Intergraph Smart® Electrical (SEL) Implementation
Case Study

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Project Overview:

- Full Hexagon Suite Implementation
- Integrated
- Global Deployment

Drivers for Improvements to SEL :

- Low user acceptance
- Regulatory compliance
- Deliverable quality was being overlooked under the datacentric approach
  - Ongoing workarounds/data sync issues e.g.
    - Multiple platforms adopted
    - Reverting to legacy practices

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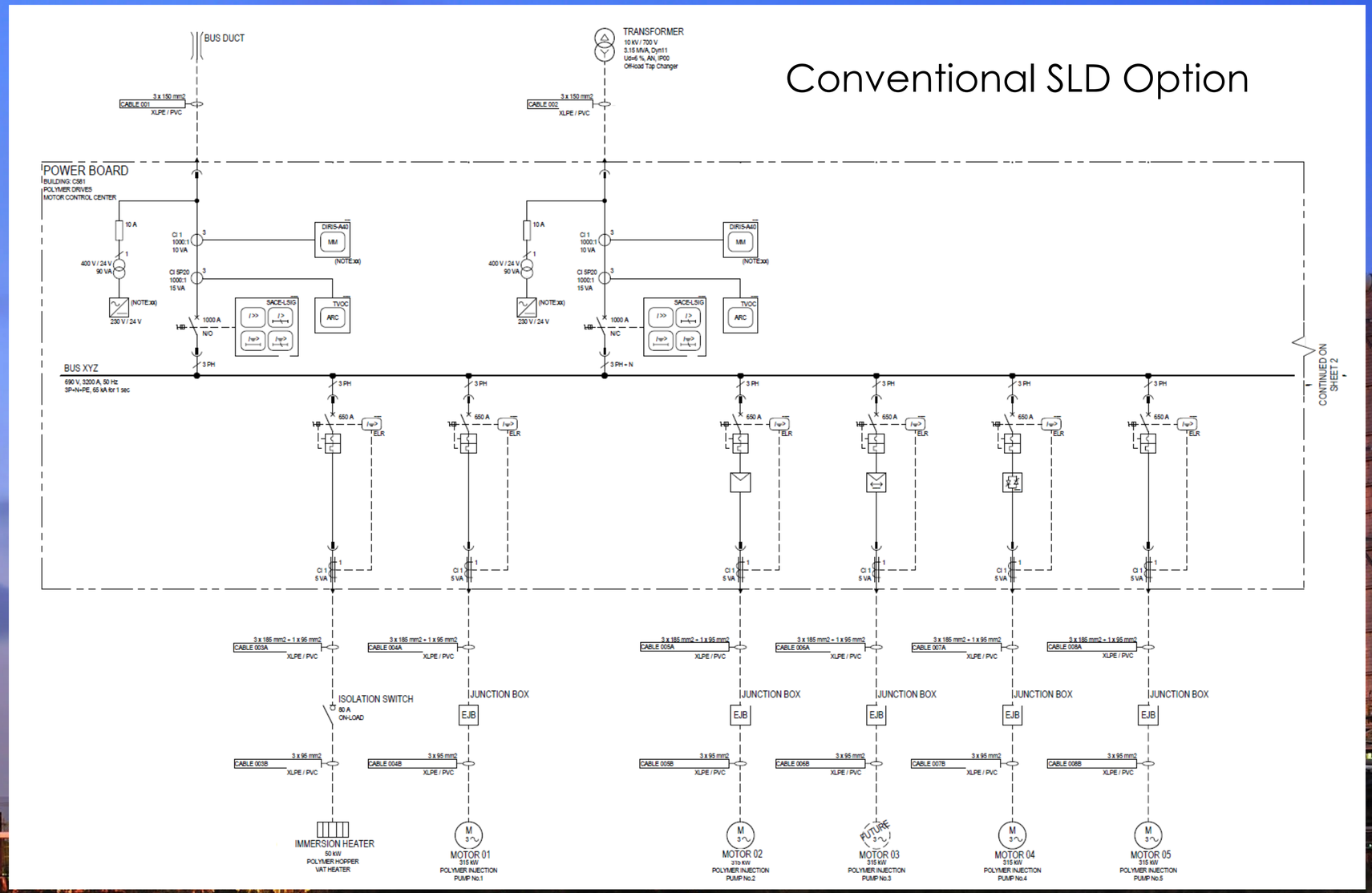
Our brief

- Deliver CAD quality output for SLD's
- Conform with existing Standards
- Increase user acceptance
- Facilitate full adoption of Smart® Electrical

Roles

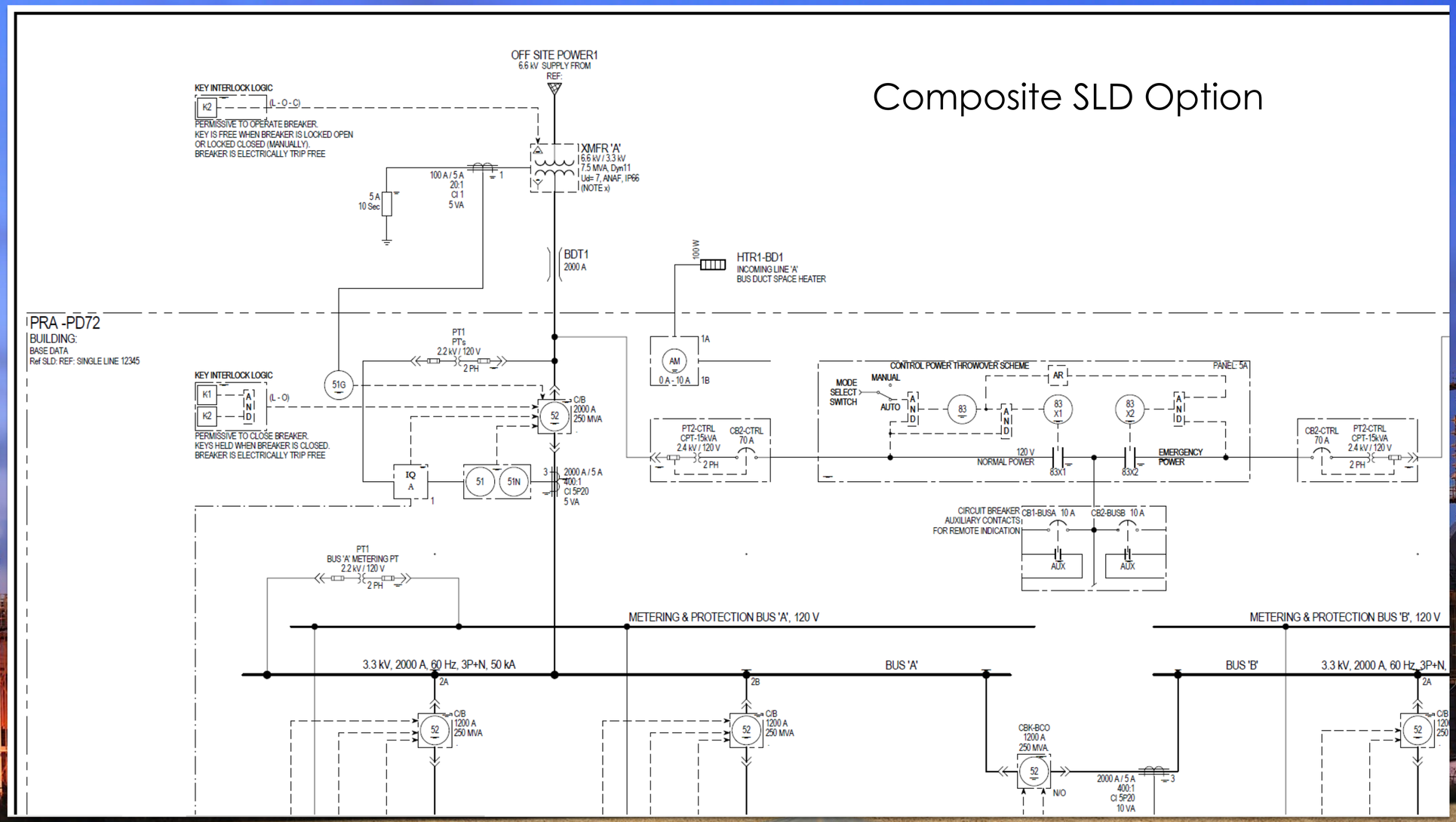
- Technical Lead (TG)
  - Review Current State, Standards, Processes etc
  - Gather requirements from customer (APAC, EU, Americas)
  - Solution Design
  - Manage Implementation and Testing
- SEL Senior SME (TG)
  - Solution Design
  - Configure Solution
  - Testing Support
  - Training
  - Documentation
- Customer Team
  - Provide Requirements
  - Provide Standards
  - Testing and Feedback
  - Final Acceptance

What we delivered



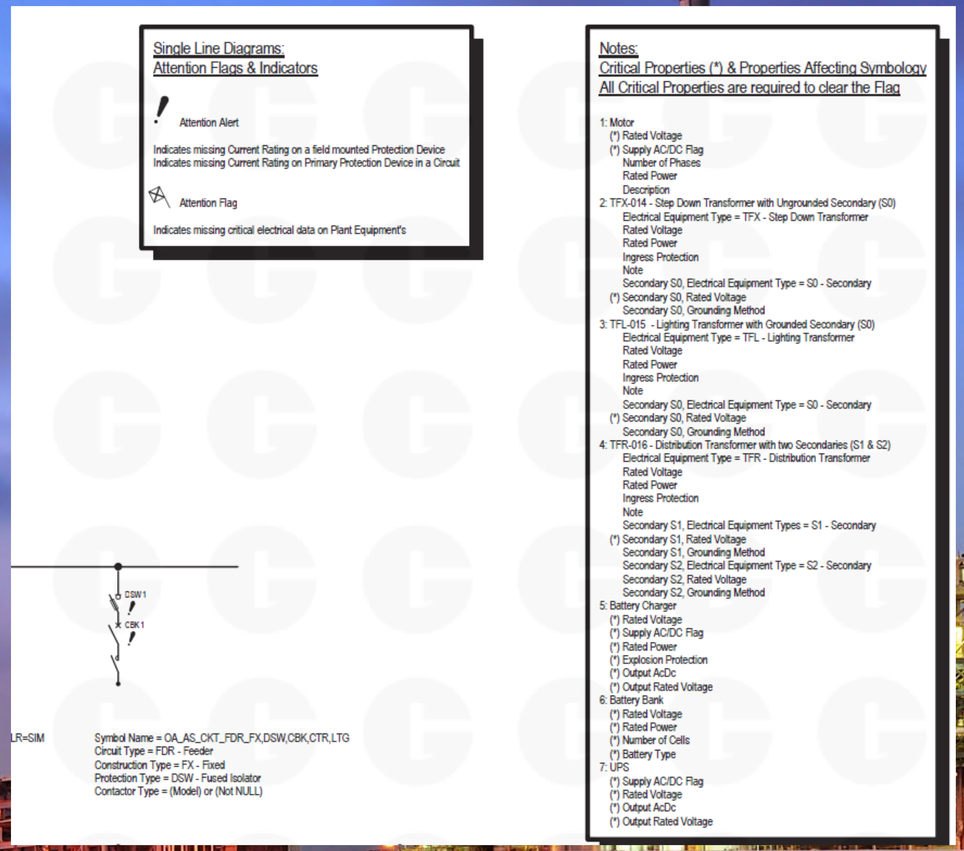
What we delivered

Composite SLD Option



What we delivered

Data Entry Management Solutions



Single Line Diagrams:
Attention Flags & Indicators

Attention Alert

Indicates missing Current Rating on a field mounted Protection Device
Indicates missing Current Rating on Primary Protection Device in a Circuit

Attention Flag

Indicates missing critical electrical data on Plant Equipment's

Notes:
Critical Properties (*) & Properties Affecting Symbology
All Critical Properties are required to clear the Flag

1: Motor
(*) Rated Voltage
(*) Supply AC/DC Flag
Number of Phases
Rated Power
Description
2: TFX-014 - Step Down Transformer with Ungrounded Secondary (S0)
Electrical Equipment Type = TFX - Step Down Transformer
Rated Voltage
Rated Power
Ingress Protection
Note
Secondary S0, Electrical Equipment Type = S0 - Secondary
(*) Secondary S0, Rated Voltage
Secondary S0, Grounding Method
3: TFL-015 - Lighting Transformer with Grounded Secondary (S0)
Electrical Equipment Type = TFL - Lighting Transformer
Rated Voltage
Rated Power
Ingress Protection
Note
Secondary S0, Electrical Equipment Type = S0 - Secondary
(*) Secondary S0, Rated Voltage
Secondary S0, Grounding Method
4: TFR-016 - Distribution Transformer with two Secondaries (S1 & S2)
Electrical Equipment Type = TFR - Distribution Transformer
Rated Voltage
Rated Power
Ingress Protection
Note
Secondary S1, Electrical Equipment Types = S1 - Secondary
(*) Secondary S1, Rated Voltage
Secondary S1, Grounding Method
Secondary S2, Electrical Equipment Type = S2 - Secondary
Secondary S2, Rated Voltage
Secondary S2, Grounding Method
5: Battery Charger
(*) Rated Voltage
(*) Supply AC/DC Flag
(*) Rated Power
(*) Explosion Protection
(*) Output AcDc
(*) Output Rated Voltage
6: Battery Bank
(*) Rated Voltage
(*) Rated Power
(*) Number of Cells
(*) Battery Type
7: UPS
(*) Supply AC/DC Flag
(*) Rated Voltage
(*) Output AcDc
(*) Output Rated Voltage

DSW 1
CBK 1

LR=SIM

Symbol Name = OA_AS_CKT_FDR_FX,DSW,CBK,CTR,LTG
Circuit Type = FDR - Feeder
Construction Type = FX - Fixed
Protection Type = DSW - Fused Isolator
Contactor Type = (Model) or (Not NULL)

Config Management Solutions

Reports	Types	Attribute	Application
Select Entries	235	4755	SPEL
Site Settings	39		SPEL
Plant Settings	14		SPEL
OptionSettings	71		SPEL
Filters	527	736	SPEL
Itemtypes	230	63437	SPEL
Report Extract	65	3390	SPEL
Naming Conventions	0	0	SPEL
Symbology	33	105	SPEL
Formats	41	386	SPEL
RUL Extract	12	25	SPEL
User Roles	189	22976	SPEL
SLD	52		SPEL
Ref Cable	621		SPEL
Ref Heater	2		SPEL
Ref Motor	2		SPEL
Ref Transformer	0		SPEL
RefData Files	2101		SPEL
Ref ItemTypeStorage	174		SPEL

Tested Solution

March 17, 2022

Subject: i4009 – Single Line Diagrams
Version: SmartPlant Electrical Version (Full Version and HF)

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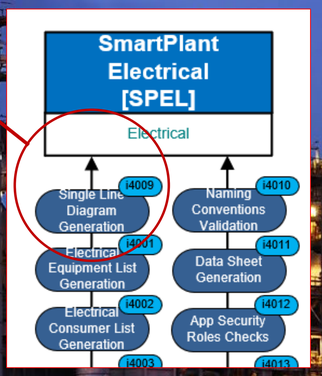
1. INTRODUCTION
1.1 Document purpose
1.2 Document Scope



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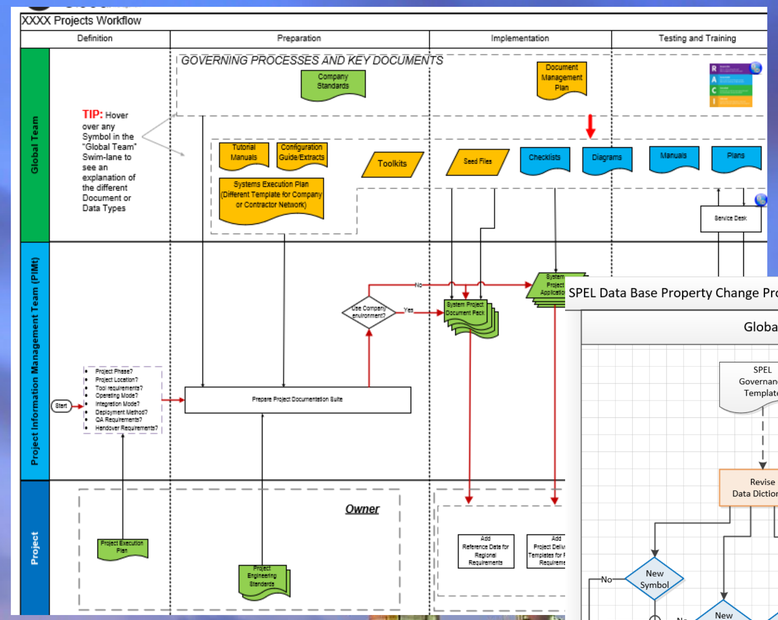
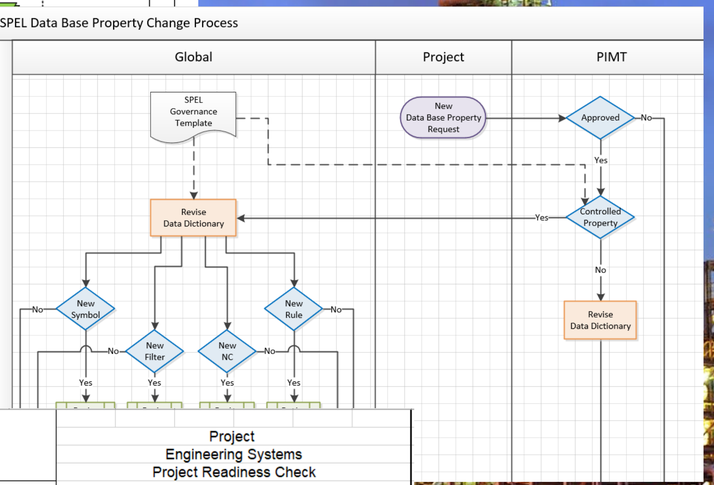
What we delivered

Admin Training and Documentation





						Project Engineering Systems Project Readiness Check
			Issued for Use			Doc. Number:
No.	By	Date	Revision	Check	Appr	

Application	Check Category	Question	Response	Required Action	Action Description
SPEL	Backup Validation	Has DDT compare routine been run to compare restored backup against the Company Seed File			
SPEL	Backup Validation	Was Site/Plant restore and DDT Check error free?			
SPEL	Documentation	Relevant Discipline Engineering and Design Guides have been provided?			
SPEL	Documentation	Admin and User Documentation provided?			
SPEL	Application and Reference Data	Is the required PBS available?			
SPEL	Application and Reference Data	Are the required roles and access rights configured and tested?			

- Admin Training
  - System Overview
  - Delta Training
- Admin Documentation
  - Workflows
  - Checklists
  - Customisation Capture
  - Config Capture

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What we delivered

User Training and Documentation

- Delta Training
  - Customer Specific settings
  - Customer Specific Processes
  - Customer specific reporting
- User Documentation
  - User Manual
  - Request Forms

DOCUMENT PROPERTIES			
Project Name			
Document number	Project-X-X-X-X	Revision	-
Author	-	Date	-
Title	Project SPEL User Guideline		
Subtitle			

Rev	Date	Description	Originator	Checked	Approved
-	-	-	-	-	-

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SPEL Symbol Request Form

Change No.		**Rev. No.**		**Date**	
Originator		**Issued by**		**Ref Doc No.**	
Project No.		**Project Title**			
Raised by:	Company		Location		Discipline

Symbol Details

Catalog Path		**Plant Item Type**	
Symbol Name		**Class**	
Label Property #1		**SubClass**	
Label Property #2		**Type**	
Label Property #3		**(User Defined)**	

(Attach additional sheets if required)

Description of Requirements (Including any images)

What we delivered

Rollout Support

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Key elements for success

- Working as an integrated team
- Getting the requirements documented
  - Global
  - Regional
  - Local
- Engagement and knowledge transfer users along the way

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