the level of data that is selected into the Wizard. This is presented to the user as a series of steps.*



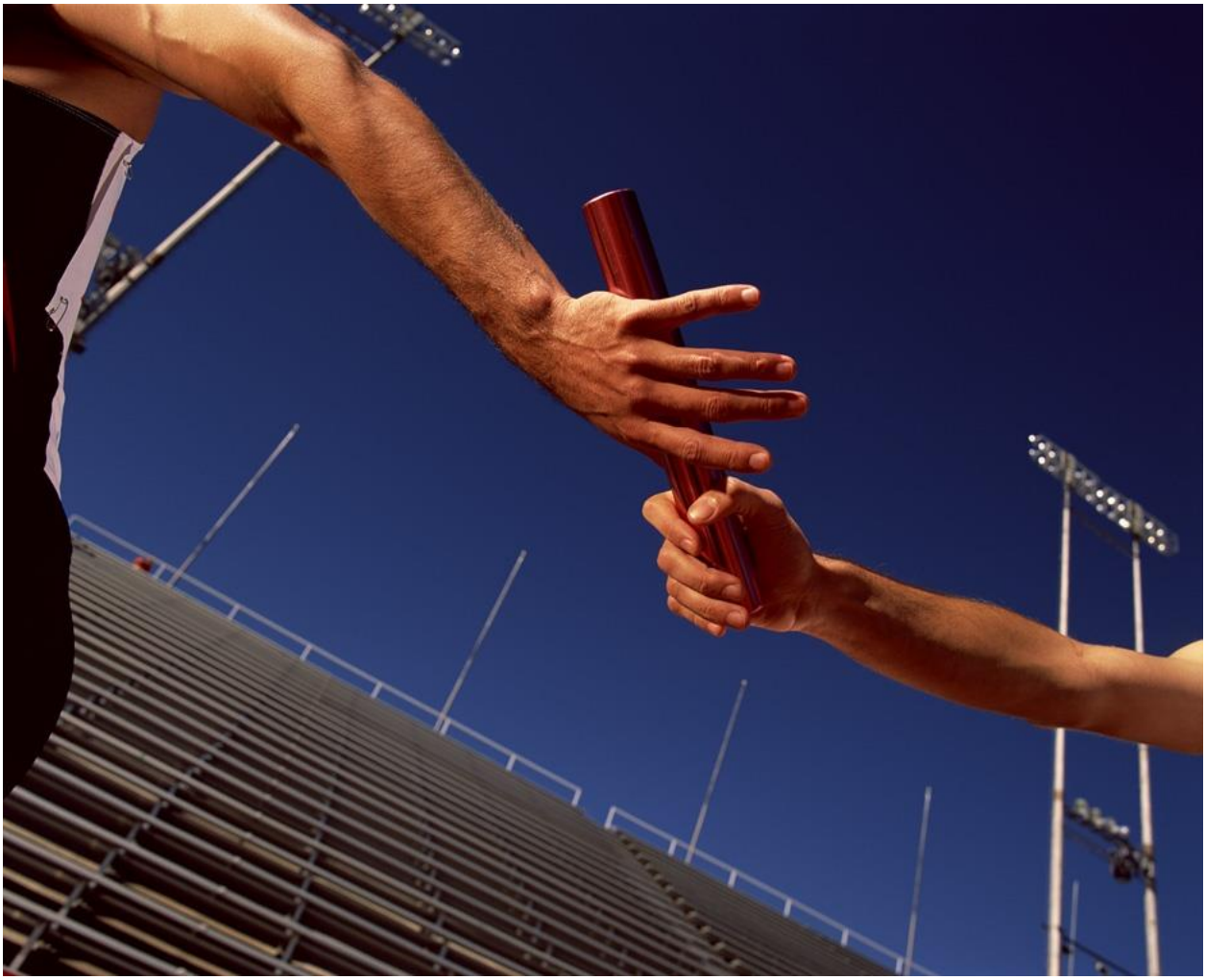
The Windows Server environment and Citrix Deployemt are also designed for scability within any environment allows the infrastructure to grow as the customer / project needs grow.

1.46 Zenator Licensing Management

Zenator contains a simple Licensing Management function. Each database after initial creation must have a license file applied to it before it can be accessed. This licence file is issued by the Falcon Global support team.

The license file activates the newly created database (or data source connection) and controls which applications can be used against that database. For each database / data source this activation is only required once.

Using Zenator is all about Safe and Timely Transitions



Helping You to Complete Your Projects On Time and Safely

Index