



JANUARY 2017

Integrating Sciencetech PdP recommendations into NSP Asset Management Systems

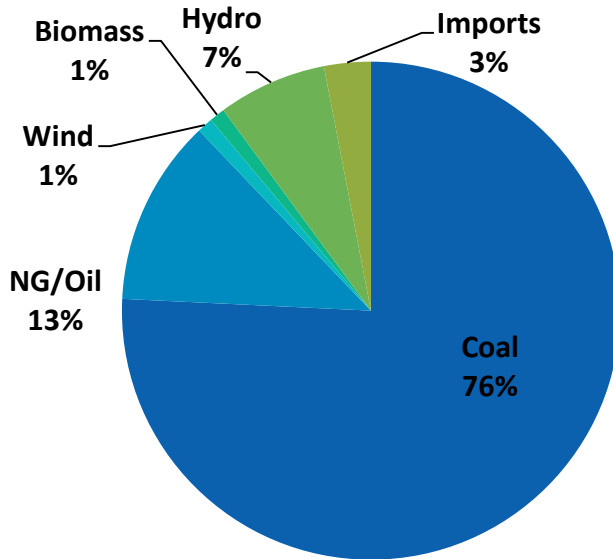
Nova Scotia's Renewable Energy Transformation

- 25% Renewable Energy by 2015
- 40% Renewable Energy by 2020

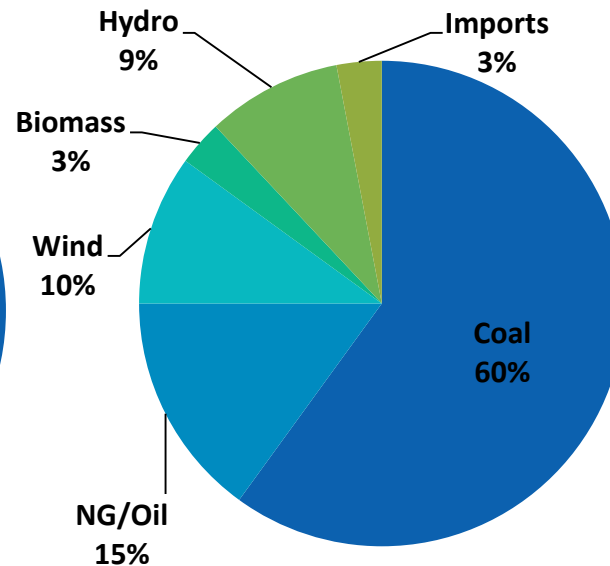
- Peak demand :
- Low load:
- Wind Generation:

2100 MW
625 MW
>600 MW

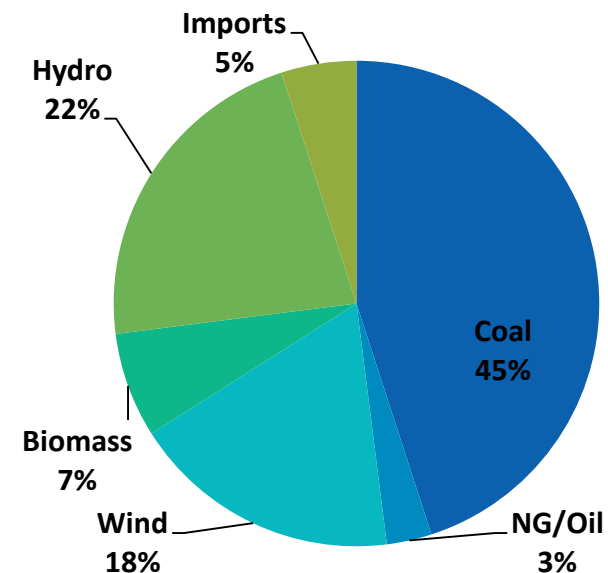
2007



2014



2020 forecast



The NSP Asset Management Pyramid



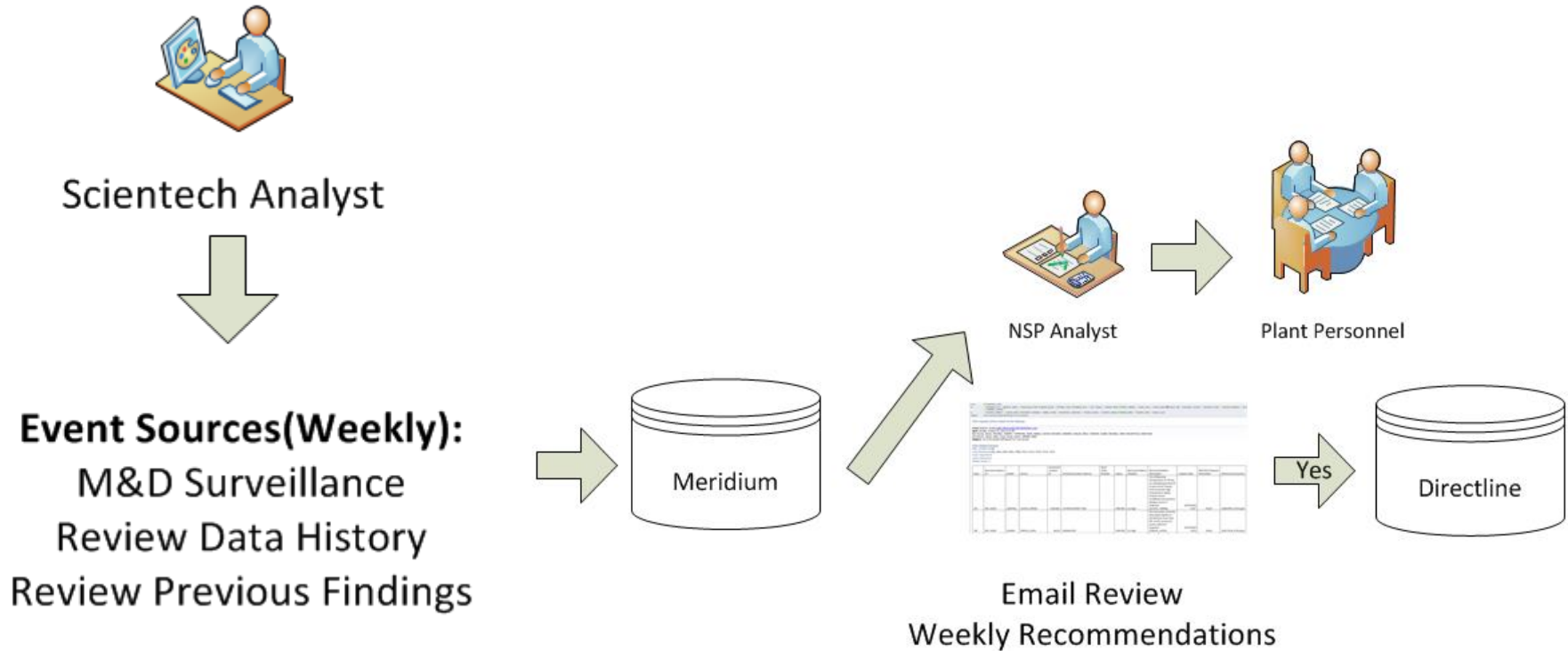
NSP AMO IT Toolkit

System	Vendor	Usage
Meridium	GE	Measurement and Recommendation storage, Elog, GAA, KPIs
Directline	Megamation	Work Management
FAMOS	Scientech	Heat Loss and Predictive Analytics
Aware	Intertek	Boiler Maintenance/Inspections and Unit Life Assessment
CBT	Inhouse	Competency Based Training and Operations Procedure Review
SharePoint	Microsoft	Storage and Organization of RCA and 3rd party Assessments
Microsoft Office	Microsoft	Access for specialty reporting (DAFOR), Excel for targeted lists

IT Security Considerations

- Sciencetech Technicians have NSP VPN network access
- Sciencetech Technicians have NSP network accounts
- Sciencetech Technicians have administrative access to the FAMOS servers
- Sciencetech Technicians have Meridium accounts

FAMOS Recommendation Capture(Business Process):



Meridium Recommendation Entry

Record Manager

Add, Edit, and Delete records. Link records together using the explorer.

PDP ~LIN~REC-10188~(1) High (NSP Recommendation)

Datasheet NSP Recommendation



Identification | DirectLine | Recommendation Comments | Alert

	Value(s)
Recommendation ID	REC-10188
Rec Type	PDP
Rec Source	PDP
Recommendation Headline	(1) High
Recommendation Description	The IB Bearing Temp on BFP B increased after the 3/17/15 pump start-up and is currently operating 7-12 deg. C above predicted temps. Verify sensor calibration. Check lube oil supply to bearing.
Recommendation Family	NSP
Work Order Number	362031
Plant	LIN
Asset ID	
Functional Location ID	44311002 (B-BOILER FEED PUMP)
Required Equipment Status	
Recommendation Priority	
Author Name	Scienteck, Scienteck
Assigned To Name	REL, REL
Initiation Date	
Initiation Year	
Completed Date	
Generate Work Request	<input checked="" type="checkbox"/>
Target Completion Date	3/23/2015
WMS Target	DL
NSP Work Request Generated	<input checked="" type="checkbox"/>
Percent Complete	
Business Driver	
Status	Completed (COMPLETED)
Closure Comments	

Meridium Recommendation Entry

Value(s)
REC-10188
PDP
PDP
(1) High
The IB Bearing Temp on BFP B increased after the 3/17/15 pump start-up and is currently operating 7-12 deg. C above predicted temps. Verify sens
NSP
362031
LIN
44311002 (B-BOILER FE
Sciencetech, Sciencetech
REL, REL
3/23/2015
DL
Completed (COMPLETED)

Reference Documents

RCID

Open

Save As

Exit

[Add New ...](#)
[Add Existing ...](#)
[Edit Selected ...](#)
[Remove Selected](#)
[<< Hide details](#)

Document Details

Stored Reference Document

Description:
Powerpoint



Anomaly Detection Report

Station : Lingan

Unit : 4

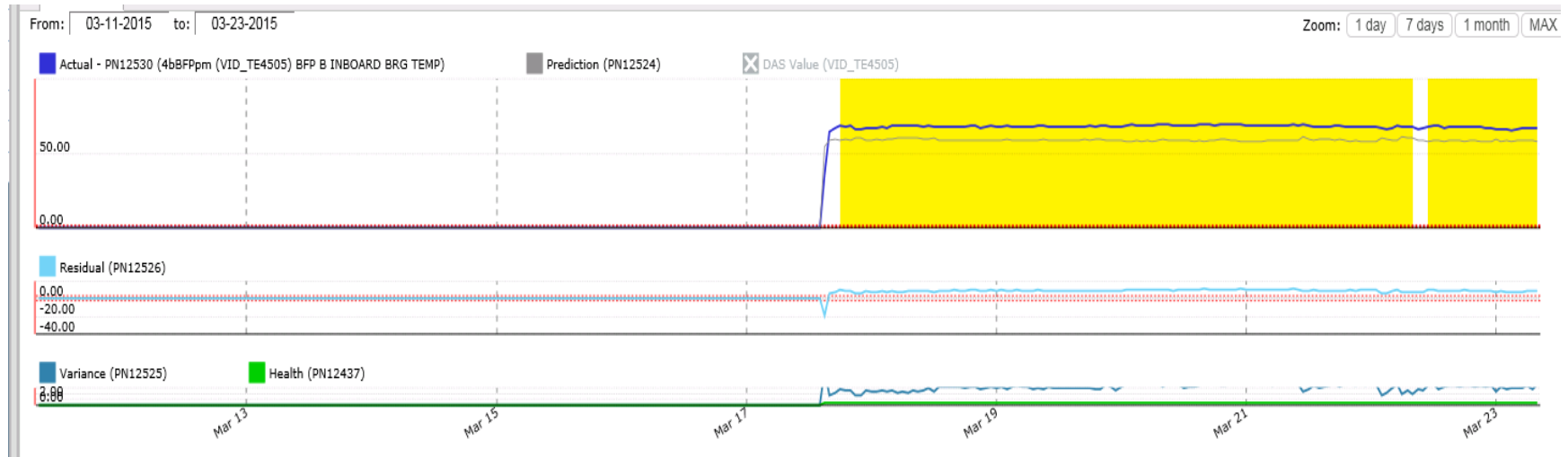
Model : 4bBFPpm

PI Point : LG4VID_TE4505

Date : March 23, 2015

Anomaly: The IB Bearing Temp on BFP B increased after the 3/17/15 pump start-up and is currently operating 7-12 deg. C above predicted temps. Verify sensor calibration. Check lube oil supply to bearing.

PdP Web Viewer Trend



Meridium Recommendation Entry Time:
20 minutes/entry
5-7 Entries per week, 2 hours per week

PdP Recommendations Query

Enter parameter values

Start Date: 1/17/2017 10:44 AM

End Date: Tuesday, January 17, 2017
October, 2016

Calendar view showing dates from 25 to 31, with 31 highlighted. A clock shows 10:44:06 AM.

Clear OK Cancel 10:44:06 AM

OK Cancel

PdP_Recommendations_All : Select Query

Plant	Recommendation ID	Model	Sensor	Functional Location ID	Functional Location Descrip	Work Order Number	Status	Recommendation Headline	Recommendation Description	Creation Date	NSP Work Request Generated	Reference Document
LIN	REC-16823	4ESPTR12	LG4VID_TR1PRIMVOLTS	43325001	ELECTRO-STATIC PRECIPITATORS		CREATED	(1) High	The Primary Voltage on TR1 decreased sharply	2017-01-17 10:29:56	False	201728537 RCID.pptx
LIN	REC-16822	3bBFPpm	LG3VID_TE4497	34311002	B-BOILER FEED PUMP -		CREATED	(1) High	3B BFP Thrust Bearing Temperature is gradually	2017-01-16 14:40:58	False	201513868 RCID.pptx
LIN	REC-16801	4bAirHtr	LG4VID_TE0321B	43324002	B-LJUNGSTRUM AIR HEATER		CREATED	(3) Low	4B Air Heater Air Outlet Temperature (B) has	2017-01-10 12:38:54	True	199950191 RCID.pptx
LIN	REC-16722	2bBFPpm	LG2VID_TE4513	24311002	B-BOILER FEED PUMP	383728	CREATED	(2) Medium	BFP B Motor OB Bearing Temperature has	2016-12-26 11:53:22	True	196181151 RCID.pptx
LIN	REC-16699	3aAirHtr	LG3VID_TE0552	33324001	A-LJUNGSTRUM AIR HEATER	383668	CREATED	(1) High	Air Heater A Bottom Bearing Temperature	2016-12-20 10:52:12	True	194755596 RCID.pptx
LIN	REC-16693	2aCWP	LG2VID_TE5396A	24221001	A-CIRCULATING WATER PUMP	383669	CREATED	(1) High	CWP A Motor Phase C Winding Temperature	2016-12-19 14:11:59	True	194532658 RCID.pptx
LIN	REC-16658	3BOILR	LG3VID_BNRTILTPOSN1	3331	BOILER	383086	CREATED	(2) Medium	The indicated Burner Tilt Position 1 failed on	2016-12-13 10:00:45	True	192948701 RCID.pptx
LIN	REC-16636	4HPFWhp	LG4LIT4750	44314006	NO.6 HIGH PRESSURE HEATER	382880	CREATED	(2) Medium	Heater #6 Level has been indicating flat-line	2016-12-06 13:45:52	True	191218748 RCID.pptx
LIN	REC-16623	2bAirHtr	LD2VID_AIRINTEMPB	23324002	B-LJUNGSTRUM AIR HEATER	382881	CREATED	(3) Low	Sensor data for the Air Heater B Air Inlet	2016-12-06 09:04:42	True	191169993 RCID.pptx
LIN	REC-16523	1GENR	LG1VID_PIT3286	1412	GENERATOR & AUXILIARIES	382658	CREATED	(1) High	Since 11/10/16 there has been a gradual	2016-11-29 11:18:28	True	189611627 RCID.pptx
LIN	REC-16456	4GENR	LG4VID_TE3296B	4412	GENERATOR & AUXILIARIES	382454	CREATED	(1) High	The Generator Bearing 6 Outlet Oil	2016-11-22 14:08:41	True	188022050 RCID.pptx
LIN	REC-16453	1HP-IPp	LG1VID_GOVPOSITION	14116100	TURBINE HIGH PRESSURE SECTION	382455	CREATED	(3) Low	The indicated Governor Position decreased	2016-11-21 12:46:28	True	187770314 RCID.pptx
LIN	REC-16450	4aMILLpm	LG4VID_MILLA_OUTPRS	43531001	A-COAL PULVERIZER	382456	CREATED	(2) Medium	Mill A Outlet Pressure has been gradually	2016-11-21 09:12:11	True	187735150 RCID.pptx
LIN	REC-16426	4dMILLpm	LG4VID_TE5355	43531004	D-COAL PULVERIZER	382457	CREATED	(1) High	Mill D Motor DE Bearing Temperature has been	2016-11-15 13:29:08	True	186464323 RCID.pptx
LIN	REC-16422	4DAHTRp	LG4VID_AIT4947	44337003	DA HEATER VESSEL	382458	CREATED	(2) Medium	The Deerator Outlet Dissolved O2 has been	2016-11-15 11:30:50	True	186447221 RCID.pptx
LIN	REC-16421	4aMILLpm	MILLAOPRPV	43531001	A-COAL PULVERIZER	382459	CREATED	(3) Low	4A Mill Feeder Speed has been operating 2-3	2016-11-15 09:35:50	True	186424677 RCID.pptx

FAMOS Recommendations

From: TOMPKINS, JOAN
 To: MCKINNON, M J; BEDECKI, JERRY; MACLELLAN, RYAN; DEANE, DAVID; STEVENS, TONY; DOBSON, ROY; TAIT, JASON; JORDAN, FRED; SMITH, JEREMY; LEWIS, JACK; ANTLE, DION; BUJOLD, JIM; MACISAAC, CLETUS; CROWDIS, TYLER; DICKSON, ANDREW; NOW...
 Cc: MACNEIL, ROBERT; CARLIN, GREG; RODGERS, WARREN; KIBBLE, GAVIN; MACINTOSH, JONATHAN; MCNEIL, BLAISE; CONDON, SHANE; GREENE, MIKE; MACNEIL, ERIN; Rathby, Scott
 Subject: FW: 16-10-28 Weekly PdP Report For Your Review

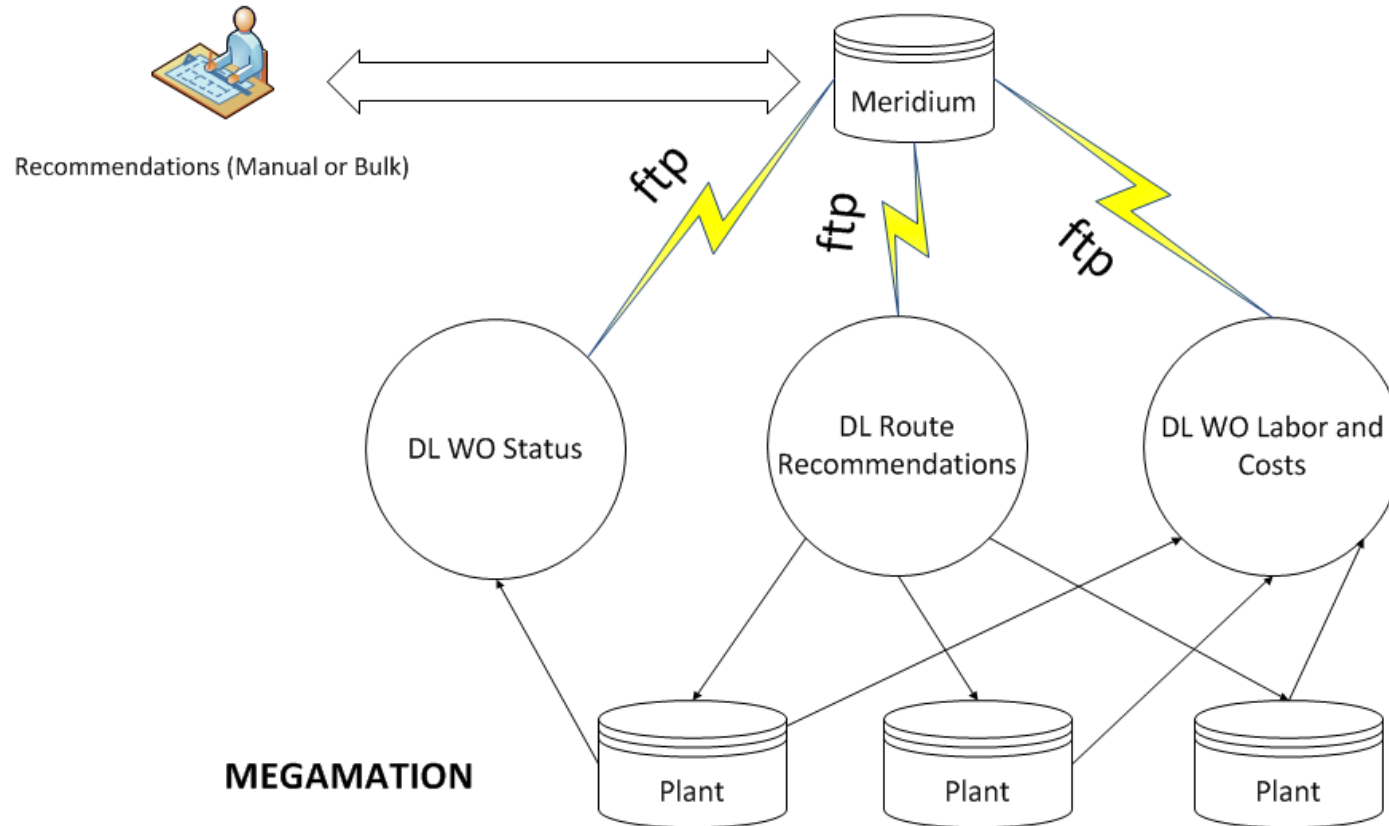
Work requests will be created for the following:

From: Nedrow, Scott [<mailto:SNedrow@CURTISSWRIGHT.com>]
Sent: Monday, October 31, 2016 6:15 PM
To: Herzau, James; MACNEIL, ROBERT; TOMPKINS, JOAN; KIBBLE, GAVIN; RODGERS, WARREN; CARLIN, GREG; CONDON, SHANE; MACNEIL, ERIN; MACINTOSH, JONATHAN
Cc: Brower, James; Alder, Greg; Kosak, James; GREENE, MIKE
Subject: 16-10-28 Weekly PdP Report For Your Review

[M & D Weekly Overview](#)
 Date: 10/22 to 10/28
 Units Reviewed: LIN1, LIN2, LIN4, POA1, TRE6, TUC2, TUC3, TUP2, TUC6, TUC4
 Issues reported: 6
 Issues reviewed: 0
 Models tuned: 0

Plant	Recommendation ID	Model	Sensor	Functional Location ID	Functional Location Descrip	Work Order Number	Status	Recommendation Headline	Recommendation Description	Creation Date	NSP Work Request Generated	Reference Document
LIN	REC-16324	2aFDFNp	LG2VID_TE0556	23321001	A-FORCED DRAFT FAN		CREATED	(1) High	The I/B Bearing Temperature on FD Fan A is displaying periods of erratic sensor output with extremely high temperature spikes. Inspect sensor installation/connections. Replace sensor if required. (LG2VID_TE0556)	10/25/2016 10:47	FALSE	181697097_RCID.pptx
TRE	REC-16350	6GENRr	TR6VID_A3702	64113	GENERATOR		CREATED	(1) High	The Generator H2 Purity decreased rapidly on 10/26/16 by more than 4%. Verify current H2 purity. Add H2 if required. (TR6VID_A3702)	10/27/2016 10:33	FALSE	182172716_RCID.pptx

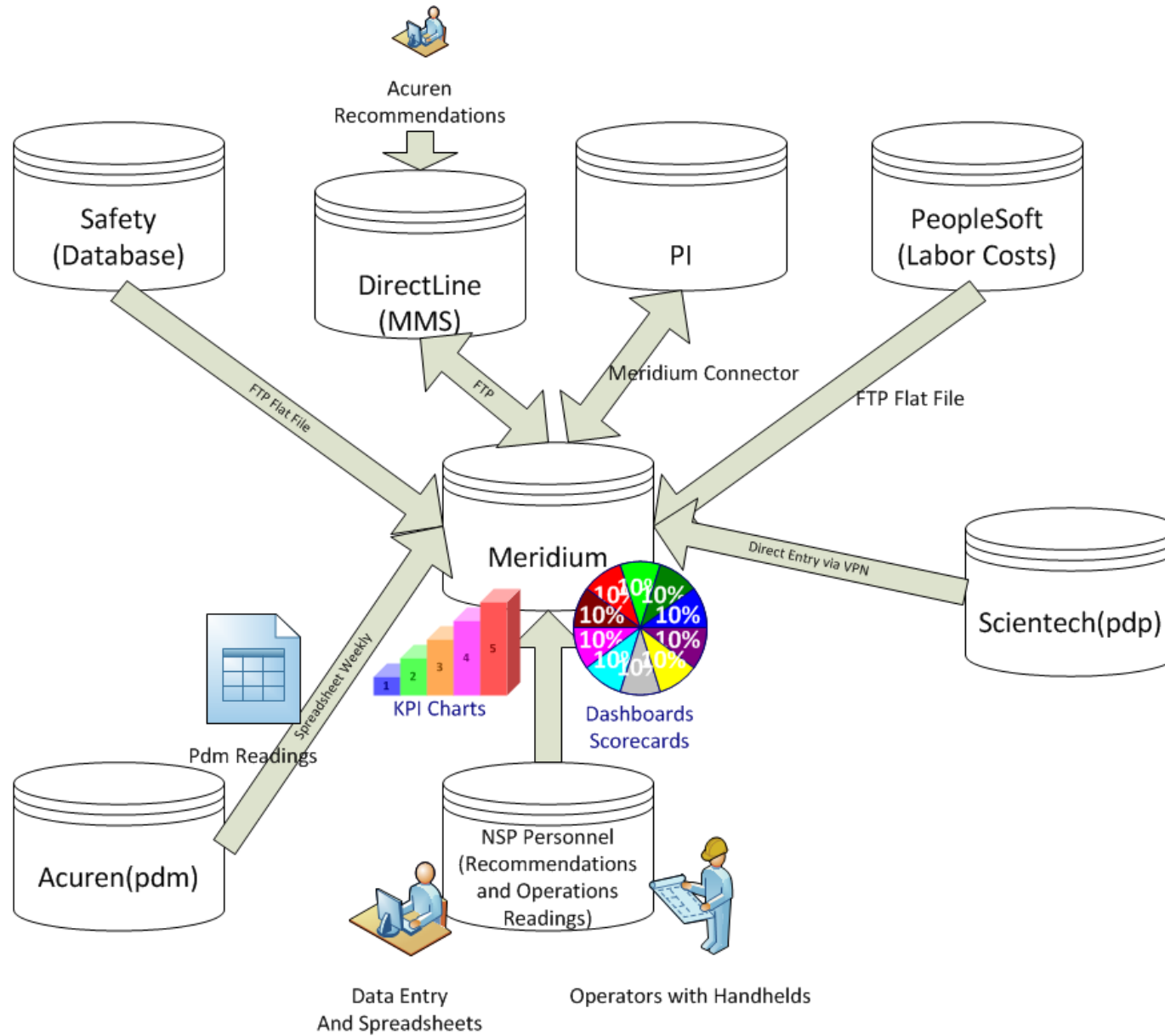
Closing the Loop on WO Recommendations



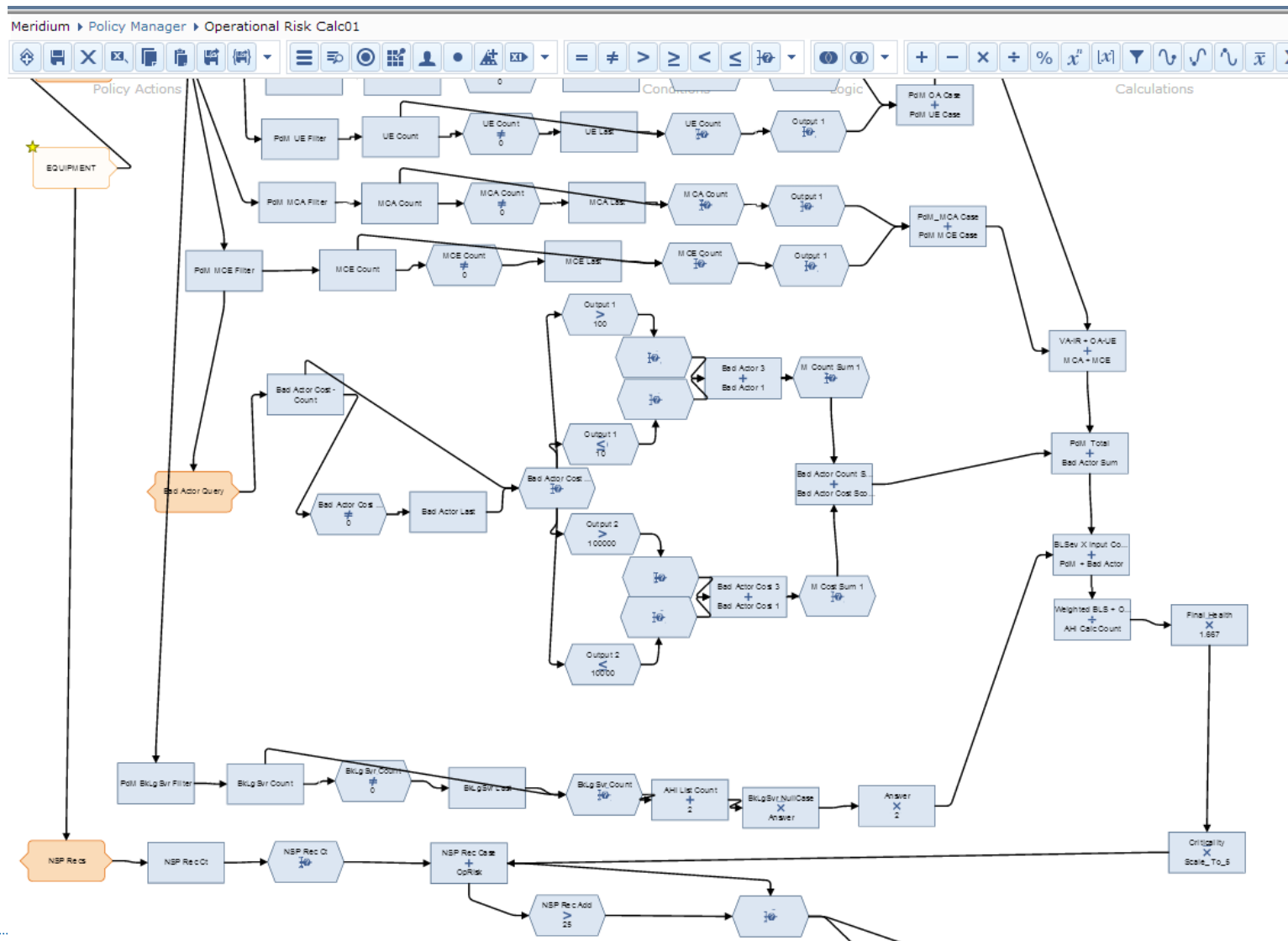
MEGAMATION

DL	Meridium	DL Description
CA	CANCELLED	Cancelled
CL	COMPLETED	Closed
ENG	CREATED	Held for Engineering
I	CREATED	Initiated
M	CREATED	Waiting for Material
P	CREATED	Ready Planned Work
R	CREATED	Reviewed/Approved
S	CREATED	Scheduled by PM system
SC	CREATED	Scoping Required
WC	COMPLETED	Work Complete

Meridium Interfaces



Operational Risk Policy



Meridium Policy Advantages

- Can do fuzzy logic
- Inputs can be manual readings, PI tag values, Recommendations, standard math
- Result of Policy can update a Health Indicator
- Result of Policy can send email notification
- Policy execution can be scheduled at any interval

PdP Recommendations integrated with other types

Meridium APM Framework - Record Manager - LIN~24311001~A-BOILER FEED PUMP (Functional Location)

File Edit Go To Tools Help

Back Forward My Start Page New Search Catalog Query Report Graph Dataset Dashboard

meridium
Record Manager

Common Tasks

- New
- Save
- Save and New
- Delete
- Copy
- Print
- Documents
- Send To >>
- Help

Associated Pages

- Create Recommendation
- Create OPR Recomm...
- Create NSP Recomm...
- View Asset Health Ind...
- Change Hierarchy

Record Explorer

LIN~24311001~A-BOILER FEED PUMP (Functional Location)

- KPI
- Reference Document
- Asset Criticality Analysis System
- Asset Strategy
- Work History Detail
- Equipment
- Work History
- Risk
- Functional Location
- Meridium General Recommendation
- Health Indicator
- Measurement Location
- Operator Rounds Recommendation
- Policy Event
- Policy Recommendation
- RCM FMEA Asset
- Risk Assessment
- Risk Assessment Recommendation
- Site Reference
- Technical Characteristic
- Xi Tag
- PM Procedure Schedule
- NSP Recommendation
 - GENERAL~LIN~REC-8417~JOHN ELLSWORTH | AF509@EMERA [10
 - PDP~LIN~REC-10077~(2) Medium
 - PDP~LIN~REC-10170~(1) High
 - PDP~LIN~REC-7040~(2) Medium
 - PDP~LIN~REC-7041~(2) Medium
 - PDP~LIN~REC-7042~(2) Medium
 - PDP~LIN~REC-7043~(2) Medium
 - PDP~LIN~REC-7044~(1) High
 - PDP~LIN~REC-7045~(3) Low
 - PDP~LIN~REC-7046~(2) Medium
- Technical Document

Record Manager
Add, Edit, and Delete records. Link records together using t

LIN~24311001~A-BOILER FEED PUMP (Functional Location)

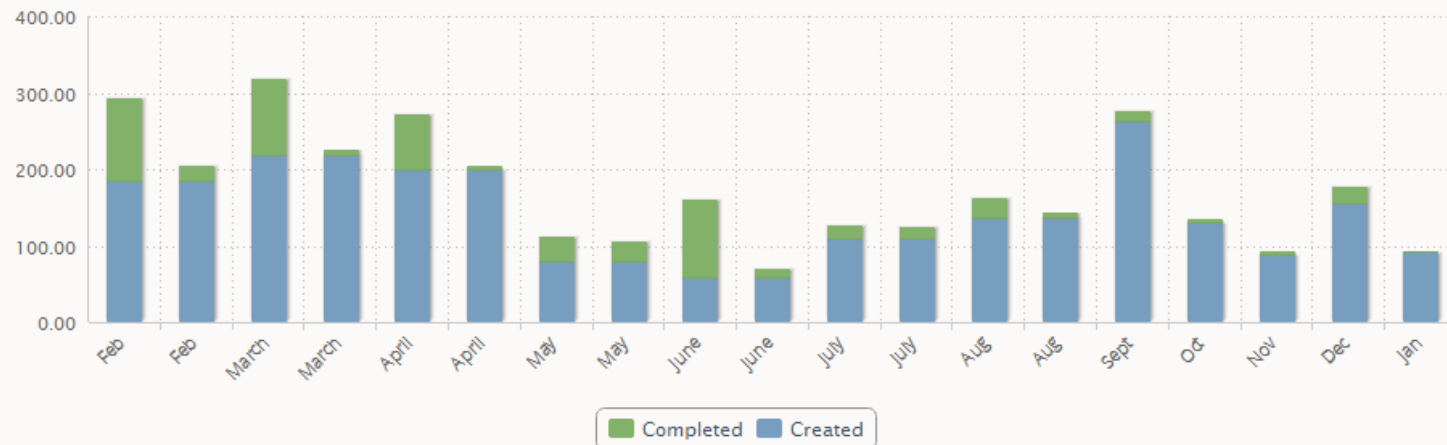
Datasheet Functional Location

Functional Location Identification

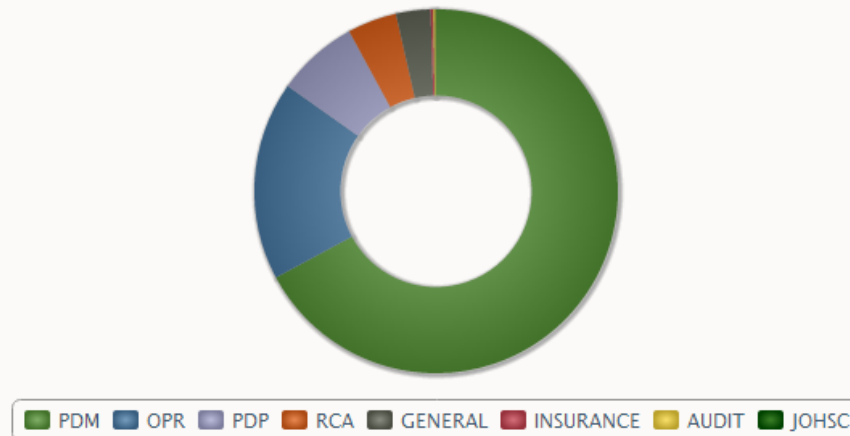
	Value(s)
Station	LIN
Functional Location	24311001
System Status	
Superior Function Location	24311
Cost Center	304
Criticality Indicator	3
Room	
Functional Location Internal ID	
DirectLine Database	DataLingan
GLA	10123313042206
Region	
River	
System	431
System Description	HP FEEDWATER SYSTEM
Unit	2
Business Unit	LIN
Major Equipment?	

Recommendations from varying business sources

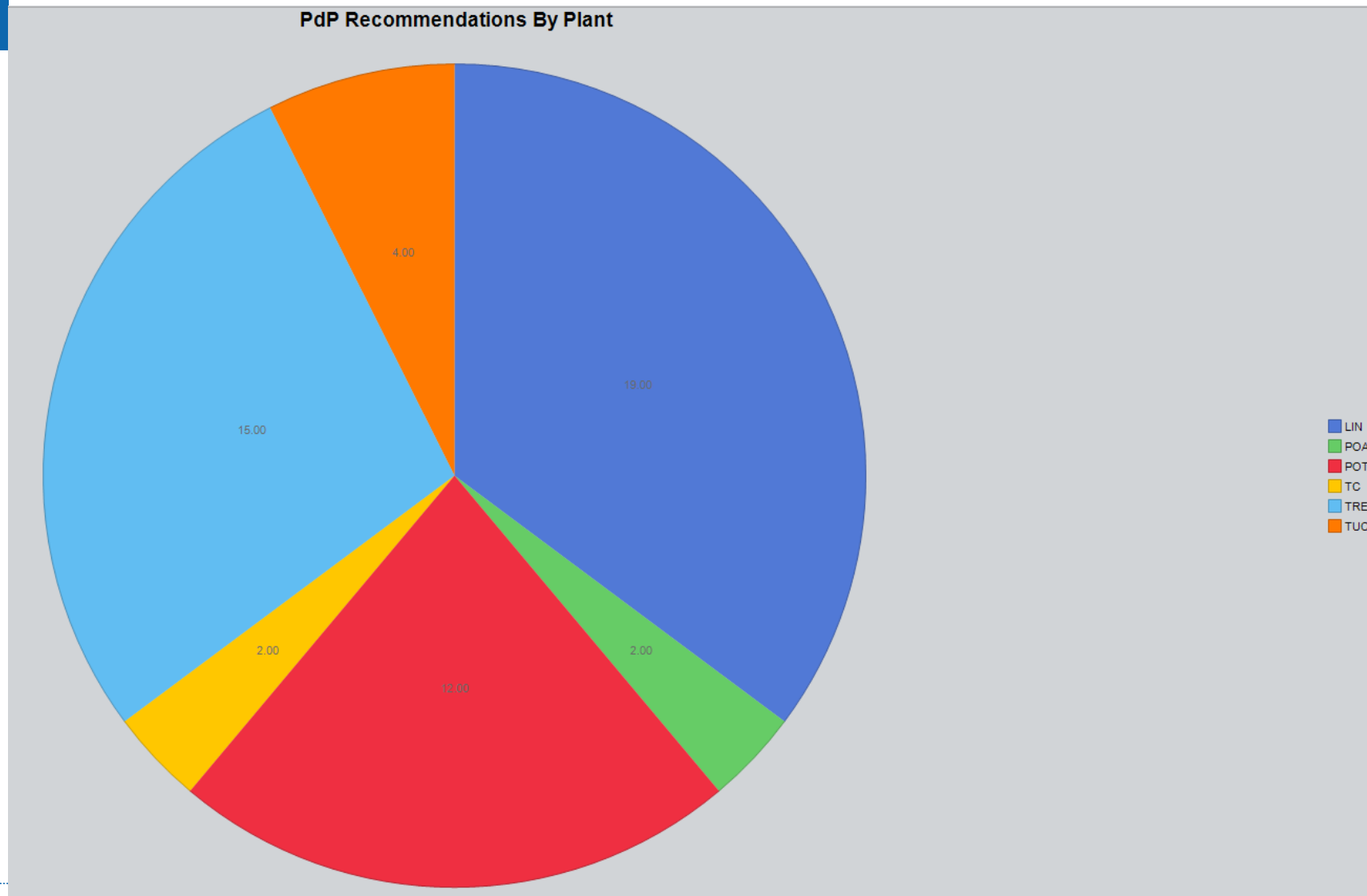
Recommendations Created and Completed - 12 Months



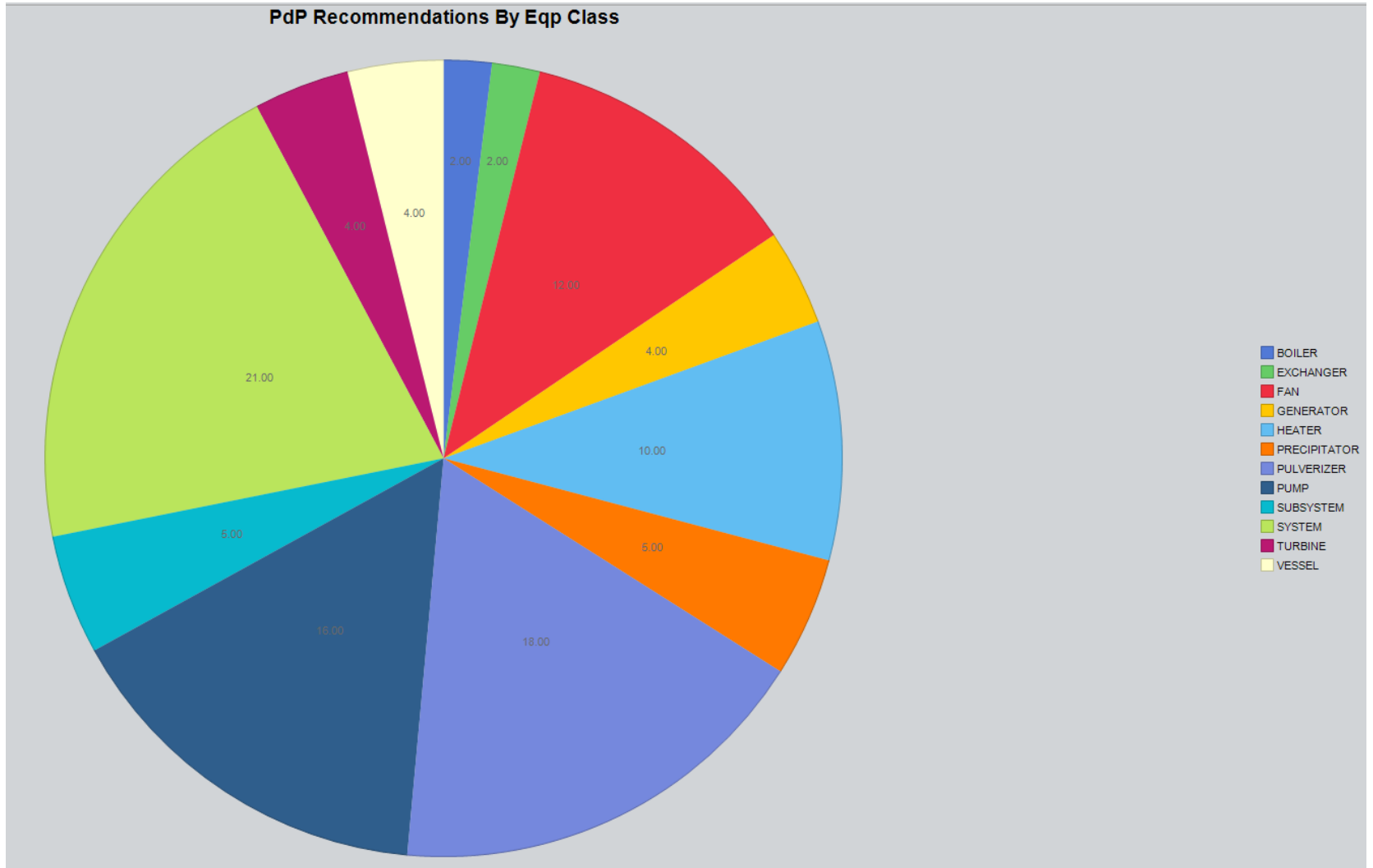
Completed Recommendations by Type - All Time



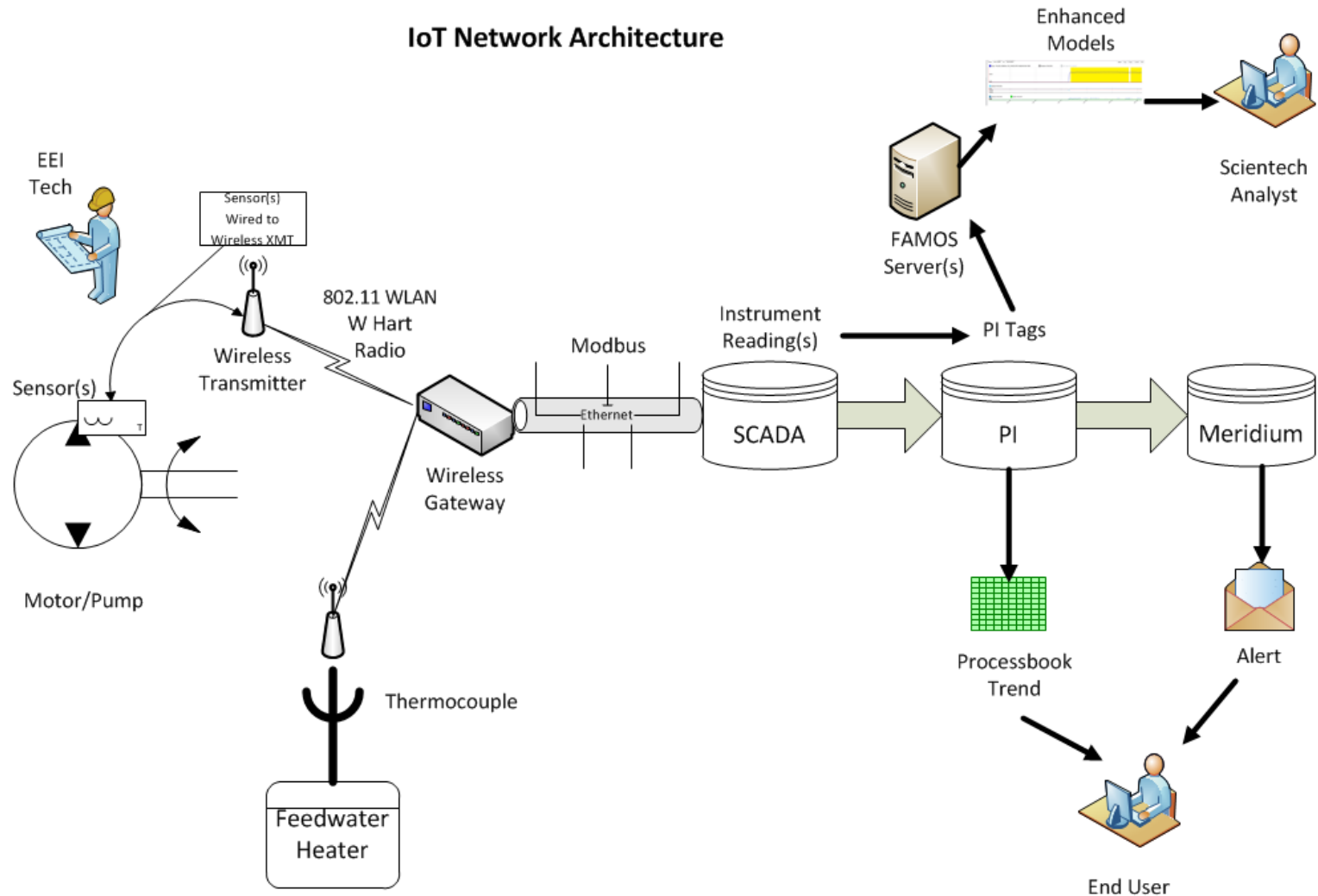
PdP Recommendations by Plant



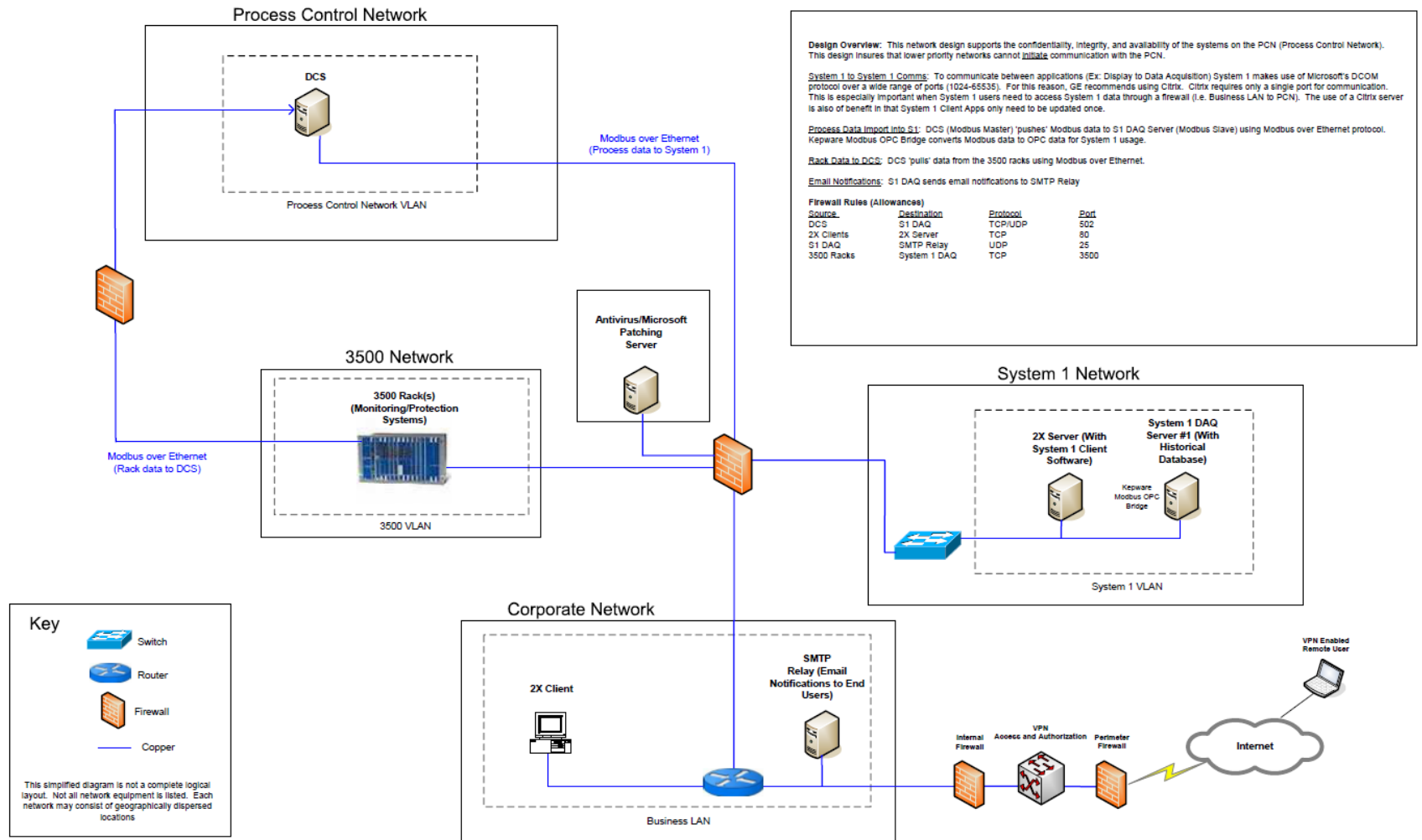
PdP Recommendations by Equipment Class



What's Next? (Wireless Instruments and IoT)



What's Next? (Remote Access to System 1 Console)



What's Next? (Mobile Work Management)

The image shows a tablet displaying a mobile web application interface for creating a new work order. The browser address bar shows "m.megamation.com". The page title is "New Work Order". The form includes the following fields and options:

- Status: INITIATED
- *Assign To: MAIN STM / MISC.
- *Issue: (empty)
- *Job Type: Inspection
- *Impact: OTHER
- Severity: LOW (ANY CATEGORY)
- *Isolation: NONE
- *Submitted By: (empty)
- Scoping Detail: N/A
- *Date: Jan 17, 2017
- Building: (empty)
- Equipment#: (empty)
- *Work Description: (empty)
- Pictures: ☐ Upload images/pictures after work order saved

Buttons for "Menu", "Save", and "Cancel" are visible at the bottom of the form.

What's Next? (Mobile Operator Rounds)

