



FAMOS - PdP Fleet Conversion

















PdP Fleet Conversion for Large US Power Producer

- Early adopter of advanced pattern recognition for condition monitoring
- Mix of technology providers due to parentage of assets absorbed into the organization



Advanced Pattern Recognition \ Performance Monitoring Conversion Project Goals

- Implement a low cost and scalable performance monitoring solution across its legacy fossil plants as well as emerging renewable solar thermal, PV, and wind plants
- User Configurable and Customizable to perform M&D inhouse
- Robust solution to handle diverse current and future generating assets
- Consolidate two existing APR systems (FAMOS-PdP and a competitor product) into one standardized system



Project Kick-Off – Key Items Addressed – and a Key to Success

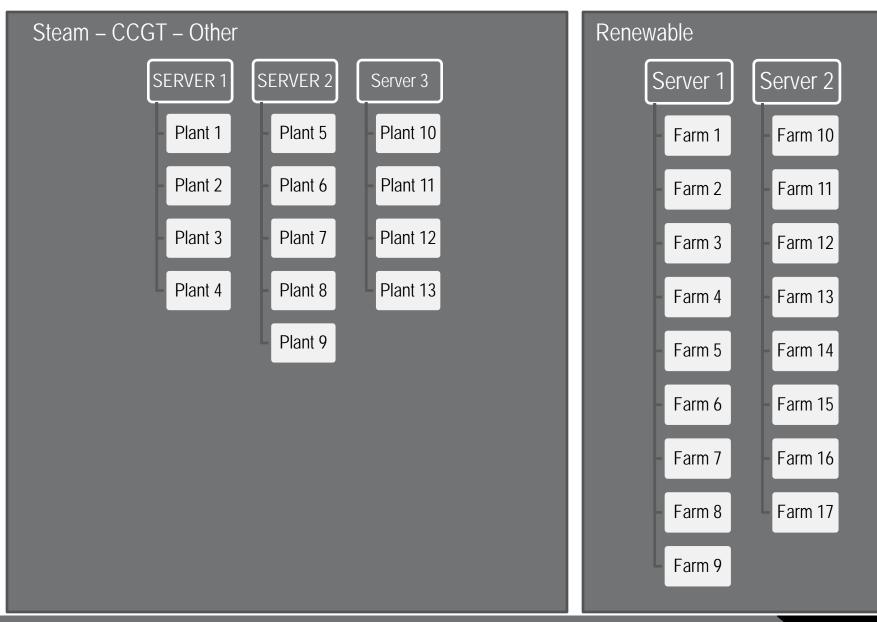
- Technology
 - Servers
 - Software (New Servers and Upgrades)
- Schedule and Scope
 - Scope (Plants to be Included)
 - Conversion Process
 - Training
 - Roles and Responsibilities
- Project Controls
 - Communications
 - Weekly Status Meetings

Final Scope

- Convert fleet running on competitor APR platform to FAMOS v19
 - Many (possible 1000+) models and associated reference file data to convert
 - Install on new 2012 R2 servers (room for additional databases to be built by Client)
- Upgrade Legacy FAMOS Steam Units from v16 to v19
 - Merge existing separate PdP and PMAX databases into common
 - Reduce number of databases from to minimize # servers required
- Migrate PdP databases to new 2012 R2 servers running v19
 - Large number of assets (possibly 1000+)
- Install new 2012 virtual servers and retire old 2003 servers



Client Servers

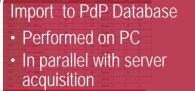






Model Conversion Process

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		AIR_INLET_TEMP_1	0	0	AIR HEATER AIR INLET	DEGF	UNIT1.HD2100.VL
		AIR_OUTLET_TEMP_1	15	10	AIR HEATER AIR OUTL	ET DEGF	UNIT1.HD2101.VL
		GAS_INLET_TEMP_1	0	0	AIR HEATER GAS INLE	T DEGF	UNIT1.HD2110.VL
		GAS_OUTLET_TEMP_1	10	10	AIR HEATER GAS CLIT	IFT DEGE	UNIT1.HD2111.VI
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Create PdP Model in Excel
Import Client csv
Macros to reformat to match PdP requirements
Manually reorder sensors to logical order, name model, update other PdP settings

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5	CutOff-High	1000	Alarm Logic - Y]	24	
7	CutOff-Low	75			PdP Residual Criteria	
	Alerting	Point	OutoffType		Analog	
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0 UNIT1.HG0100.VL	UNIT1.HG0100.VL	GENERATOR GROSS LOAD	MW	Yes	0	0
1 UNIT1.HF3700.VL	UNIT1.HF3700.VL	TOTAL FUEL GAS FLOW	KOFH	Yes	0	0
2 UNIT1.BAIR_FLOW	A.VL UNITLBAIR_FLOW_A.VL	SELECTED AIR FLOW A	KLB/HR	Yes	15	-15
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Client

Curtiss-Wright



Reference File Conversion Process

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lodify Data CSV in Excel

Macros to rename tag names to new PdP sensor names

Eliminate row of Original Point Names

• Replace text and Blank Cells with -9999

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l		UNIT1.HG0000.VL	UNIT1.HA0100.VL	UNIT1.HA0102.VL	UNIT1.HF3700.VL	UNITLBAIR FLOW A.VL	UNIT1.8FURNACE_02.VL	UNITELHD6000.VL	
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Curtiss-Wright



Data Conversion Process – Overlapping Parallel Effort for Large Fleet

- Week 1 Week 8
 - Week 1 Week 12
 - Week 11- Week 15
 - Week 12 Week 16
 - Week 14 Week 18
 - Week 15 Week 22
 - Week 18 Week 23
 - Week 19 Week 28
 - Week 15 Week 29
 - Week 23 Week 29
 - Week 25 Week 31

- Client Data Provided to Curtiss-Wright
- Curtiss-Wright Converts Data
- Client Installs Server
- Curtiss-Wright Installs and Configures Software
- Curtiss-Wright Installs New Databases/Models
- Client/Curtiss-Wright Validate Models
- Client Communicates Start Up to Plant
- Client Trains Plant End Users
- Parallel Run with Legacy System
- Client Plant Accepts Performance
- Legacy Server Shutdown

Conversion from legacy APR to server ready PdP Models approximately 11 Weeks at a pace of 5 units per week



Demo



Convert Generic Model and Data CSV files into functional PdP Model and **Reference File**



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Keys to Success

- Productive Kick Off Meeting
 - Well defined scope
 - Achievable milestones
 - Clear roles and responsibilities
- Project Team Collaboration
 - Weekly Project Progress calls highlighted any bottlenecks
 - Mutual support between Client and Curtiss-Wright Data Conversion and Server teams to address any issues in a timely fashion to keep to schedule



Questions



