



OSIsoft®

REGIONAL SEMINARS 2012

The **Power** of **Data**

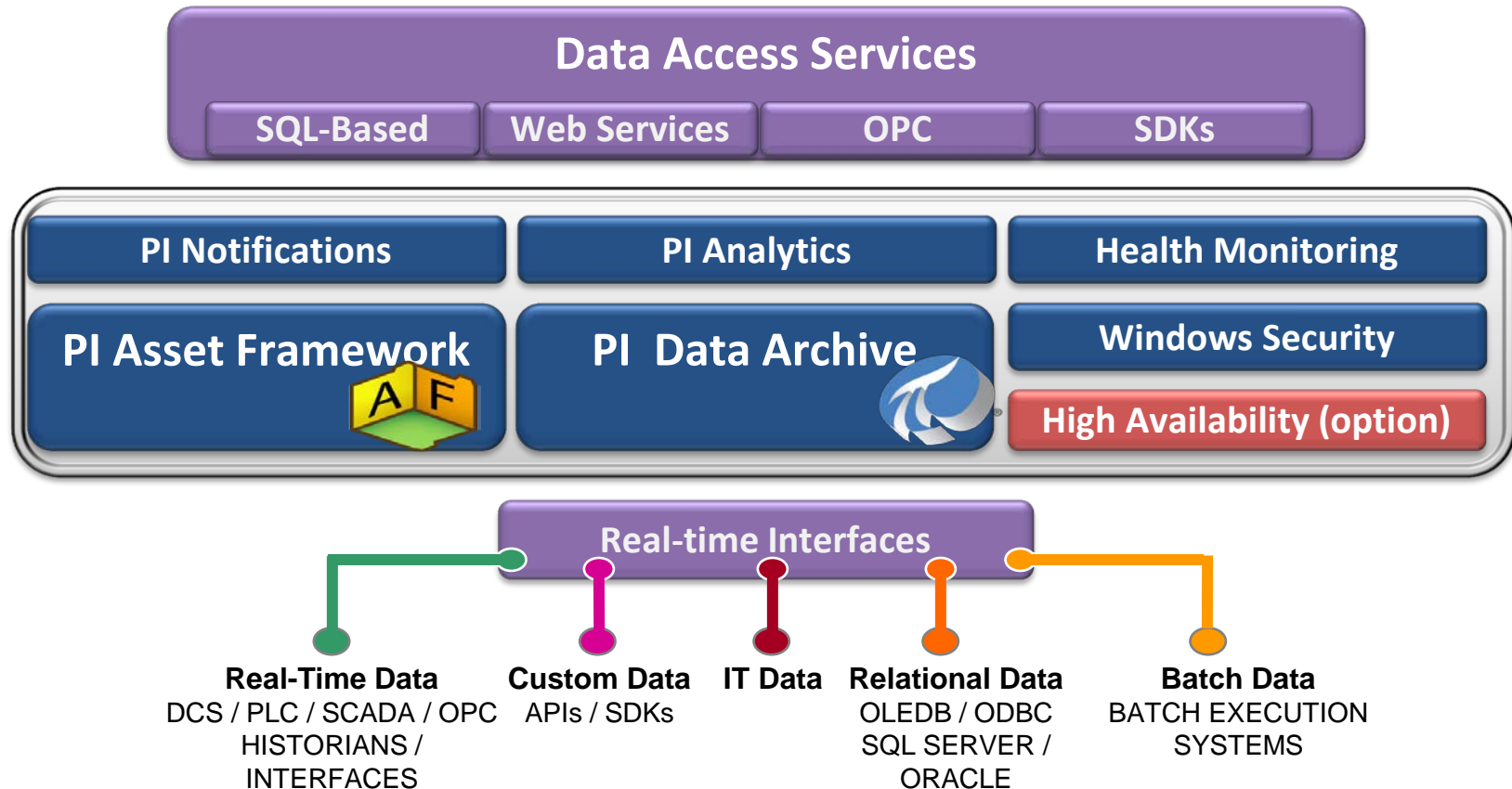


PI System 2012

Now and Beyond

Presented by **Chris Ong**
OSIsoft

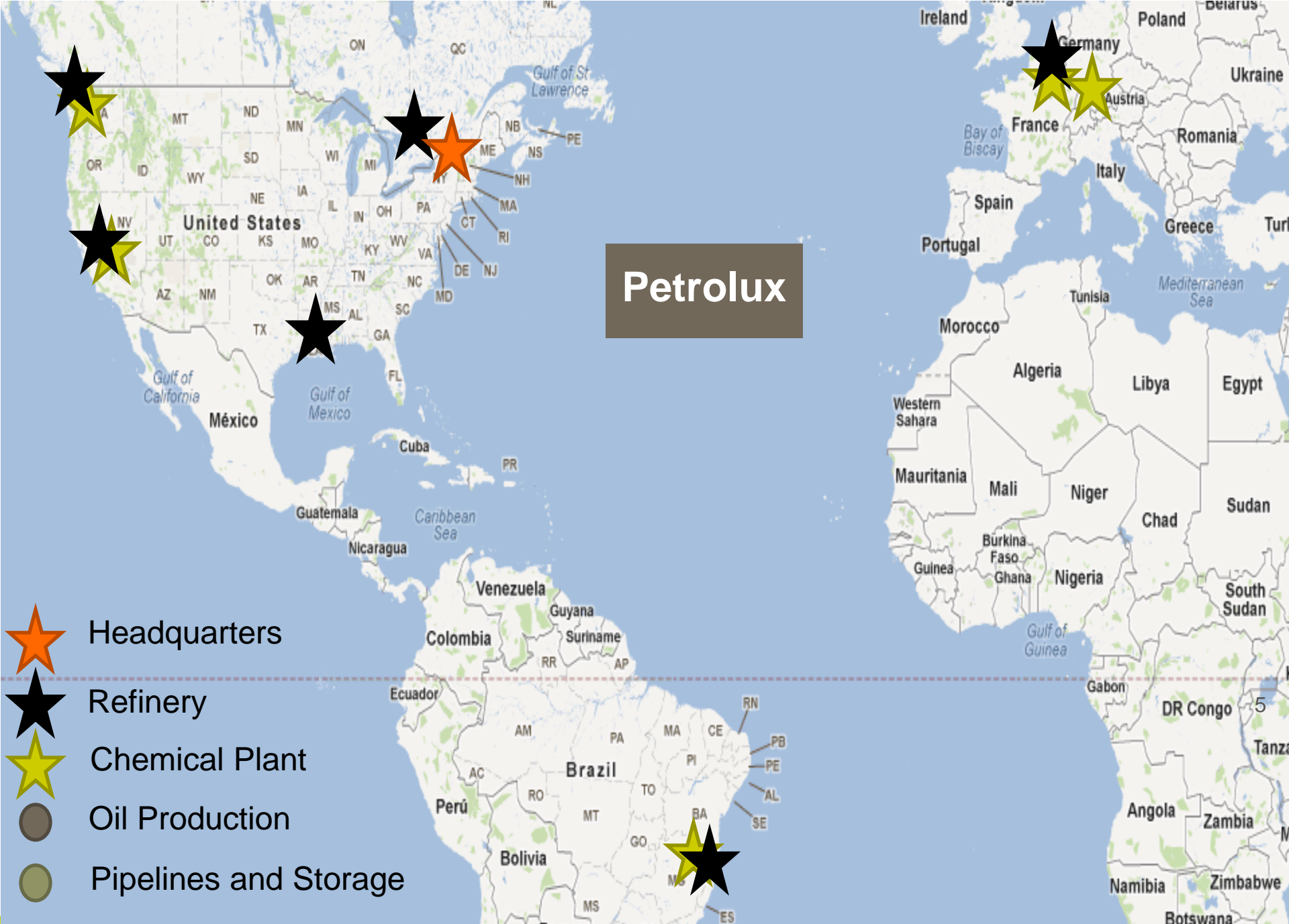
PI System Overview



Disclaimer

This story is not yet rated

No animals were harmed in the process of this story. All characters and entities portrayed in this story are fictitious. Any resemblance to real persons, living or dead is purely coincidental.





Anacortes

- ★ Headquarters
- ★ Refinery
- ★ Chemical Plant
- Oil Production
- Pipelines and Storage

Library

- Anacortes1
 - Categories
 - Analysis Categories
 - Attribute Categories
 - Element Categories
 - Reference Type Categories
 - Table Categories
 - Templates
 - Element Templates
 - Heat Exchanger
 - Event Frame Templates
 - Model Templates
 - Transfer Templates
 - Enumeration Sets
 - Reference Types
 - Tables

Elements

Event Frames

Library

Unit of Measure

Heat Exchanger

General Attribute Templates Ports

Group by: ☐ Category ☐ Template

Filter

	Name	Description	Default Value	Unit Of Measure	Data Reference	Settings...
	Area		0 ft2	square foot	Table Lookup	SELECT Area FROM [Heat Exchanger Specifications] WHERE [Equipment No] = '%Element%'
	Calculated Heat Transfer Coeffi...	UC	6.3 Btu/h/ft2/F	Btu/h/ft2/F	Formula	A=Heat Duty Shell Side;UOM=MM Btu/h;B=Heat Duty Tube Side;UOM=MM Btu/h;C=Area;UOM...
	Cold Side Inlet Temperature		0 °F	degree Fahren...	PI Point	\\%Server%\%@\PI Tag%
	Cold Side Outlet Temperature		0 °F	degree Fahren...	PI Point	\\%Server%\%@\PI Tag%
	Cold Side Temperature Difference		0 delta °F	delta degree Fa...	Formula	A=Cold Side Inlet Temperature;B=Cold Side Outlet Temperature;[B-A]
	Design Heat Transfer Coefficient	UE	6.3 Btu/h/ft2/F	Btu/h/ft2/F	Table Lookup	SELECT Coefficient FROM [Heat Exchanger Specifications] WHERE [Equipment No] = '%Elemen...
	Fouling factor FPI		0	<None>	Formula	A=Calculated Heat Transfer Coefficient;B=Design Heat Transfer Coefficient;[if B>0 then abs(B-A)/...
	Heat Duty	Design	0 MM Btu/h	million British th...	Formula	A=Area;UOM=ft2;B=Design Heat Transfer Coefficient;UOM=Btu/h/ft2/F;C=LMTD;UOM=delta °F;...
	Heat Duty Shell Side	Actual	0 MM Btu/h	million British th...	Formula	A=Shell Side Mass Flow;UOM=lb/s;B=Hot Side Temperature Difference;UOM=delta °F;C=Shell Si...
	Heat Duty Tube Side	Actual	0 MM Btu/h	million British th...	Formula	A=Tube Side Mass Flow;UOM=lb/s;B=Cold Side Temperature Difference;UOM=delta °F;C=Tube ...
	Hot Side Inlet Temperature		0 °F	degree Fahren...	PI Point	\\%Server%\%@\PI Tag%
	Hot Side Outlet Temperature		0 °F	degree Fahren...	PI Point	\\%Server%\%@\PI Tag%
	Hot Side Temperature Difference		0 delta °F	delta degree Fa...	Formula	A=Hot Side Inlet Temperature;B=Hot Side Outlet Temperature;[A-B]
	Information		—	<None>	<None>	
	LMTD		0 delta °F	delta degree Fa...	Formula	A=Cold Side Inlet Temperature;B=Cold Side Outlet Temperature;C=Hot Side Inlet Temperature;D=...
	Shell Side Density		45 lb/ft3	pound per cubi...	<None>	
	Shell Side Heat Capacity		0 Btu/lb/F	Btu/lb/F	Table Lookup	SELECT [Heat Capacity] FROM [Material Properties Table] WHERE [Material ID] = @[Shell Side ...
	Shell Side Mass Flow		800 lb/s	pound per seco...	Formula	A=Shell Side Volume Flow;UOM=ft3/s;B=Shell Side Density;UOM=lb/ft3;[A*B]
	Shell Side Material		WX1000	<None>	<None>	
	Shell Side Volume Flow		8000 gpm	Gallons per min...	PI Point	\\%Server%\%@\PI Tag%
	Tube Side Density		58 lb/ft3	pound per cubi...	<None>	

Heat Exchanger Modified:4/21/2012 2:54:11 PM.

Elements

- Elements
 - Anacortes Refinery
 - Heat Exchanger-210
 - Heat Exchanger-216
 - Heat Exchanger-217
 - Heat Exchanger-218
 - Heat Exchanger-219
 - Heat Exchanger-220
 - Heat Exchanger-221
 - Heat Exchanger-222
 - Heat Exchanger-223
 - Heat Exchanger-224
 - Heat Exchanger-301
 - Heat Exchanger-302
 - Heat Exchanger-303
 - Heat Exchanger-304
 - Heat Exchanger-305
 - Heat Exchanger-306
 - Heat Exchanger-307
 - Heat Exchanger-308
 - Heat Exchanger-309
 - Heat Exchanger-310
 - Heat Exchanger-311
 - Heat Exchanger-312
 - Heat Exchanger-313
 - Heat Exchanger-314
 - Heat Exchanger-315
 - Heat Exchanger-316
 - Heat Exchanger-317
 - Heat Exchanger-318
 - Heat Exchanger-319

Elements

Event Frames

Library

Unit of Measure

Heat Exchanger-210

General Child Elements Attributes Ports Version

Filter

Name	Value	Data Reference
Area	1200 ft ²	Table Lookup
Calculated Heat Transfer Coefficient	8.08294009259129 Btu/h/ft ² /F	Formula
Cold Side Inlet Temperature	128.039932250977 °F	PI Point
Cold Side Outlet Temperature	172.614288330078 °F	PI Point
Cold Side Temperature Difference	44.5743560791016 delta °F	Formula
Design Heat Transfer Coefficient	305.7 Btu/h/ft ² /F	Table Lookup
Fouling factor FPI	97.355924078314928	Formula
Heat Duty	57.2737068971556 MM Btu/h	Formula
Heat Duty Shell Side	1.00344755368703 MM Btu/h	Formula
Heat Duty Tube Side	1.51436029352418 MM Btu/h	Formula
Hot Side Inlet Temperature	319.550170898438 °F	PI Point
Hot Side Outlet Temperature	293.734008789063 °F	PI Point
Hot Side Temperature Difference	25.816162109375 delta °F	Formula
Information	—	<None>
LMTD	156.127213218721 delta °F	Formula
Shell Side Density	45 lb/ft ³	<None>
Shell Side Heat Capacity	0.95 Btu/lb/F	Table Lookup
Shell Side Mass Flow	11.3651950359345 lb/s	Formula
Shell Side Material	WX1000	<None>
Shell Side Volume Flow	113.356750488281 gpm	PI Point
Tube Side Density	58 lb/ft ³	<None>

Group by: ☐ Category ☐ Template

Name: Calculated Heat Transfer Coeff

Description: UC

Configuration Item:

Categories: Specification

Default UOM: Btu/h/ft²/F

Value Type: Double

Value: 8.08294009259129 Btu/h/ft²/F

Data Reference: Formula

Settings...

A=Heat Duty Shell Side;UOM=MM Btu/h;B=Heat Duty Tube Side;UOM=MM Btu/h;C=Area;UOM=ft²;D=LMTD;UOM=delta °F;if C > 0 and D > 0 then max(A,B)/(C*D) else 0;UOM=MM Btu/h/ft²/F

Calculated Heat Transfer Coefficient

Microsoft Excel - Anacortes1 Heat Exchangers

File Home Insert Page Layout Formulas Data Review View PI DataLink PI AF Builder

Clipboard Font Alignment Number Styles Cells Editing

Calibri 14 A A

B I U

Wrap Text

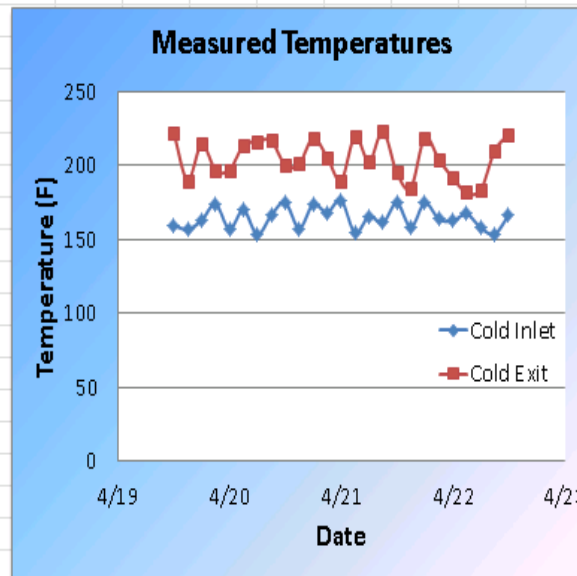
General

Conditional Formatting Format as Table Cell Styles

Insert Delete Format

AutoSum Fill Clear Sort & Filter Find & Select

B16		Hot Side Inlet Temperature																	
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1																			
2	Site:	Anacortes Refinery																	
3																			
4	Heat Exchanger Name:	Heat Exchanger-309																	
5																			
6	Properties:	Area	Jan-01, 12:00 AM	1200.00	ft2			1200	1200										
7		Calculated Heat Transfer Coefficient	Apr-22, 11:50 AM	11.55	Btu/h/ft2/F														
8		Cold Side Inlet Temperature	Apr-22, 11:50 AM	165.01	°F			147	180.9										
9		Cold Side Outlet Temperature	Apr-22, 11:50 AM	219.11	°F			180.4	228.5										
10		Cold Side Temperature Difference	Apr-22, 11:50 AM	54.10	delta °F														
11		Design Heat Transfer Coefficient	Jan-01, 12:00 AM	301.40	Btu/h/ft2/F			301.4	301.4										
12		Fouling factor FPI	Apr-22, 11:50 AM	96.17															
13		Heat Duty	Apr-22, 11:50 AM	66.58	MM Btu/h														
14		Heat Duty Shell Side	Apr-22, 11:50 AM	-0.10	MM Btu/h														
15		Heat Duty Tube Side	Apr-22, 11:50 AM	2.55	MM Btu/h														
16		Hot Side Inlet Temperature	Apr-22, 11:50 AM	376.38	°F			307.3	427.1										
17		Hot Side Outlet Temperature	Apr-22, 11:50 AM	378.79	°F			282	394.7										
18		Hot Side Temperature Difference	Apr-22, 11:50 AM	-2.40	delta °F														
19		LMTD	Apr-22, 11:50 AM	184.08	delta °F														
20		Shell Side Density	Jan-01, 12:00 AM	45.00	lb/ft3			45	45										
21		Shell Side Heat Capacity	Jun-25, 08:24 AM	0.95	Btu/lb/F			0.95	0.95										
22		Shell Side Mass Flow	Apr-22, 11:50 AM	11.97	lb/s														
23		Shell Side Material	Jan-01, 12:00 AM	WX1000															
24		Shell Side Volume Flow	Apr-22, 11:50 AM	119.40	gpm			95.67	131										
25		Tube Side Density	Jan-01, 12:00 AM	58.00	lb/ft3			58	58										
26		Tube Side Heat Capacity	Jun-25, 08:24 AM	0.89	Btu/lb/F			0.885	0.885										
27		Tube Side Mass Flow	Apr-22, 11:50 AM	14.81	lb/s														
28		Tube Side Material	Jan-01, 12:00 AM	HC1500															
29		Tube Side Volume Flow	Apr-22, 11:50 AM	114.58	gpm			85.42	121.7										
30																			





Library

- Anacortes2
 - Categories
 - Analysis Categories
 - Attribute Categories
 - Element Categories
 - Reference Type Categories
 - Table Categories
 - Templates
 - Element Templates
 - Base Metrics
 - Boiler
 - Compressor
 - Cooling Fan
 - Heat Exchanger
 - Heater
 - Pump
 - Refinery
 - Unit
 - Event Frame Templates
 - Model Templates
 - Transfer Templates
 - Enumeration Sets
 - Reference Types
 - Tables

Elements

Event Frames

Library

Unit of Measure

Base Metrics

General Attribute Templates Ports

Group by: ☐ Category ☐ Template

Filter

	Name	Description	Default Value	Unit Of Measure	Data Reference	Settings...
	Asset Down		0 %	percent	Formula	A=I[Down;UOM=h;[A/8*100]
	Asset Maintenance		0 %	percent	Formula	A=I[Maintenance;UOM=h;[A/8*100]
	Asset Problems		0 %	percent	Formula	A=I[Problems;UOM=h;[A/8*100]
	Asset Running		0 %	percent	Formula	A=I[Running;UOM=h;[A/8*100]
	Availability		0 h	hour	Formula	A=Availability Sec;[B=A*24];roundfrac(B,2)
	Availability Sec		0 h	hour	PI Point	\\%Server%\%@\PI Tag%;TimeMethod=TimeRangeOverride;Relative Time=-3m;TimeRangeMethod=...
	Efficiency		0 %	percent	PI Point	\\%Server%\%@\PI Tag%;TimeMethod=Interpolated;Relative Time=-1h;TimeRangeMethod=Averag...
	Feed Rate		0 kbb/d	thousand barrel...	PI Point	\\%Server%\%@\PI Tag%;TimeMethod=TimeRange;Relative Time=-1h;TimeRangeMethod=Averag...
	Operating State		Running	<None>	PI Point	\\%Server%\%@\PI Tag%;TimeMethod=Interpolated
	Operating State Integer		0	<None>	PI Point	I[Operating State;TimeMethod=Interpolated
	Power Draw		0 kW	kilowatt	PI Point	\\%Server%\%@\PI Tag%;TimeMethod=TimeRange;Relative Time=-1h;TimeRangeMethod=Averag...
	Power Draw Maximum		0 kW	kilowatt	PI Point	I[Power Draw;TimeMethod=TimeRangeOverride;Relative Time=-1h;TimeRangeMethod=Maximum;Tim...
	Power Draw Minimum		0 kW	kilowatt	PI Point	I[Power Draw;TimeMethod=TimeRangeOverride;Relative Time=-1h;TimeRangeMethod=Minimum;Tim...
	Power Draw Std		0 kW	kilowatt	PI Point	I[Power Draw;TimeMethod=TimeRangeOverride;Relative Time=-1h;TimeRangeMethod=StandardDev...
	Power Usage KPI		0	<None>	Formula	F=Feed Rate;P=Power Draw;[if F>0 then P/F else 0]

Base Metrics Modified:4/18/2012 11:22:07 AM.

File Edit View Go Tools Help

Database Query Date Back Check In Refresh New Element New Attribute Search

Elements

Elements

- Anacortes Refinery
 - Alkylation
 - Cooling Fan-378
 - Heat Exchanger-210
 - Heat Exchanger-216
 - Heat Exchanger-217
 - Heat Exchanger-218
 - Heat Exchanger-219
 - Heat Exchanger-220
 - Heat Exchanger-221
 - Pump-110
 - Pump-210
 - Pump-3019
 - Pump-3343
 - Pump-3667
 - Pump-3991
 - Pump-432
 - Pump-619
 - Atmospheric Distillation
 - Catalytic Cracking
 - Coking
 - Hydrosulfurization
 - Isomerization
 - Naphtha Reforming
 - Vacuum Distillation
 - Viscosity Reduction

Elements
Event Frames
Library
Unit of Measure

Anacortes Refinery

General Child Elements Attributes Ports Version

Filter

Name	Value	
Asset Down	1.99463166130914 %	R..
Asset Maintenance	2.62925387606209 %	R..
Asset Problems	3.06383658044132 %	R..
Asset Running	92.3034652898341 %	R..
Availability	NaN h	R..
Power Draw	2017.74177028526 kW	R..
Power Draw Maximum	2132.09774017334 kW	R..
Power Draw Minimum	1916.51013183594 kW	R..
Power Draw Std	5.37792259026868 kW	R..
Power Usage KPI	6.7337722260915225	R..

Group by: Category Template

Name: Power Usage KPI

Description:

Configuration Item:

Categories: Power KPI

Default UOM: <None>

Value Type: Double

Value: 6.7337722260915225

Data Reference: Rollup

Settings...

CategoryName=Power KPI;Calculation=Avg

Anacortes Refinery Modified:4/18/2012 11:22:08 AM. Version: 1/1/1970 12:00:00 AM, Revision 1

Elements

- Elements
 - Anacortes Refinery
 - Alkylation
 - Atmospheric Distillation
 - Catalytic Cracking
 - Coking
 - Hydrosulfurization
 - Isomerization
 - Naphtha Reforming
 - Vacuum Distillation
 - Viscosity Reduction

Elements

Event Frames

Library

Unit of Measure

Availability Sec

Alkylation

General Child Elements Attributes Ports Version

Filter

	Name	Value	Data Reference
	Asset Down	6.28145599365234 %	Formula
	Asset Maintenance	0.438705126444499 %	Formula
	Asset Problems	1.19850773281521 %	Formula
	Asset Running	92.0523478190104 %	Formula
	Availability	Data was not available for attribute 'Availability Sec'. Calculation failed.	Formula
	Availability Sec	Calculation failed.	PI Point
	Efficiency	93.2062454223633 %	PI Point
	Feed Rate	28.0046903700332 kbb/d	PI Point
	Operating State	Running	PI Point
	Operating State Integer	1	PI Point
	Power Draw	79.624831980181 kW	PI Point
	Power Draw Maximum	81.5486373901367 kW	PI Point
	Power Draw Minimum	78.1760177612305 kW	PI Point
	Power Draw Std	0.703516768431038 kW	PI Point
	Power Usage KPI	2.8432677143749019	Formula
	SVG File		<None>

Group by: Category Template

Name: Availability Sec

Description:

Configuration Item:

Categories: Performance Metrics

Default UOM: hour

Value Type: Double

Value: Calculation failed.

Data Reference: PI Point

Settings...

\\10.8.64.40\Anacortes
Refinery.Alkyltion.Availability
Sec;TimeMethod=TimeRangeOverride;Relative Time=-
3m;TimeRangeMethod=Average;TimeRangeMinPe
rcentGood=20;UOM=s

Anacortes2 Power - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View **PI DataLink** PIAF Builder

Current Value Single Value Archived Value Compressed Data Multiple Value Sampled Data Timed Data Calculated Data Calculation Time Filtered Search Search Properties Properties Update Update Settings About Help Resources

B1 **Anacortes Refinery**






		Efficiency	Operating State	Power Draw	Power Draw Minimum	Power Draw Maximum	Power Draw Std
Alkylation	85.21	Running	77.26	69.62	80.33	2.32	
Atmospheric Distillation	81.11	Running	100.07	94.82	110.18	3.14	
Catalytic Cracking	108.79	Running	306.61	297.54	321.08	5.09	
Coking	93.46	Running	178.84	169.89	187.41	4.62	
Hydrosulfurization	109.23	Running	357.30	347.92	364.64	3.76	
Isomerization	62.19	Running	325.40	311.48	344.75	10.09	
Naphtha Reforming	93.48	Running	203.39	185.05	224.59	9.76	
Vacuum Distillation	81.62	Running	345.26	305.44	381.32	15.30	
Viscosity Reduction	53.12	Running	71.38	67.01	75.14	1.85	

Power by Area Sheet2 Sheet3

Ready 100%



**Baton
Rouge**

-  Headquarters
-  Refinery
-  Chemical Plant
-  Oil Production
-  Pipelines and Storage

Elements

- Elements
 - Anacortes Refinery
 - Baton Rouge Refinery
 - Alkylation
 - Cooling Fan-101
 - Heat Exchanger-100
 - Heat Exchanger-101
 - Heat Exchanger-102
 - Heat Exchanger-103
 - Heat Exchanger-104
 - Heat Exchanger-200
 - Pump-101**
 - Pump-201
 - Pump-3010
 - Pump-3334
 - Pump-3658
 - Pump-3982
 - Pump-403
 - Pump-610
 - Unit1
 - Unit2
 - Atmospheric Distillation
 - Catalytic Cracking
 - Coking
 - Hydrosulfurization
 - Isomerization
 - Naphtha Reforming
 - Vacuum Distillation
 - Viscosity Reduction

Elements

Event Frames

Library

Unit of Measure

Pump-101

General Child Elements Attributes Ports Version

Filter

Name	Value	Data Reference
a0	34.892	Table Lookup
a1	0.055	Table Lookup
a2	-0.0021	Table Lookup
CL	95	<None>
Cost per Hour	1.09740144415615 US\$	Formula
Discharge Pressure	530.578552246094 psi	Formula
Electricity Cost Factor	0.160777315497398 US\$	PI Point
Flow Rate	135.25 gpm	Formula
Impeller Size	3	<None>
LCL	92.5	<None>
Liquid Gravity	1 SG	<None>
Minimum Efficiency	90 %	<None>
Model Number	G11	<None>
Pump Curve Head	3.91636875 psi	Formula
Pump Downtime During Last Shift %	0.366758267084758 %	Formula
Pump Efficiency	468.359440370542 %	Formula
Pump Head Efficiency	100 %	Formula
Pump Horse Power	9.15327870237534 hp	Formula
Pump Name	Pump-101	String Concat
Pump Operation	1	Formula
Pump Uptime During Last Shift	7.97065933863322 h	Formula

Group by: ☐ Category ☐ Template

Name: UCL

Description:

Configuration Item:

Categories: SQC Control Limits

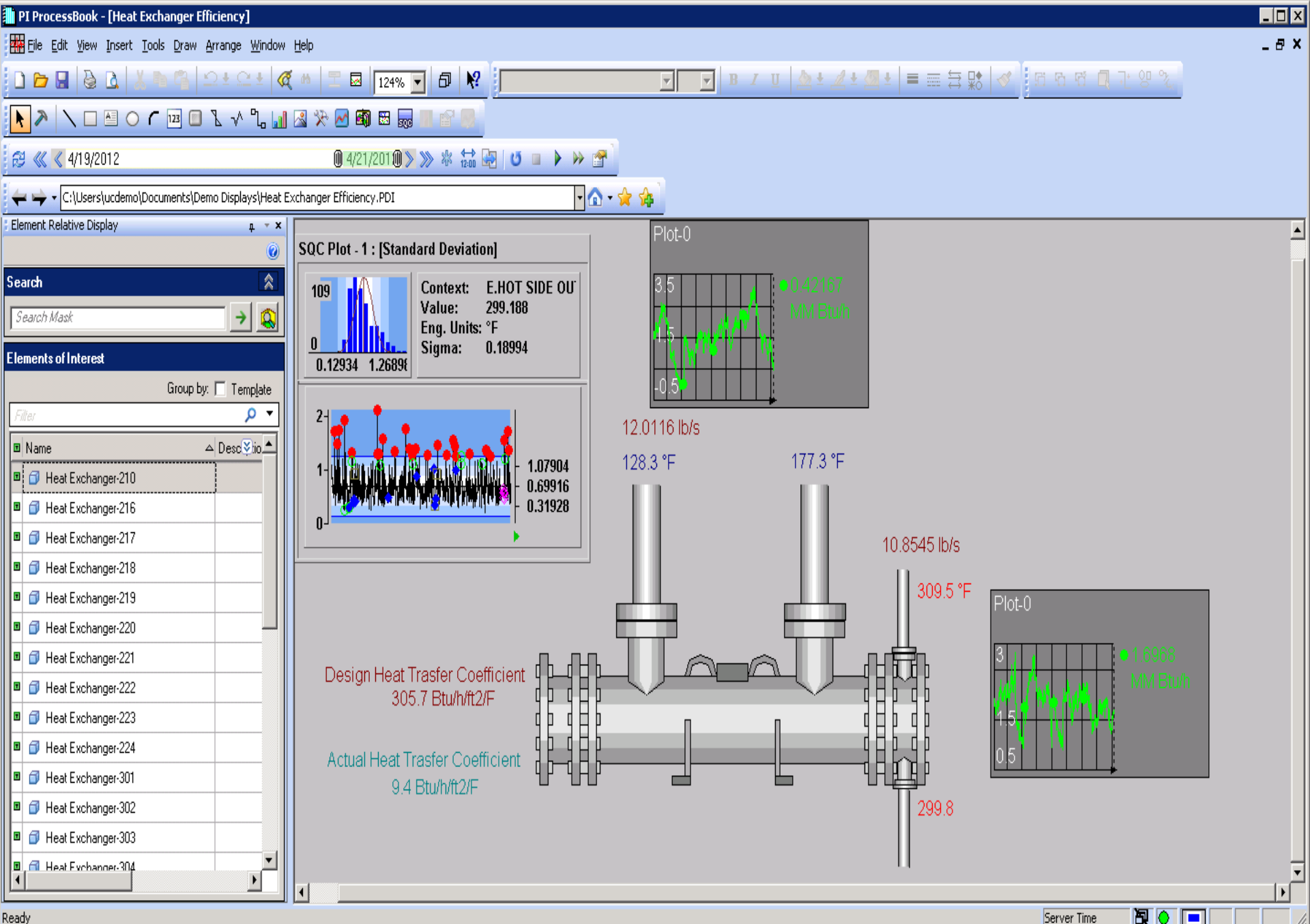
Default UOM: <None>

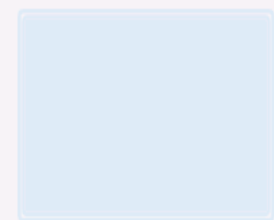
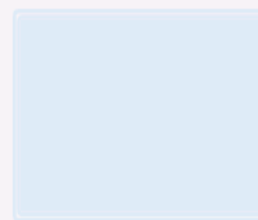
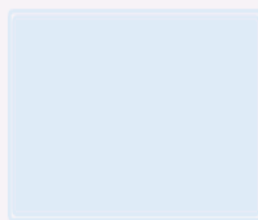
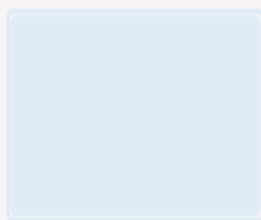
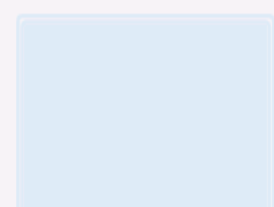
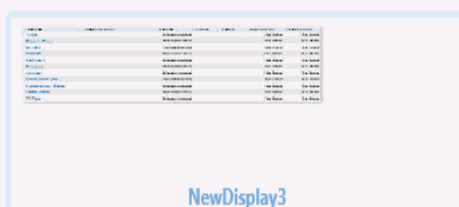
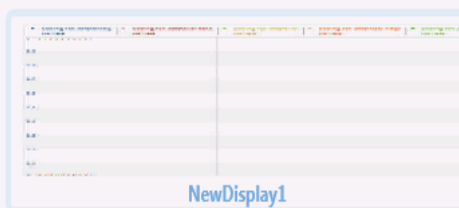
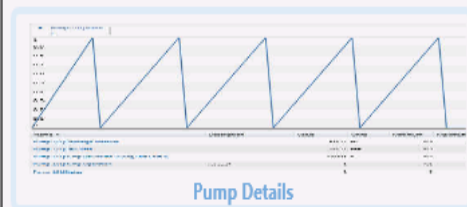
Value Type: Double

Value: 99.9

Data Reference: <None>

Settings...





PI Coresight - NewDisplay - Windows Internet Explorer

http://scalab02/coresight/#/1/NewDisplay

PI Coresight - NewDisplay

PI Coresight homepage

Home > "pump"

pump

Pump Details

- Pump-101.Discharge Pressure
- Pump-101.Discharge Pressure.SIM
- Pump-101.DownTime
- Pump-101.DownTime.Name
- Pump-101.Electricity Cost Factor
- Pump-101.Flow Rate
- Pump-101.Pump Downtime During Last Shift %
- Pump-101.RunTime.Name

Search

Related Assets

Cart

Drag symbols to the Cart area to store for later use. Click for more details.

Create a display

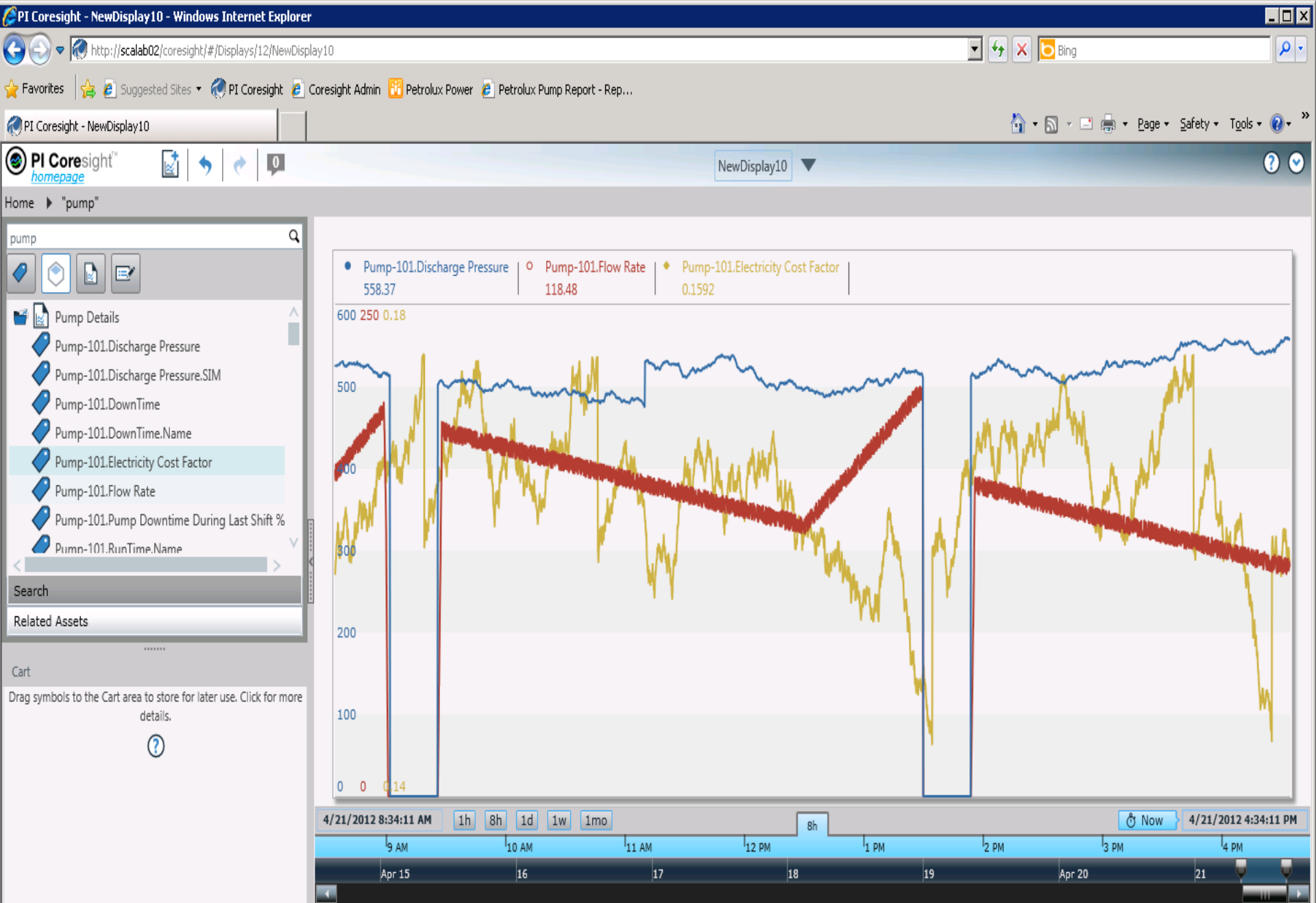
Select one or more items from the search results list and hit enter.

Drag one or more items from the search results list and drop them onto the display.

4/21/2012 8:31:15 AM 1h 8h 1d 1w 1mo 8h Now 4/21/2012 4:31:15 PM

9 AM 10 AM 11 AM 12 PM 1 PM 2 PM 3 PM 4 PM

Apr 15 16 17 18 19 Apr 20 21



PI Coresight - NewDisplay10 - Windows Internet Explorer

http://scalab02/coresight/#/Displays/12/NewDisplay10

PI Coresight Coresight Admin Petrolux Power Petrolux Pump Report - Rep...

PI Coresight - NewDisplay10

PI Coresight homepage

NewDisplay10

Home > "pump"

pump

Pump Details

Pump-101.Discharge Pressure

Pump-101.Discharge Pressure.SIM

Pump-101.DownTime

Pump-101.DownTime.Name

Pump-101.Electricity Cost Factor

Pump-101.Flow Rate

Pump-101.Pump Downtime During Last Shift %

Pump-101.RunTime.Name

Search

Related Assets

Cart

Drag symbols to the Cart area to store for later use. Click for more details.

Name	Description	Value	Units	Trend	Minimum	Maximum
Pump-101.Discharge Pressure		561.88			0	561.23
Pump-101.Flow Rate		117.83			0	208.78
Pump-101.Electricity Cost Factor		0.15722			0.14417	0.17603

4/21/2012 8:36:22 AM

1h 8h 1d 1w 1mo

8h

Now

4/21/2012 4:36:22 PM

9 AM

10 AM

11 AM

12 PM

1 PM

2 PM

3 PM

4 PM

Apr 15

16

17

18

19

Apr 20

21

Done

Local intranet | Protected Mode: Off

100%

PI Coresight - NewDisplay10 - Windows Internet Explorer

http://scalab02/coresight/#/Displays/12/NewDisplay10

PI Coresight - NewDisplay10

PI Coresight homepage

NewDisplay10

Home > SCALAB02 > Baton Rouge > Baton Rouge Refinery > "pump"

pump

- Alkylation
 - Pump-101
 - Pump-201
 - Pump-3010
 - Pump-3334
 - Pump-3658
 - Pump-3982
 - Pump-403
 - Pump-610

Search

Related Assets

Cart

Drag symbols to the Cart area to store for later use. Click for more details.

4/21/2012 8:42:21 AM 1h 8h 1d 1w 1mo 8h Now 4/21/2012 4:42:21 PM

9 AM 10 AM 11 AM 12 PM 1 PM 2 PM 3 PM 4 PM

Apr 15 16 17 18 19 Apr 20 21

Create a display

Select one or more items from the search results list and hit enter.

Drag one or more items from the search results list and drop them onto the display.

http://scalab02/coresight/#/Displays/12/NewDisplay10

PI Coresight - NewDisplay10

PI Coresight homepage

NewDisplay10

Home > SCALAB02 > Baton Rouge2 > Baton Rouge Refinery > Alkylation

Search in Alkylation

- Availability Sec
- Cooling Fan-101
- Efficiency
- Feed Rate
- Heat Exchanger-100
- Heat Exchanger-101
- Heat Exchanger-102
- Heat Exchanger-103
- Heat Exchanger-104

Search

Related Assets (58)

Cart

Drag symbols to the Cart area to store for later use. Click for more details.

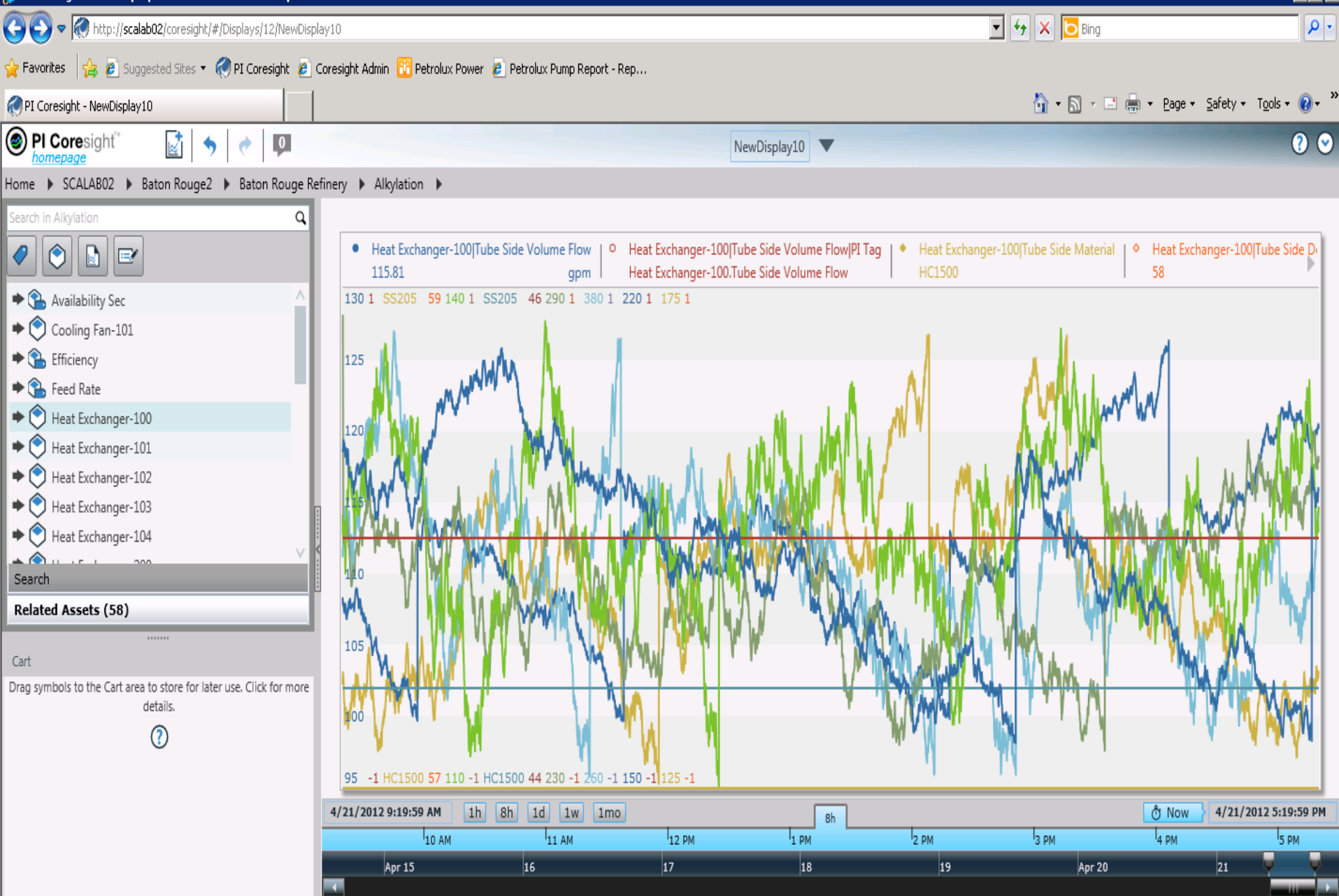
Name	Description	Value	Units	Trend	Minimum	Maximum
Heat Exchanger-100 Tube Side Volume Flow		114.59	gpm		98.086	125.84
Heat Exchanger-100 Tube Side Volume Flow PI Tag	Heat Exchanger-100			—	n/a	n/a
Heat Exchanger-100 Tube Side Material		HC1500		—	n/a	n/a
Heat Exchanger-100 Tube Side Density		58	lb/ft3	—	n/a	n/a
Heat Exchanger-100 Shell Side Volume Flow		124.92	gpm		110.05	138.06
Heat Exchanger-100 Shell Side Volume Flow PI Tag	Heat Exchanger-100			—	n/a	n/a
Heat Exchanger-100 Shell Side Material		WX1000		—	n/a	n/a
Heat Exchanger-100 Shell Side Density		45	lb/ft3	—	n/a	n/a
Heat Exchanger-100 Hot Side Outlet Temperature		268.54	°F		234.37	286.76
Heat Exchanger-100 Hot Side Outlet Temperature PI Tag	Heat Exchanger-100			—	n/a	n/a
Heat Exchanger-100 Hot Side Inlet Temperature		315.88	°F		262.6	369.71
Heat Exchanger-100 Hot Side Inlet Temperature PI Tag	Heat Exchanger-100			—	n/a	n/a
Heat Exchanger-100 Cold Side Outlet Temperature		199.76	°F		159.28	212.79
Heat Exchanger-100 Cold Side Outlet Temperature PI Tag	Heat Exchanger-100			—	n/a	n/a
Heat Exchanger-100 Cold Side Inlet Temperature		135.29	°F		125.35	170.42
Heat Exchanger-100 Cold Side Inlet Temperature PI Tag	Heat Exchanger-100			—	n/a	n/a

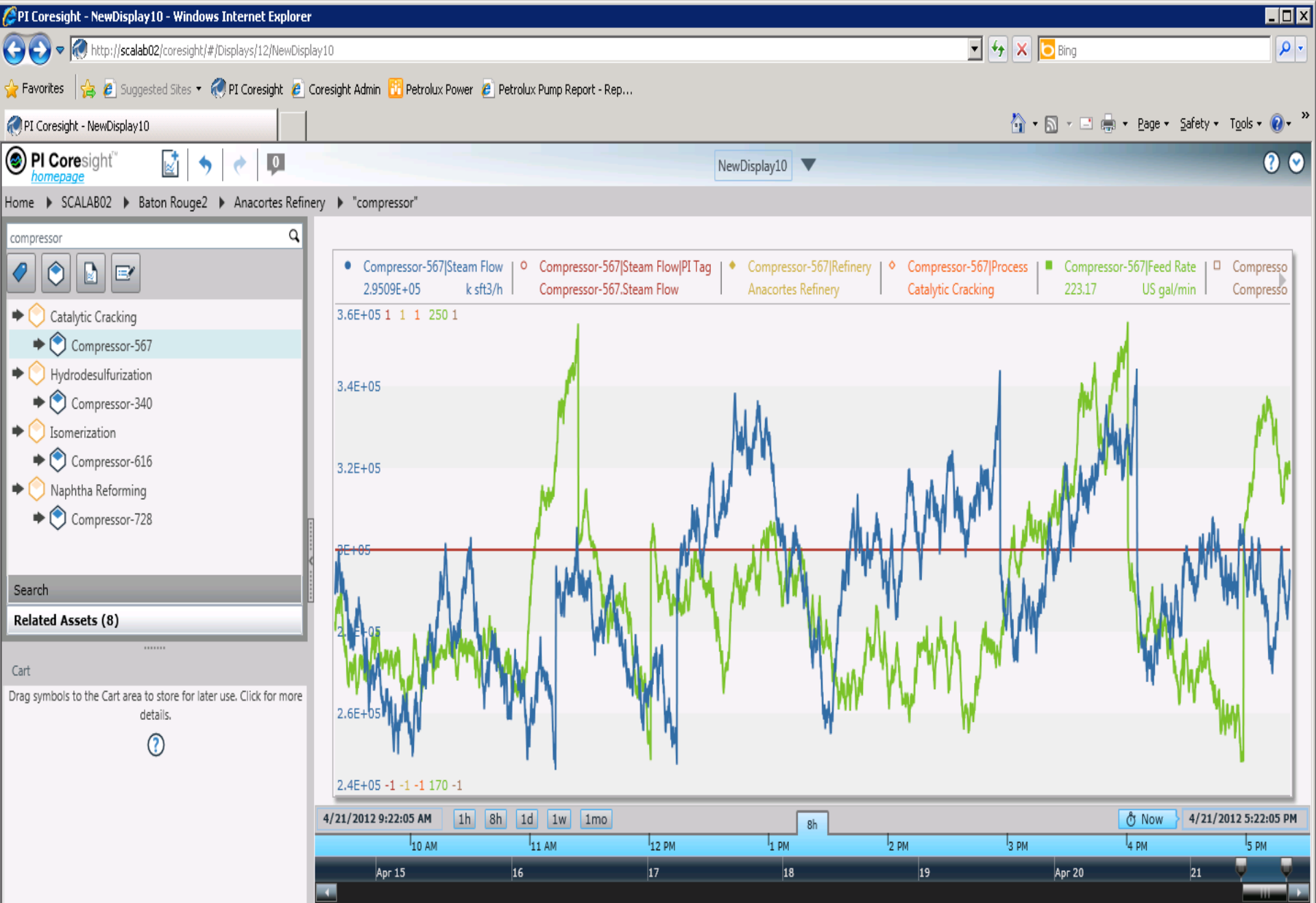
4/21/2012 9:18:34 AM 1h 8h 1d 1w 1mo 8h Now 4/21/2012 5:18:34 PM

10 AM 11 AM 12 PM 1 PM 2 PM 3 PM 4 PM 5 PM

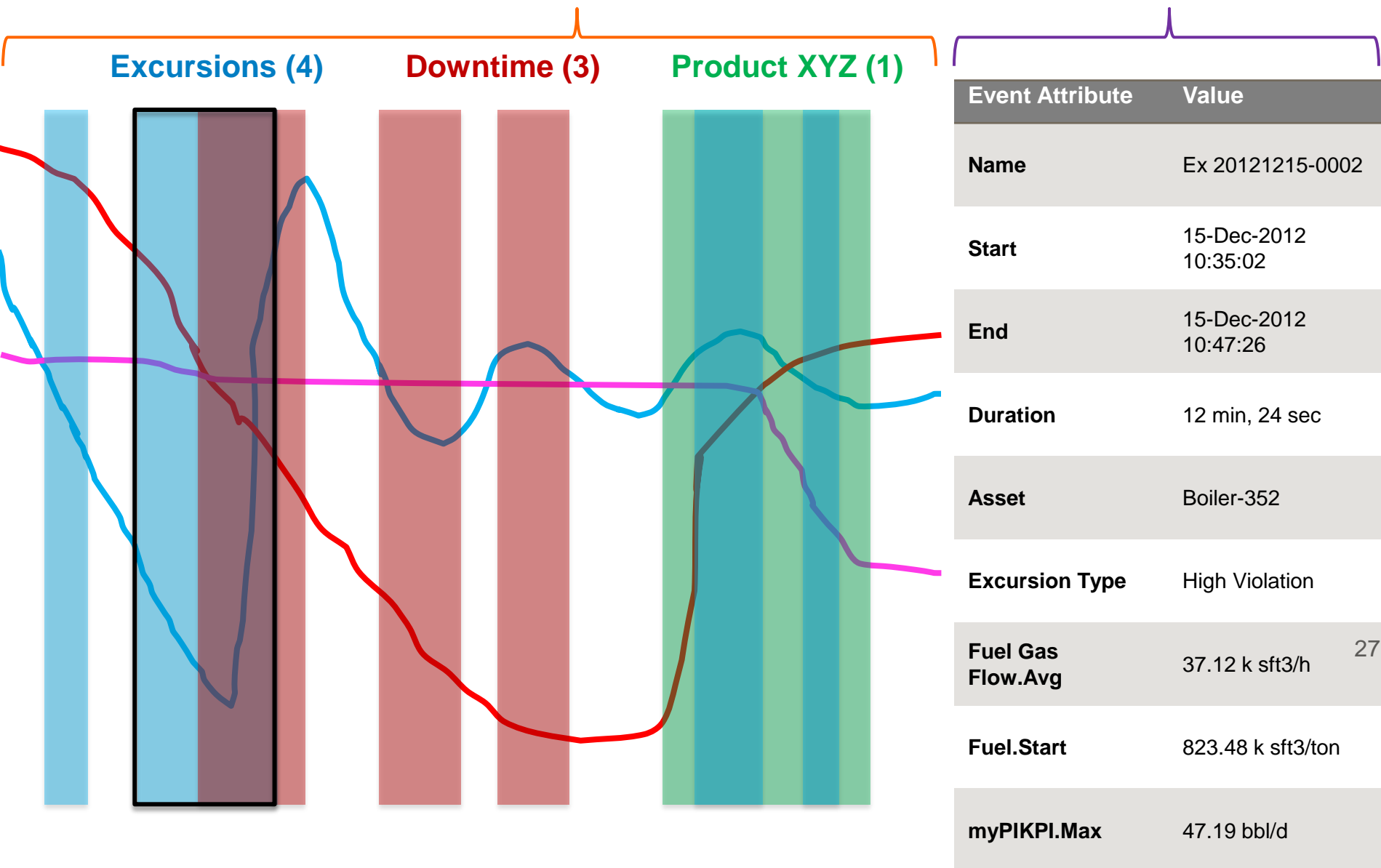
Apr 15 16 17 18 19 Apr 20 21

Done Local intranet | Protected Mode: Off 100%





PI Event Frames is a core capability of the PI Server to record important process or business events and help you find the related data.



Event Frames

- Pump-101 Downtime - 2012.4.18.1
- Pump-101 Downtime - 2012.4.19.3
- Pump-101 Downtime - 2012.4.18.5
- Pump-101 DownTime - 2012.4.17.6
- Pump-101 DownTime - 2012.4.16.9
- Pump-101 Downtime - 2012.4.18.9
- Pump-101 Downtime - 2012.4.17.11
- Pump-101 Downtime - 2012.4.18.14
- Pump-101 Downtime - 2012.4.17.16
- Pump-101 Downtime - 2012.4.18.18
- Pump-101 Downtime - 2012.4.17.20
- Pump-101 Downtime - 2012.4.18.23
- Pump-101 Runtime - 2012.4.18.1
- Pump-101 Runtime - 2012.4.19.3
- Pump-101 Runtime - 2012.4.18.5
- Pump-101 Runtime - 2012.4.19.7
- Pump-101 RunTime - 2012.4.16.22
- Pump-101 RunTime - 2012.4.16.8
- Pump-101 RunTime - 2012.4.17.2
- Pump-101 RunTime - 2012.4.17.7
- Pump-101 Runtime - 2012.4.18.9
- Pump-101 Runtime - 2012.4.17.11
- Pump-101 Runtime - 2012.4.19.12
- Pump-101 Runtime - 2012.4.18.14
- Pump-101 Runtime - 2012.4.17.16
- Pump-101 Runtime - 2012.4.18.18
- Pump-101 Runtime - 2012.4.17.20
- Pump-101 Runtime - 2012.4.18.22
- Pump-201 Downtime - 2012.4.19.8
- Pump-201 Runtime - 2012.4.19.8

Elements

Event Frames

Library

Unit of Measure

Event Frame Search

Event Frame Search 1

Group by: ☐ Category ☐ Template

Filter

Name	[2.17:44:54.94...	Start Time	End Time	Description	Category	Template
Pump-101 ...		4/16/2012 8:4...	4/16/2012 9:4...			Pump RunTime
Pump-101 ...		4/16/2012 9:4...	4/16/2012 10:...			Pump DownTime
Pump-101 ...	H	4/16/2012 10:...	4/17/2012 2:1...			Pump RunTime
Pump-101 ...	I	4/17/2012 2:1...	4/17/2012 2:4...			Pump DownTime
Pump-101 ...	H	4/17/2012 2:4...	4/17/2012 6:4...			Pump RunTime
Pump-101 ...	I	4/17/2012 6:4...	4/17/2012 7:0...			Pump DownTime
Pump-101 ...	H	4/17/2012 7:0...	4/17/2012 11:...			Pump RunTime
Pump-101 ...	I	4/17/2012 11:...	4/17/2012 11:...			Pump DownTime
Pump-101 ...	H	4/17/2012 11:...	4/17/2012 3:4...			Pump RunTime
Pump-101 ...	I	4/17/2012 3:4...	4/17/2012 4:0...			Pump DownTime
Pump-101 ...	H	4/17/2012 4:0...	4/17/2012 8:0...			Pump RunTime
Pump-101 ...	I	4/17/2012 8:0...	4/17/2012 8:3...			Pump DownTime
Pump-101 ...	H	4/17/2012 8:3...	4/18/2012 12:...			Pump RunTime
Pump-101 ...	I	4/18/2012 12:...	4/18/2012 1:0...			Pump DownTime
Pump-101 ...	H	4/18/2012 1:0...	4/18/2012 5:0...			Pump RunTime
Pump-101 ...	I	4/18/2012 5:0...	4/18/2012 5:2...			Pump DownTime
Pump-101 ...	H	4/18/2012 5:2...	4/18/2012 9:3...			Pump RunTime
Pump-101 ...	I	4/18/2012 9:3...	4/18/2012 9:5...			Pump DownTime
Pump-101 ...	H	4/18/2012 9:5...	4/18/2012 2:0...			Pump RunTime
Pump-101 ...	I	4/18/2012 2:0...	4/18/2012 2:2...			Pump DownTime
Pump-101 ...	H	4/18/2012 2:2...	4/18/2012 6:2...			Pump RunTime
Pump-101 ...	I	4/18/2012 6:2...	4/18/2012 6:5...			Pump DownTime

PI Notifications



- Define key events

- Customize message content

Fuel Gas Flow is 38.72 scf/h

- Send to people and systems



- Acknowledge and escalate



- Simplify deployment with templates



Petrolux Pump Report - Report Manager - Windows Internet Explorer

http://scalab02/Reports/Pages/Report.aspx?ItemPath=%2fPetrolux+Production+Reports%2fPetrolux+Pump+Report

Favorites

Suggested Sites

PI Coresight

Coresight Admin

Petrolux Power

Web Slice Gallery

Petrolux Pump Report - Report Manager

Home

My Subscriptions

Site Settings

Help

Refinery

Baton Rouge Refinery

Refinery Unit

Alkylation

View Report

1 of 1

100%

Find | Next

Petrolux Pump Report

Report Name

Petrolux Pump Report

Report Execution Time

4/21/2012 3:47:55 PM

Report Author

SCALE\udema

Total Event Duration by Unit

Event Type	Total Event Duration	In Minutes	Event Count	Expected Duration
Pump DownTime	07:47:20	467	22	
Pump RunTime	3.06:11:34	4692	20	1051200

Duration (Minutes)

5000

4000

3000

2000

1000

0

Pump RunTime

Pump DownTime

Duration Minutes

Total Event Duration by Pump

Done

Local intranet | Protected Mode: Off

100%

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1 of 1 100% Find | Next

Pump	RunTime (Minutes)	Downtime (Minutes)
Pump-201	~3400	~100
Pump-3658	~200	~100
Pump-610	~200	~200
Pump-201	~200	~100
Pump-3658	~200	~100
Pump-403	~200	~100

Pump Name	Event Frame Name	Template Name	Start Time	End Time	Duration
Done					

Home - Refinery Pump Events - Windows Internet Explorer

http://ucdemo-webparts/SitePages/Refinery%20Pump%20Events.aspx

Favorites

Suggested Sites

PI Coresight

Coresight Admin

Petrolux Power

Petrolux Pump Report - Rep...

Home - Refinery Pump Events

Page

Safety

Tools

UC DEMO

Site Actions

Browse

Page

Home

Refinery Pump Events

Search this site...

I Like It

Tags & Notes

Recently Modified

Home

Refinery Pump Events

Regions

WebParts Demo

How To Use This Library

Petrolux

Regions

Metrics

Libraries

Site Pages

Shared Documents

Petrolux Refinery Pump Event Summary

PumpName	EventType	EventCount	DurationTime
Pump-101	Pump RunTime	15	2:09:51:33
Pump-101	Pump DownTime	15	06:05:22
Pump-201	Pump RunTime	1	04:04:00
Pump-201	Pump DownTime	1	00:06:59
Pump-3010	Pump RunTime	1	04:04:01
Pump-3010	Pump DownTime	1	00:14:00
Pump-3658	Pump RunTime	1	04:04:00
Pump-3658	Pump DownTime	1	00:07:00
Pump-3982	Pump RunTime	1	04:04:00
Pump-3982	Pump DownTime	1	00:28:00
Pump-403	Pump DownTime	1	00:24:00
Pump-610	Pump RunTime	1	04:04:00
Pump-610	Pump DownTime	2	00:21:59

Petrolux Pump Event Detail

EventName	PumpName	EventType	StartTime	EndTime	Duration
Pump-101 Downtime - 2012.4.19.8.	Pump-101	Pump DownTime	4/19/2012 12:21:48 PM	4/19/2012 12:45:48 PM	00:24:00
Pump-101 Runtime - 2012.4.19.7.	Pump-101	Pump RunTime	4/19/2012 8:17:48 AM	4/19/2012 12:21:48 PM	04:04:00
Pump-101 Downtime - 2012.4.19.3.	Pump-101	Pump DownTime	4/19/2012 7:53:48 AM	4/19/2012 8:17:49 AM	00:24:01
Pump-101 Runtime - 2012.4.19.3.	Pump-101	Pump RunTime	4/19/2012 3:49:48 AM	4/19/2012 7:53:48 AM	04:04:00
Pump-101 Downtime - 2012.4.18.23.	Pump-101	Pump DownTime	4/19/2012 3:25:49 AM	4/19/2012 3:49:49 AM	00:24:00
Pump-101 Runtime - 2012.4.18.22.	Pump-101	Pump RunTime	4/18/2012 11:21:48 PM	4/19/2012 3:25:48 AM	04:04:00
Pump-101 Downtime - 2012.4.18.18.	Pump-101	Pump DownTime	4/18/2012 10:57:48 PM	4/18/2012 11:21:49 PM	00:24:01

Done

Local intranet | Protected Mode: Off

100%

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\\SCALAB02\Petrolux - PI System Explorer (Administrator)

FileViewGoToolsHelp

DatabaseQuery DateBackCheck InRefresh

Notifications

NewX>Pump DownTime Notification

ElementsEvent FramesLibraryUnit of MeasureMyPINotificationsContacts

Pump DownTime Notification

OverviewTriggerMessageSubscriptionsHistory

Target: \\SCALAB02\Petrolux\Baton Rouge Refinery\Alkylation\Pump-101Select Target...

Conditions

New ConditionX↑↓

Rule	Configuration	Time True	Result ...	Priority
Comparison	Status = 0	0	Outside...	AboveN...

Time Rule: Natural

Options

☒ Notify only on change in status

Resend Interval: 0Seconds

Non Repetition Interval: 0Seconds

File View Go Tools Help

Database Query Date Back Check In Refresh

Notifications

New X

Pump DownTime Notification

Pump DownTime Notification

Overview Trigger **Message** Subscriptions History

Delivery Formats

Name	Delivery Channel
Down Time Format	Email

Global Default Email Email

Design HTML Preview Plain Text Preview

Arial 11

Subject

Pump Name:Value is currently down on the Alkylation unit at the Baton Rouge Refinery

Attachments

Body

Pump Name:Value is down!

Details	
Start time	Notification:Trigger Time
Location	Baton Rouge Refinery
Unit	Alkylation
Status	Status:Value
Pump Downtime During Last Shift % Name	Pump Downtime During Last Shift %:Value

Content

Add X

Standard Content

- Notification
- Target
- Database
- System
- Acknowledge
- Acknowledge With Comment

Trigger Input

- Triggering Condition
- Status

Target Attribute (Pump-101)

- a0
- a1
- a2
- CL
- Cost per Hour
- Discharge Pressure
- Electricity Cost Factor
- Flow Rate
- Impeler Size
- LCL
- Liquid Gravity
- Minimum Efficiency
- Model Number
- Pump Curve Head
- Pump Downtime During Last Shift %
- Pump Efficiency
- Pump Head Efficiency

Elements

Event Frames

Library

Unit of Measure

MyPI

Notifications

Contacts

Message



Junk



Delete



Reply



Reply all



Forward



Instant message



Add to calendar



Move to



Copy to



Flag



Watch



Copy



Find text



Encoding



Previous



Next

Navigate

Pump-101 is currently down on the Alkylation unit at the Baton Rouge Refinery

ucdemo@osisoft.com (ucdemo@osisoft.com) [Add contact](#)

To: ucdemo@ucdemo.com;

⬇ This message is Low Priority.

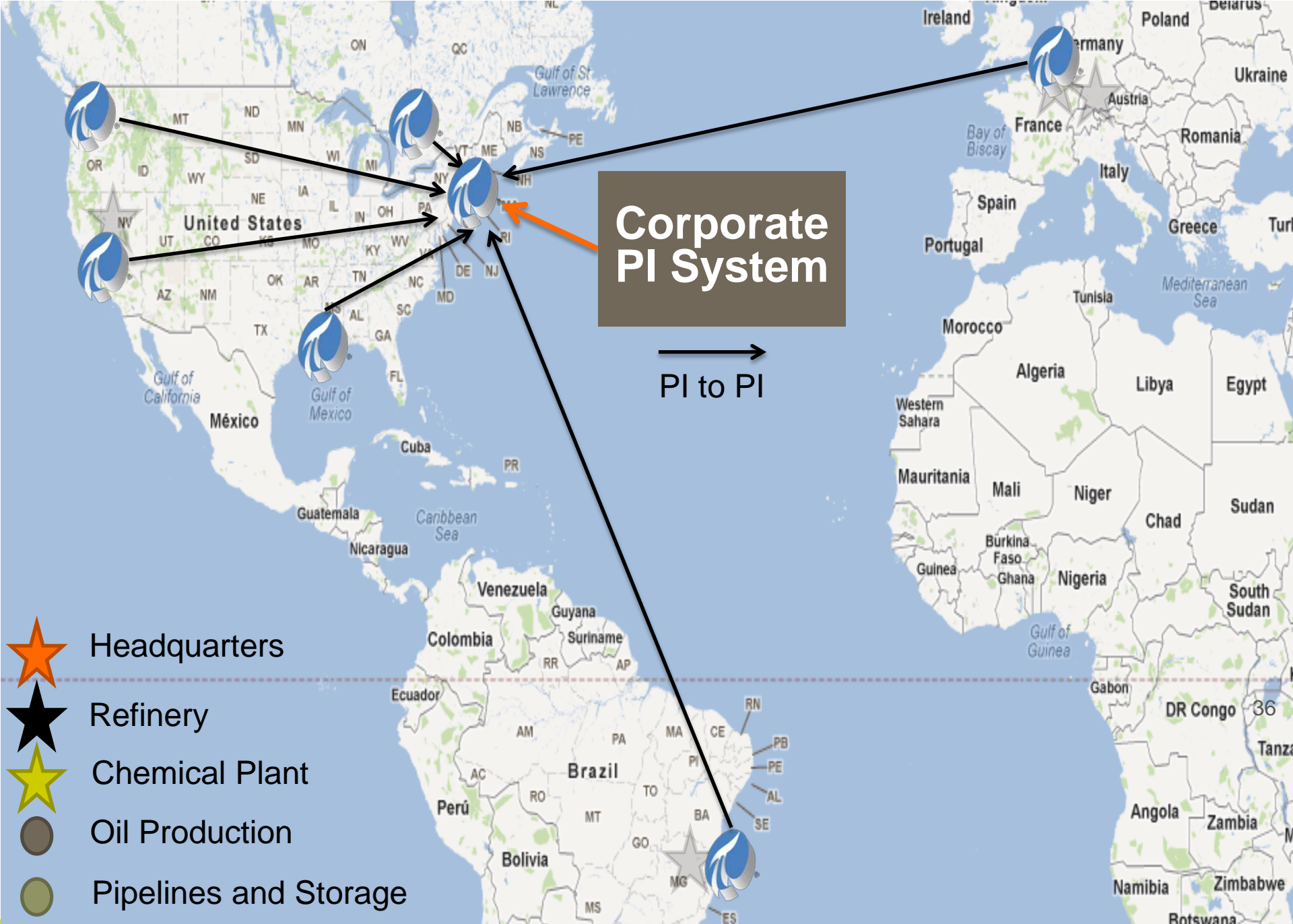
Pump-101 is currently down on the Alkylation unit at the Baton Rouge Refinery 0 PM

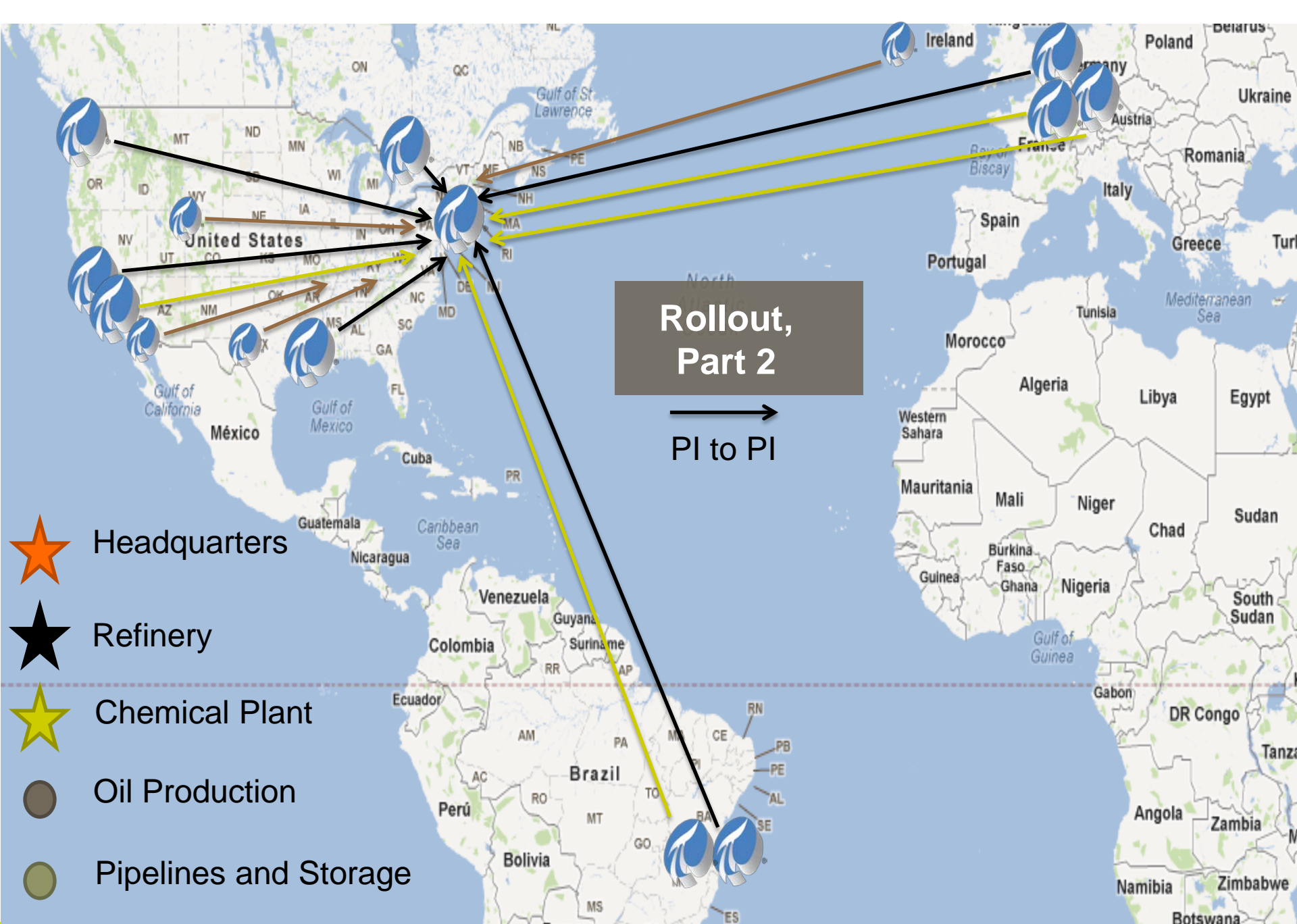
Pump-101 is down!

Details

Start time	12:10:07 PM on 4/20/12
Location	Baton Rouge Refinery
Unit	Alkylation
Status	1
Pump Downtime During Last Shift %	0.345555649863349

For more details, please see the [PI Coresight Pump-101 Details](#) page. Please [Acknowledge](#) this notification response team.







2010 R3

Max Point Count	2M+ tags
Point Changes	<10 pt/sec
Startup Time	>20 minutes
Real-time Updates	200K signups
Max Data Rate	<100K ev/sec
Query Throughput	<1M ev/sec
Online Archives	<10K files

5x



2012

Max Point Count	10M tags
Point Changes	>1,000 pt/sec
Startup Time	<4 minutes
Real-time Updates	>1M signups
Max Data Rate	500K ev/sec
Query Throughput	>5M ev/sec
Online Archives	>50K files

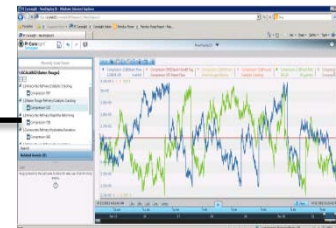
PI Server 2012 is More Resilient



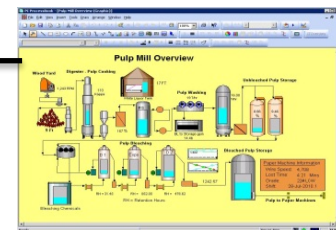
PI Interface



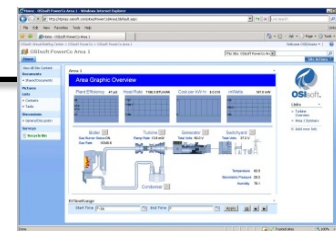
PI Server



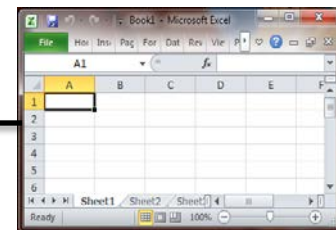
PI Coresight



PI ProcessBook



PI WebParts



PI DataLink

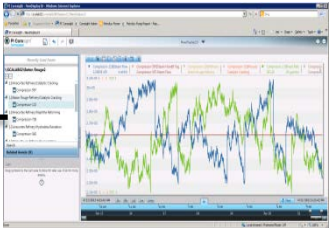
Resilient During: Restarting from Hard Power Stop



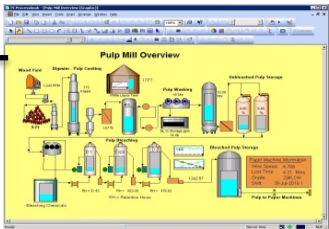
PI Interface



PI Server



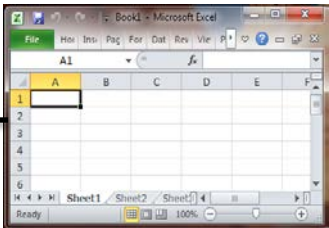
PI Coresight



PI ProcessBook

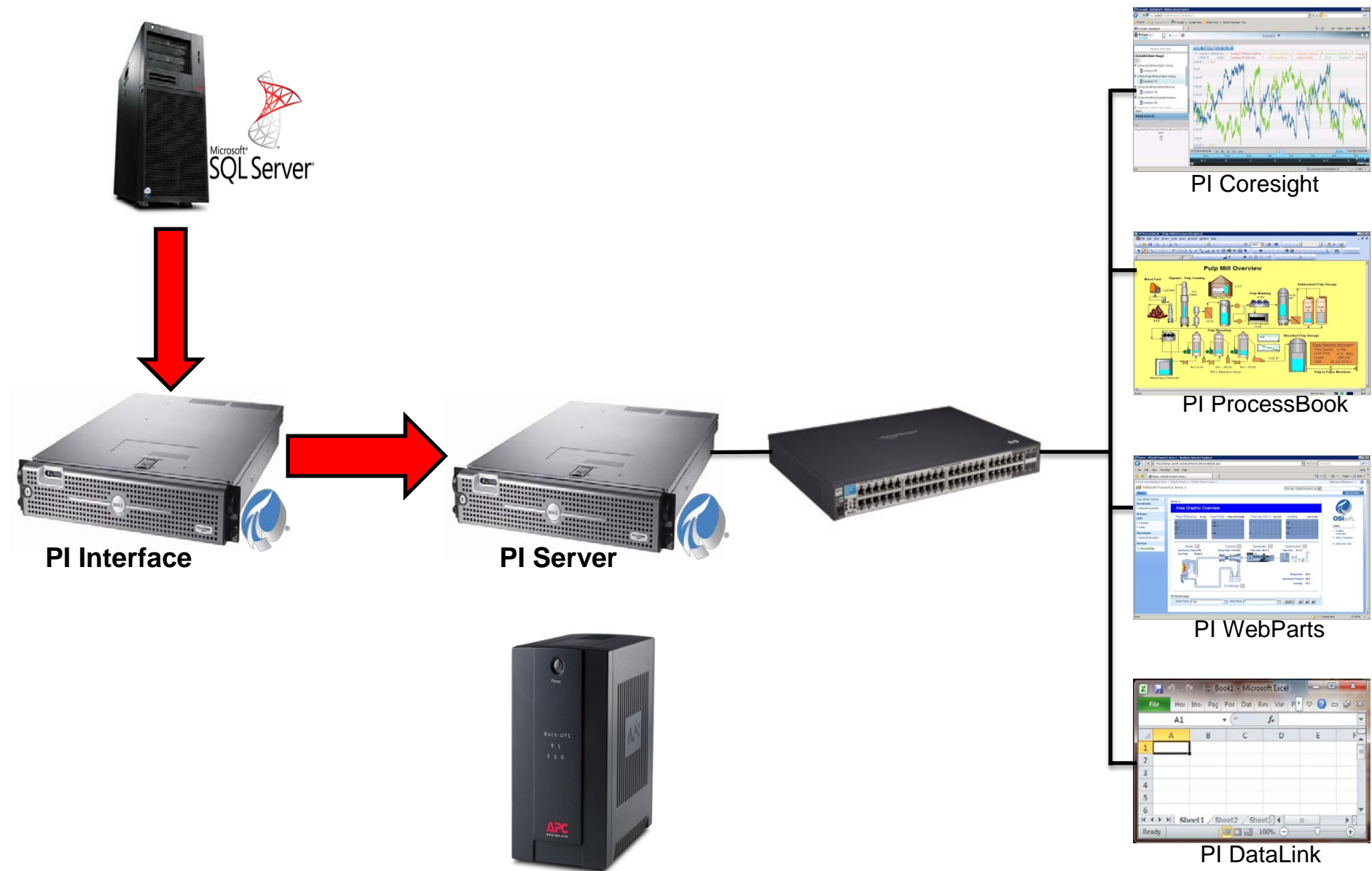


PI WebParts



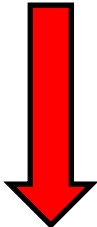
PI DataLink

Resilient During: Heavy Backfilling



Resilient During: Large Point Building Operations

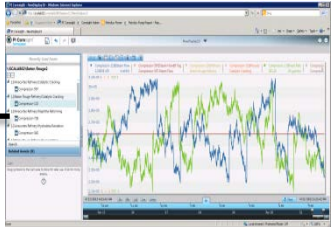
Select (x)	Tag	archiving	changedate	changer	compdev
1	1-13.Net Volume	1	16-Apr-12 19:13:45	OSI/hall	59.80441
3	1-14.Net Volume	1	16-Apr-12 19:13:45	OSI/hall	12.31336
4	1-15.Net Volume	1	16-Apr-12 19:13:45	OSI/hall	25.62005
5	1-16.Net Volume	1	16-Apr-12 19:13:45	OSI/hall	11.70846
6	1-7.Net Volume	1	16-Apr-12 19:13:46	OSI/hall	14.10056
7	1-768.Net Volume	1	16-Apr-12 19:13:46	OSI/hall	35.79502
8	1-8.Net Volume	1	16-Apr-12 19:13:46	OSI/hall	16.86019
9	1-800.Net Volume	1	16-Apr-12 19:13:46	OSI/hall	54.50037
10	1-801.Net Volume	1	16-Apr-12 19:13:46	OSI/hall	20.86365
11	10-35.Net Volume	1	16-Apr-12 19:13:45	OSI/hall	21.50817



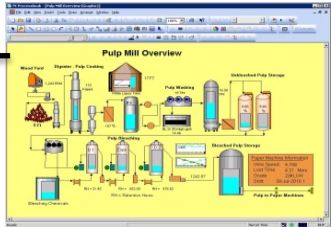
PI Interface



PI Server



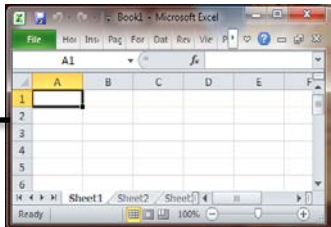
PI Coresight



PI ProcessBook

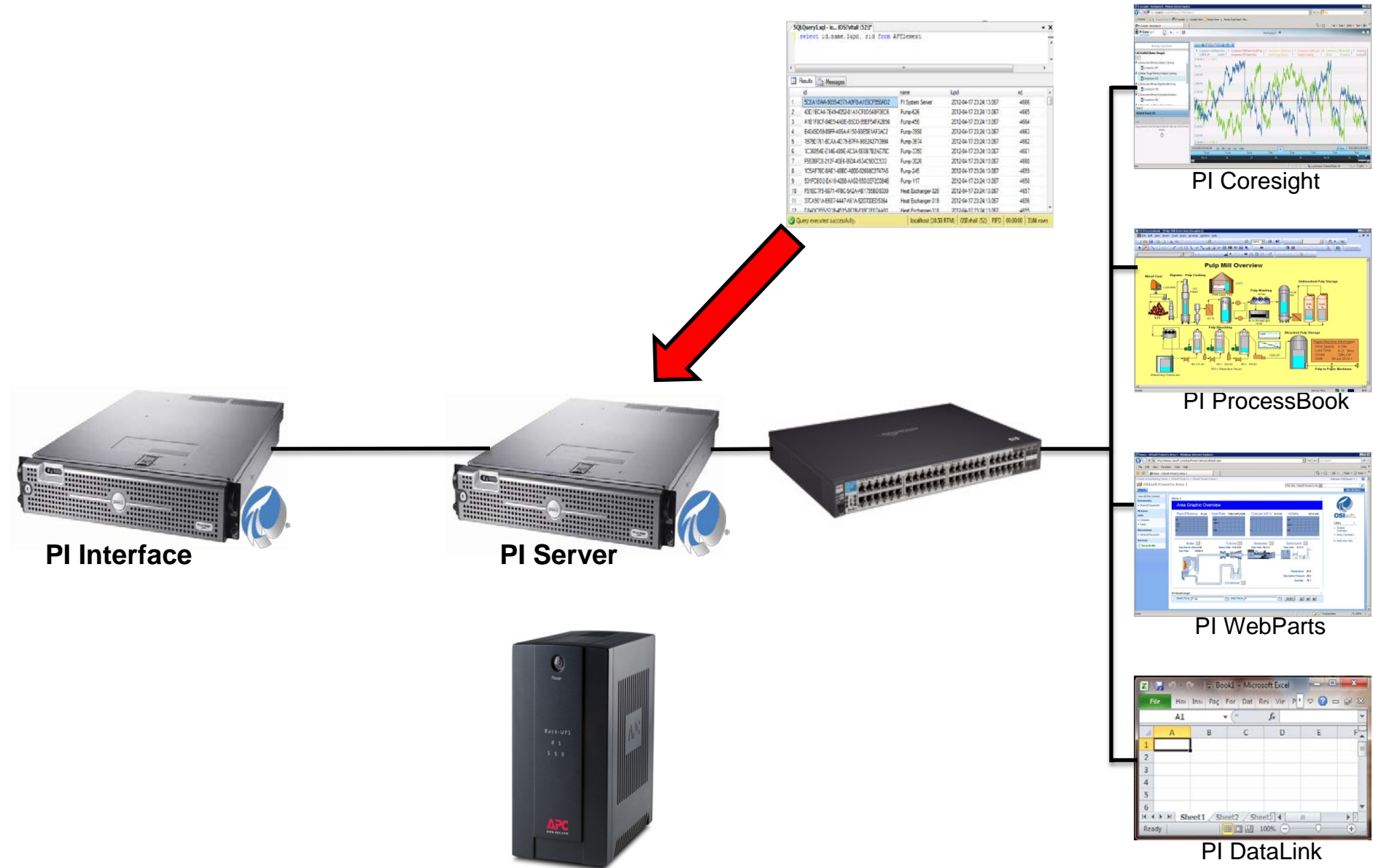


PI WebParts

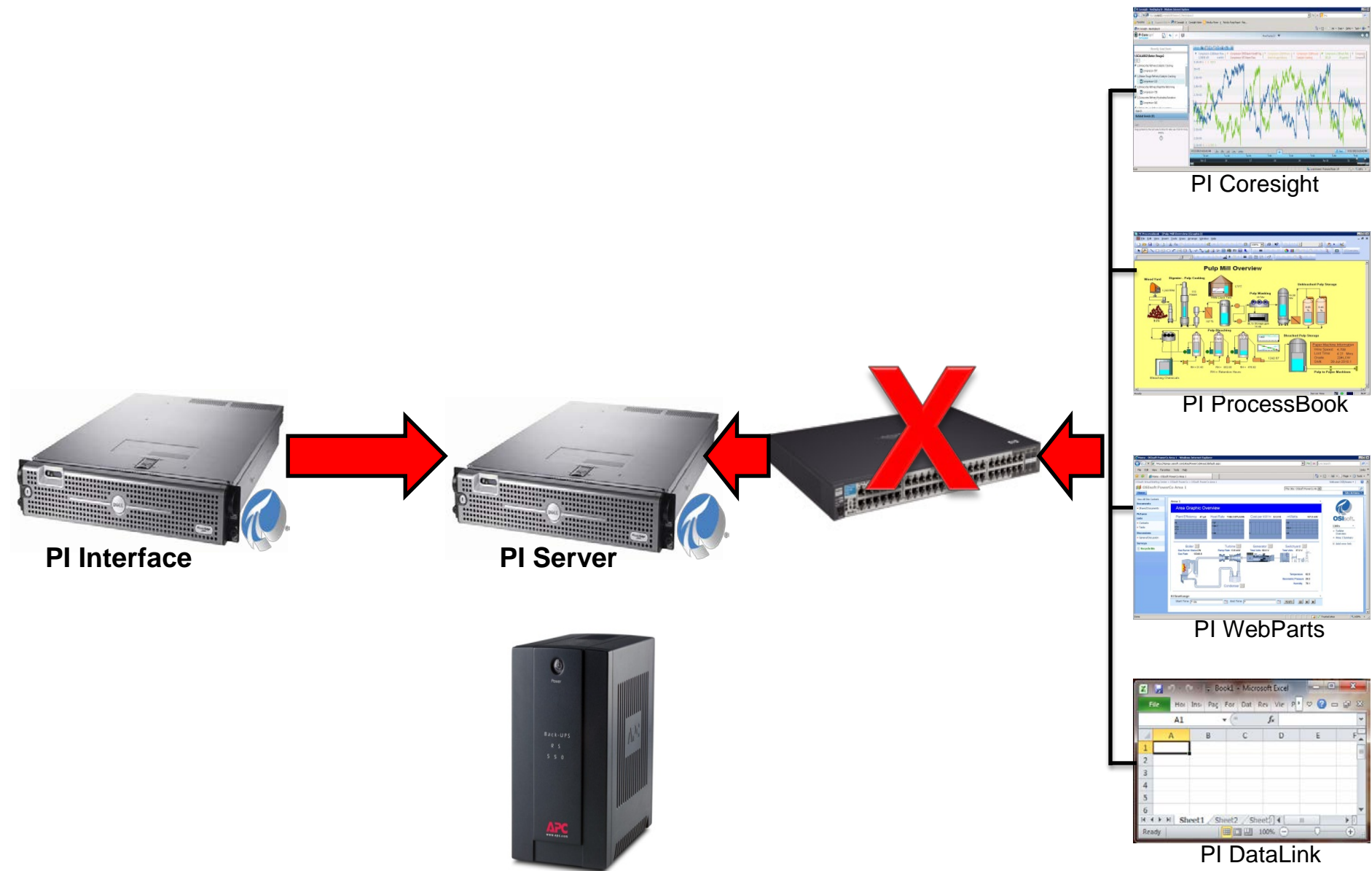


PI DataLink

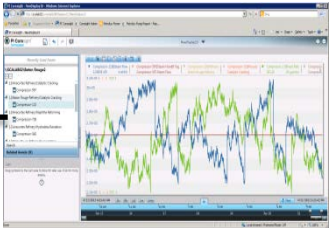
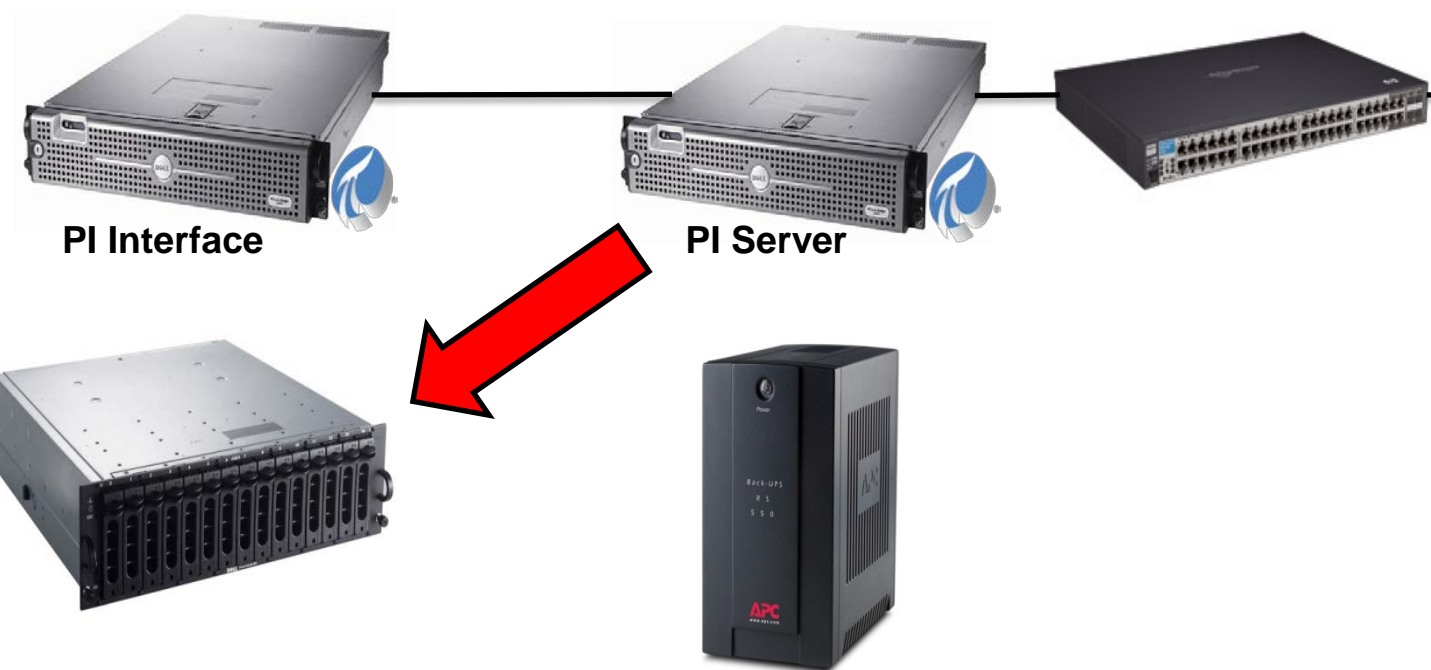
Resilient During: Large PI OLEDB Queries



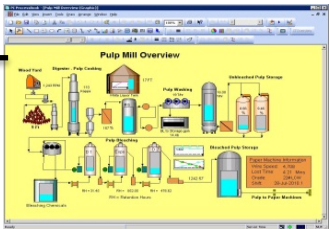
Resilient During: Network Disruption, Reconnection



Resilient During: Backup Operations



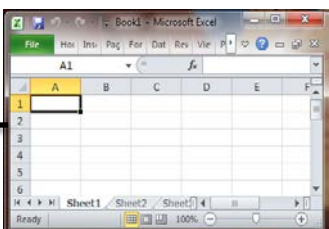
PI Coresight



PI ProcessBook

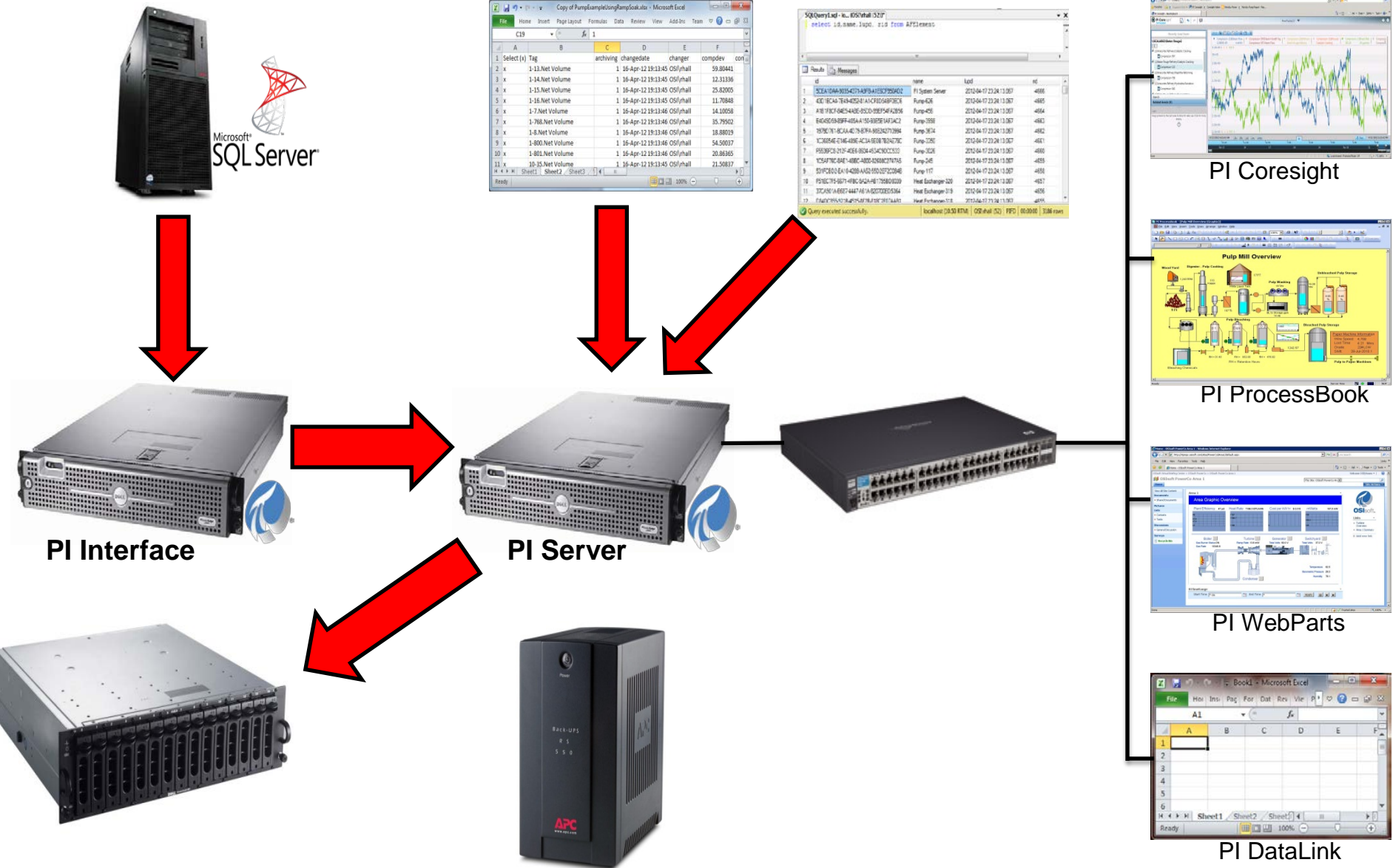


PI WebParts



PI DataLink

Resilient During: Several Events at the Same Time



DATA BACKFILLING



*Historical Data
in
Legacy System*

Archive File	Status	Start Time	End Time
C:\Program Files\PI\dat\piarch.001	Primary	4/21/2012 7:30:52 AM	Current Time
C:\Program Files\PI\dat\piarch.002	Has Data	4/19/2012 12:47:44 PM	4/21/2012 7:30:52 AM
C:\Program Files\PI\dat\piarch.003	Has Data	4/18/2012 3:51:16 AM	4/19/2012 12:47:44 PM

DATA BACKFILLING



2010 R3

- | | |
|----------------------|------------|
| 1 Create PI Points | Minutes |
| 2 Delete Pt. Created | Minutes |
| 3 Check Disk Space | Minutes |
| 4 Reprocess Archives | Days/Weeks |
| 5 Create Archives | Minutes |
| 6 Backfill Data | Hours/Days |



2012

- | | |
|---------------------------------|-----------|
| 1 Create PI Points | 5x Faster |
| 2 Delete Pt. Created | Zero |
| 3 Check Disk Space | Minutes |
| 4 Reprocess Archives | Zero |
| 5 Create Archives | Minutes |
| 6 Backfill Data | 5x Faster |

Petrolux Value from PI Server 2012

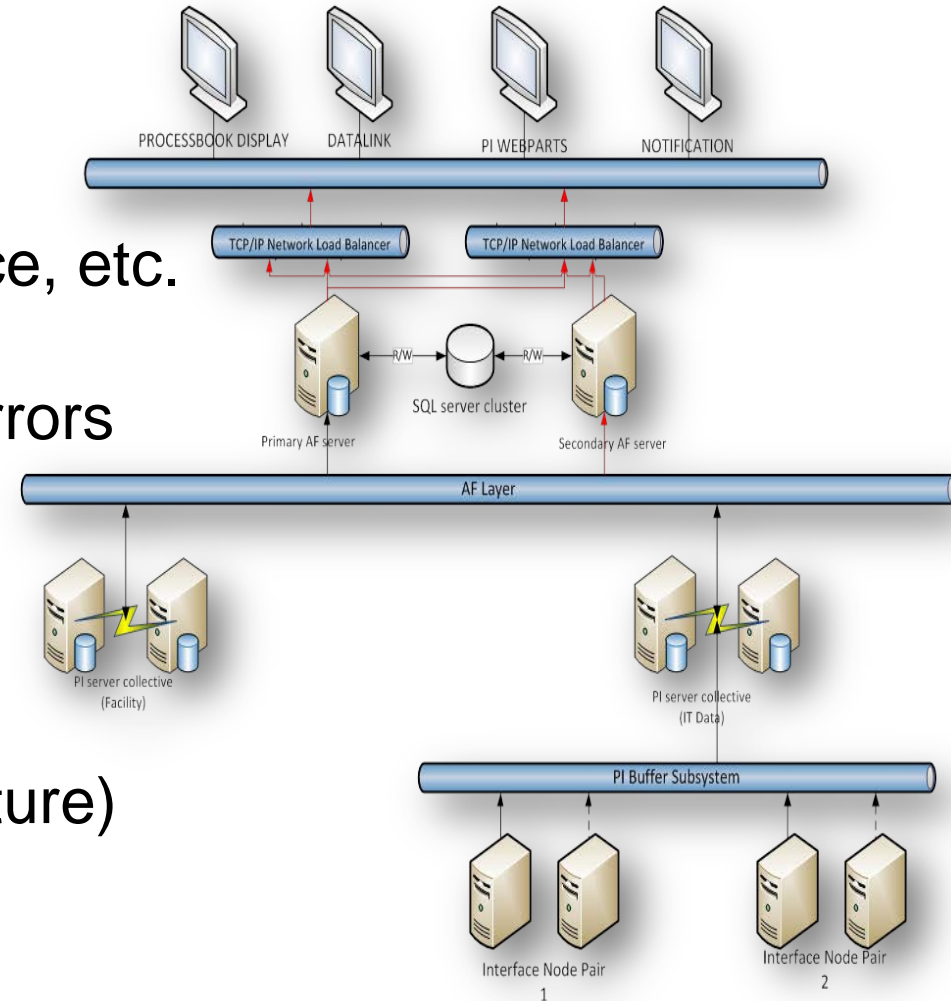
- **Simplified** Installation, Automatic Backfilling
- Very high **Scale** for growth
- **Faster** queries and response
- More **Resilient** during atypical scenarios

OSISOFT NOC



OSIsoft IT SYSTEMS

- ☑ 20 OSIsoft Office Locations
- ☑ Servers
 - CPU, Memory, Disk Space, etc.
- ☑ Network
 - Ping Time, Bandwidth, Errors
- ☑ Facilities
 - Building Power Usage
 - Rack Load
 - UPC Battery Status
 - Cooling (HVAC, temperature)
- ☑ More...





Project Abacus

Configured and Programmed
Calculations for PI AF

Project Abacus Use Case

Extruding Process

Boiler Efficiency = $\text{AVG}(\text{B1}..\text{Bn})$

Boiler1

Flow Out
Fuel Flow Rate



Boiler
Template

Efficiency = $(\text{Flow Out} / \text{Fuel Flow Rate} * 3.14)$



Boiler2

Flow Out
Fuel Flow Rate

Or myProgrammedCalc (Flow Out, Fuel Flow Rate)

Efficiency

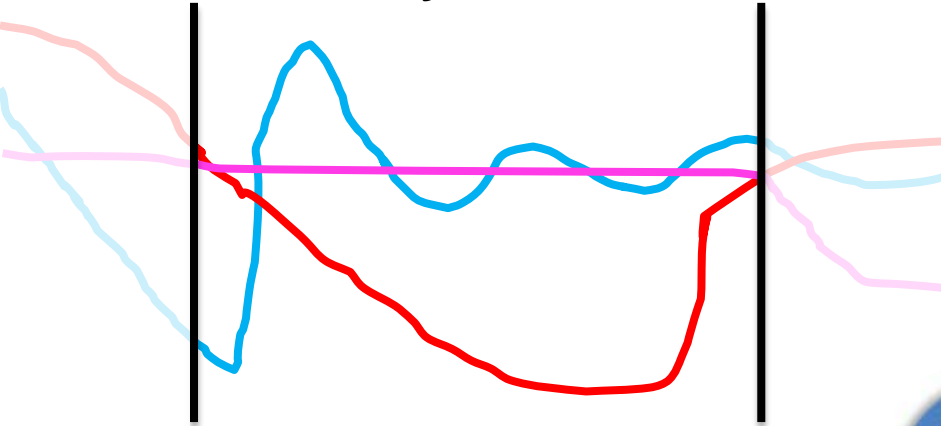
Boiler3

Flow Out
Fuel Flow Rate
Efficiency



Simplify Data Analysis

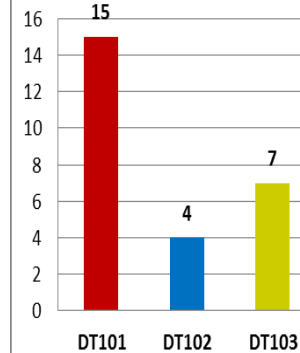
myEvent



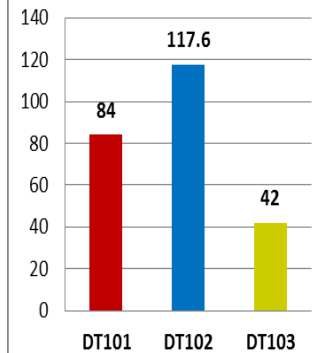
Perform Asset Comparisons



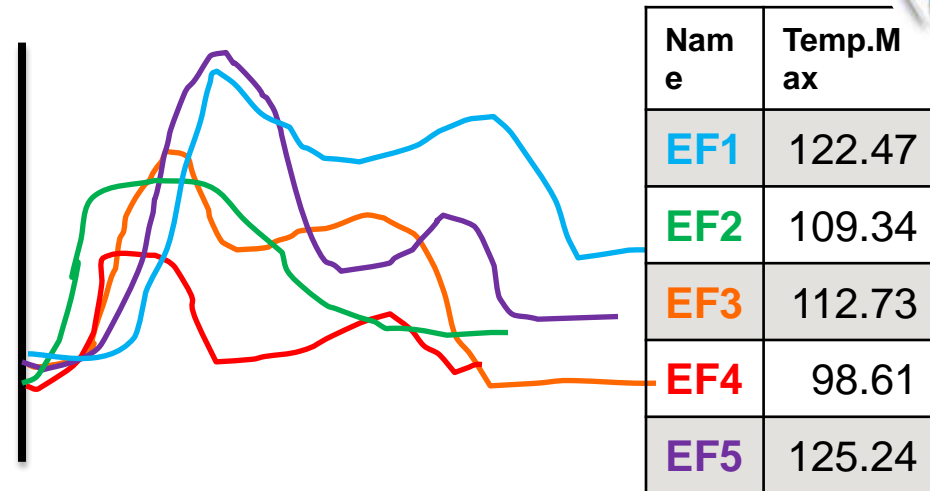
Weekly Downtime
(Instances)



Weekly Cumulative
Downtime (hrs)



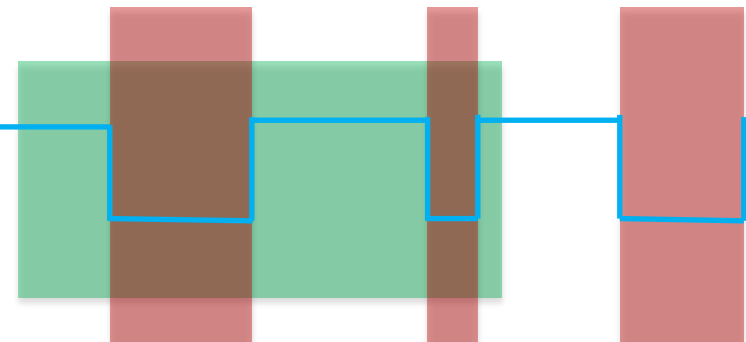
Event Overlay Trend (Temp)



Downtime Events for Product XYZ

Product XYZ (1)

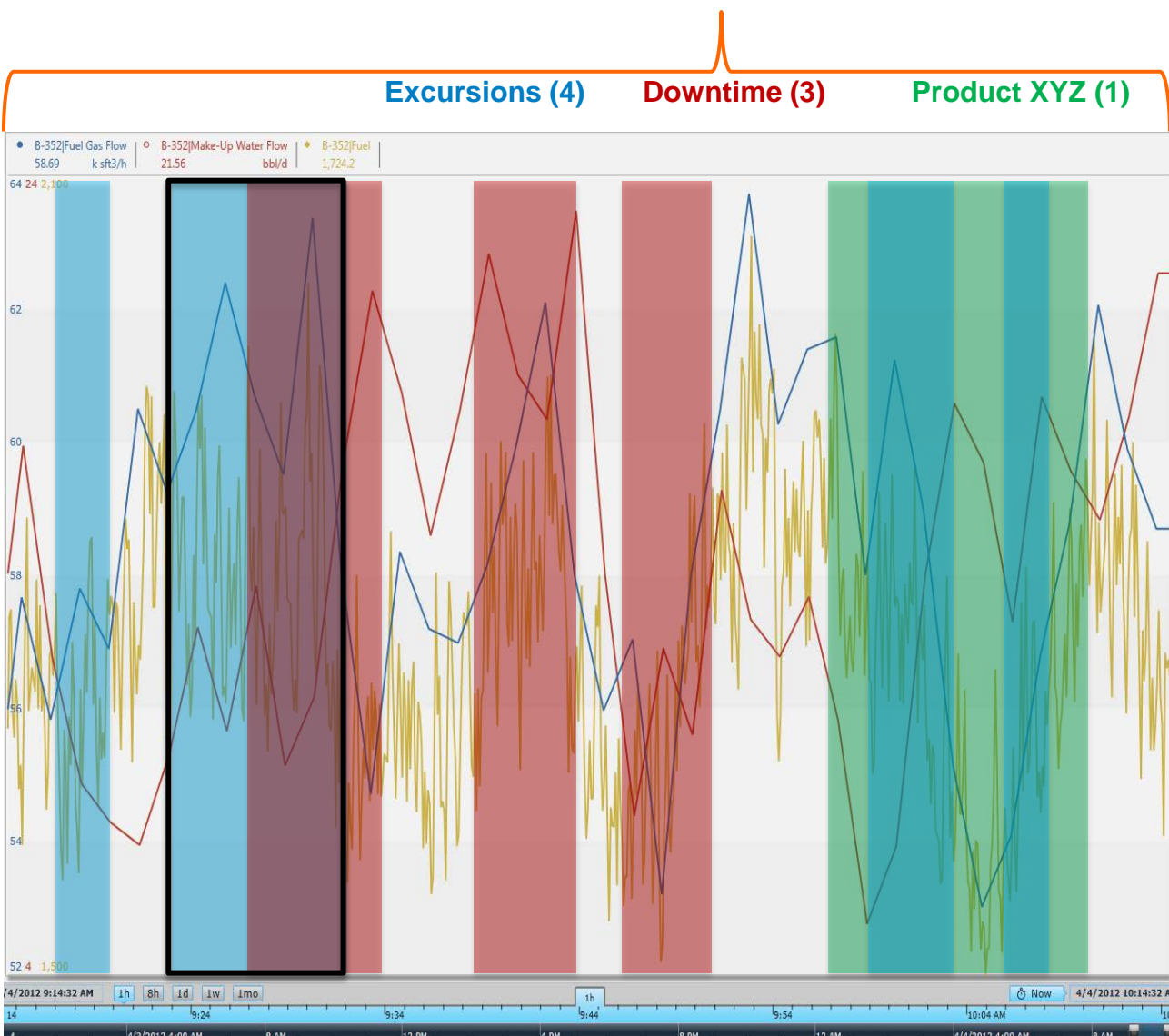
Downtime (2)



Perform Event Comparisons

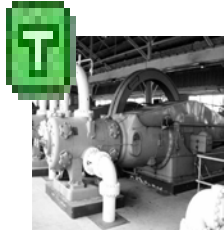
Discover Event Interrelationships

PI Event Frames is a core capability of the PI Server to record important process or business events and help you find the *related data*.



Event Attribute	Value
Name	Ex 20121215-0002
Start	15-Dec-2012 10:35:02
End	15-Dec-2012 10:47:26
Duration	12 min, 24 sec
Asset	Boiler-459
Excursion Type	High Violation
Fuel Gas Flow.Avg	37.12 k sft3/h
Fuel.Start	823.48 k sft3/ton
myPIKPI.Max	47.19 bbl/d

Event Generation in Abacus



|Efficiency

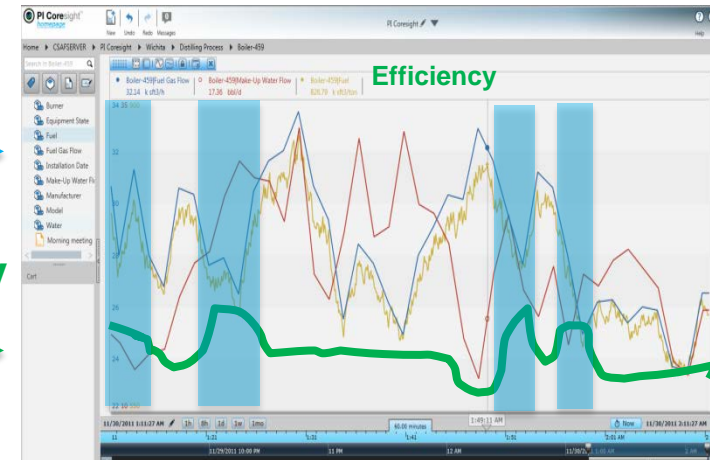
|Fuel Flow Rate

|Flow Out


“Abacus”

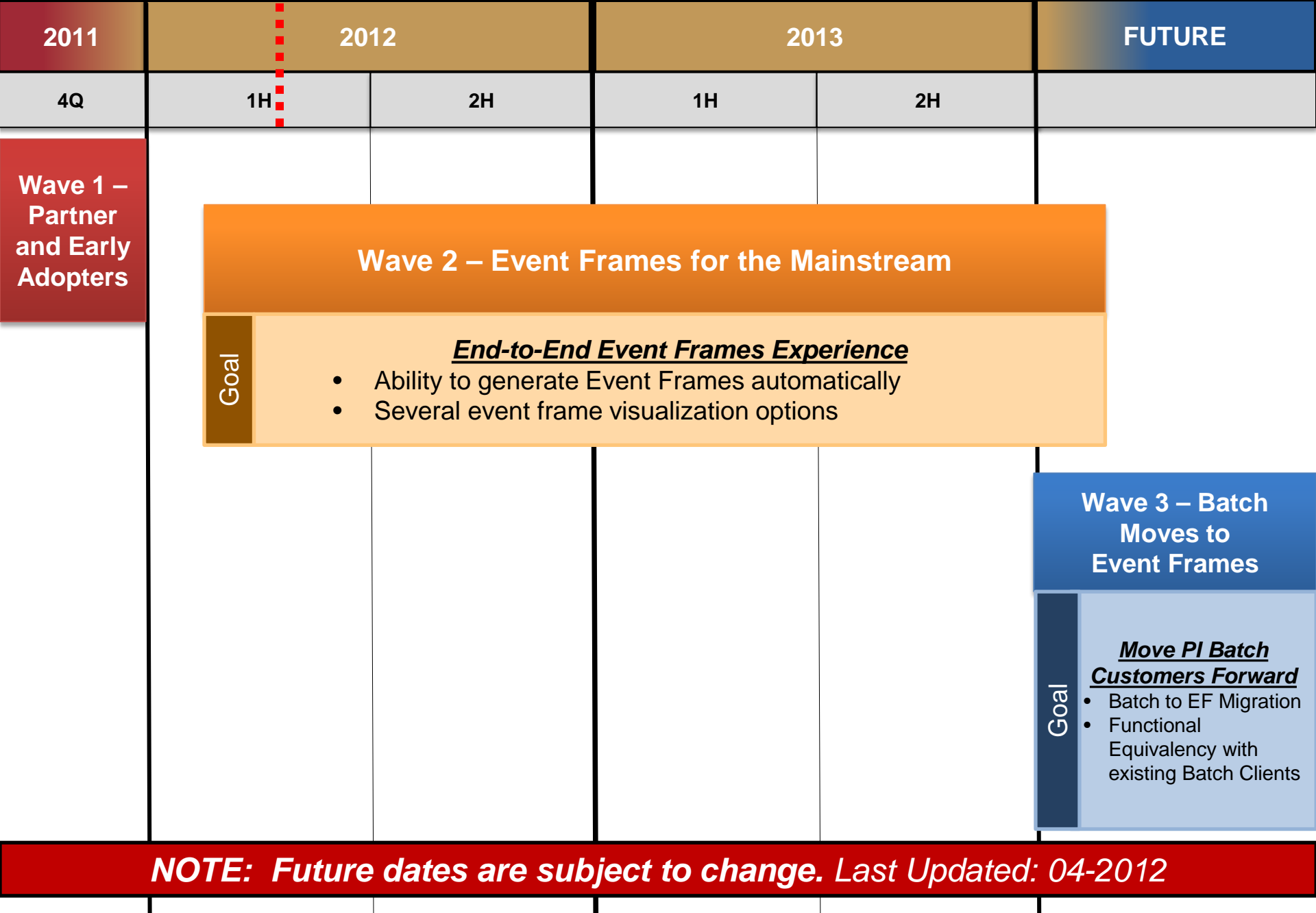
myEF

|Efficiency



 $\text{Efficiency} = (\text{Flow Out} / \text{Fuel Flow Rate} * 3.14)$

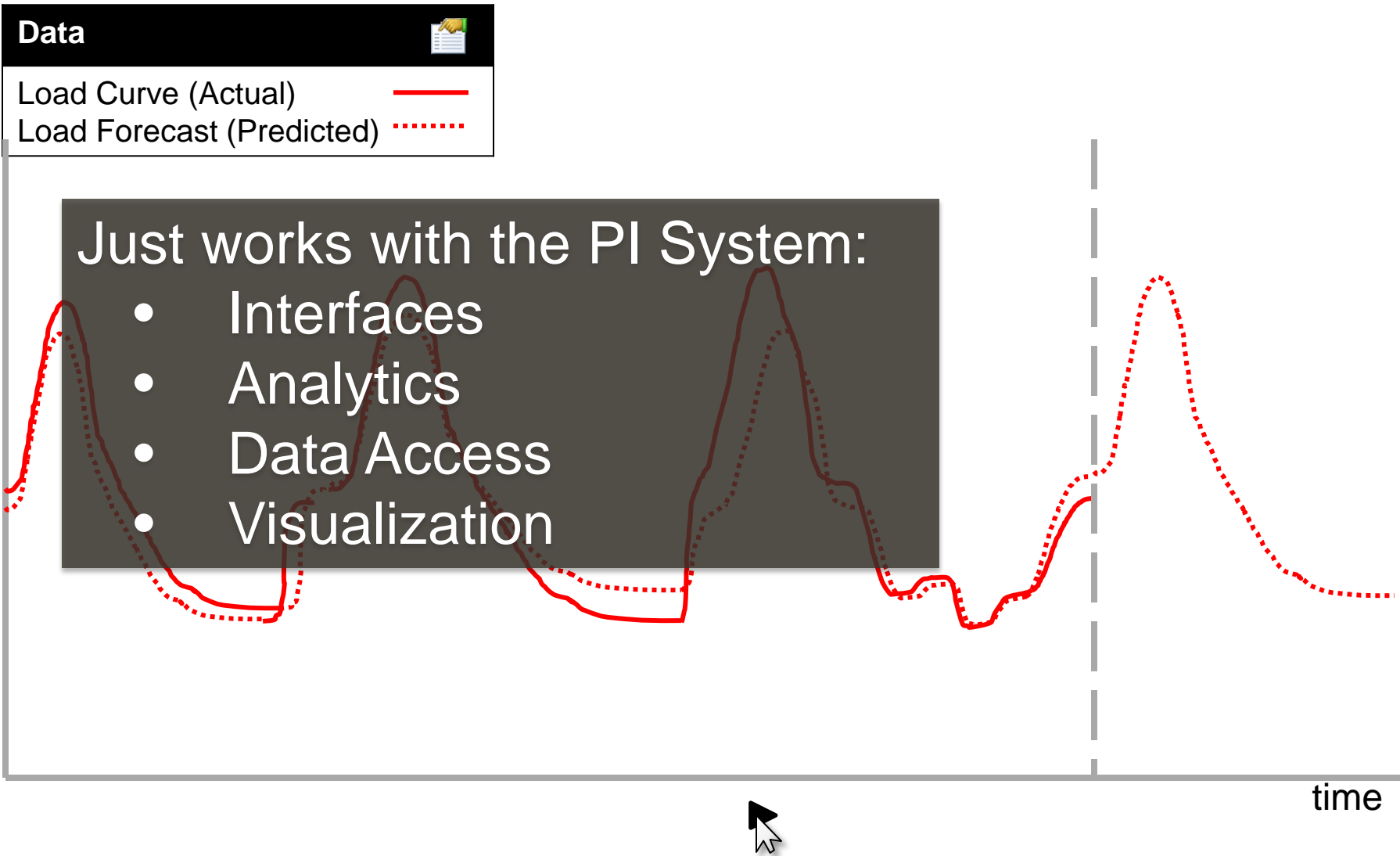
 $\text{myEF.Start} = (\text{Efficiency} > \text{LIMIT})$
 $\text{myEF.End} = (\text{Efficiency} < \text{LIMIT}) \text{ AND } (\text{Fuel Flow Rate} > 80)$



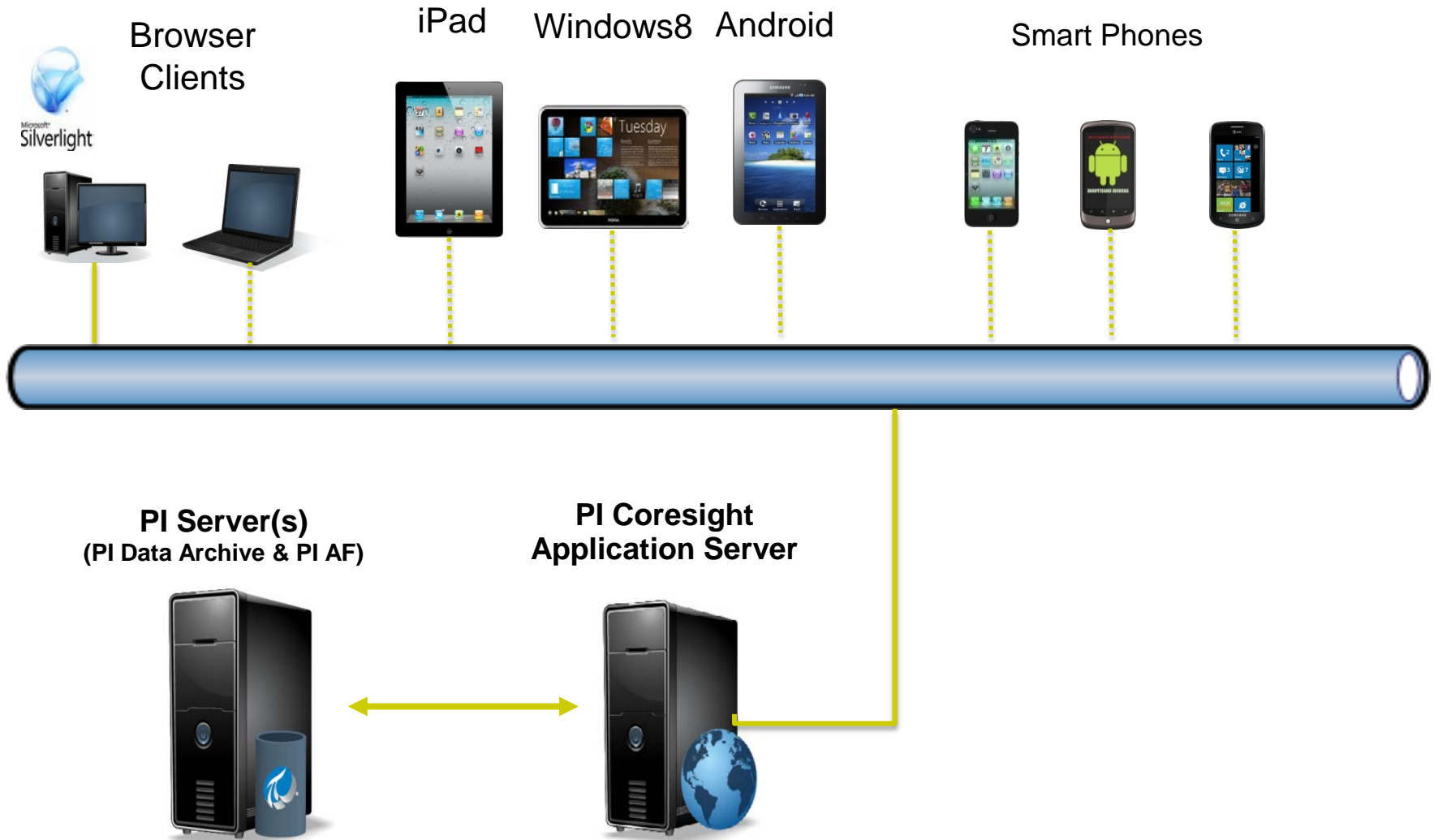
Find - PI System Search

- Optimized Search Engine for the whole PI System
 - And perhaps related systems
- Indexed for high performance
- Weighted / Ranked Results
 - Helps you find things more easily
- Can crawl many PI System machines
- Includes client artifacts
 - PI ProcessBook Displays, PI Coresight Displays
- Common User Experience

Future Data Coming – Next PI Server



PI Coresight with Mobile Clients



PI WebParts 2012

- Support for SharePoint 2010 and SharePoint “15”
- Become a better SharePoint corporate citizen
- Become a more “IT” friendly product
- Replace obsolete technology
- Set the stage for OS and Browser independence, Mobile



- Remote Data Services
- WSP Installs
- Can leverage Adobe SVG Viewer if needed
- Support for IE 8



- Remote Data Services
- WSP Installs
- Visualization using Web Standards
- Support for IE9, IE10, Firefox, and Chrome

What's the difference?

- **Coresight**

1. Lightweight
2. No Sharepoint required
3. Only PI data
4. Limited sharing & collaboration capabilities

- **Webparts**

1. Requires Sharepoint
2. Variety of sharing features
3. Display data from different sources
4. Display data in different formats

PI Cloud Initiatives

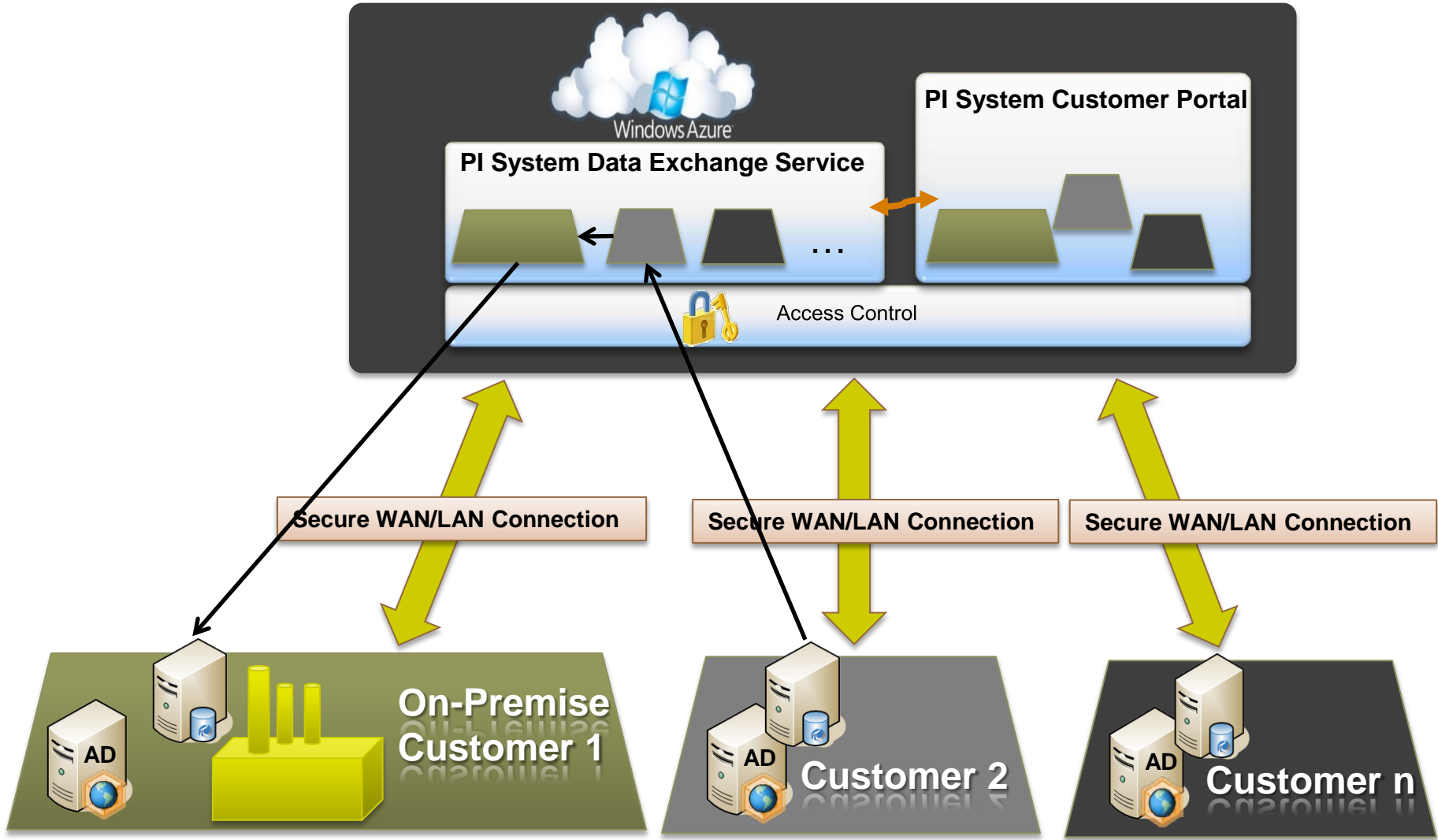
Add to existing PI System installations

- PI System Management
- PI Data Exchange
- PI Coresight Service
- Data, Visualization and other services for Partner and Custom Apps

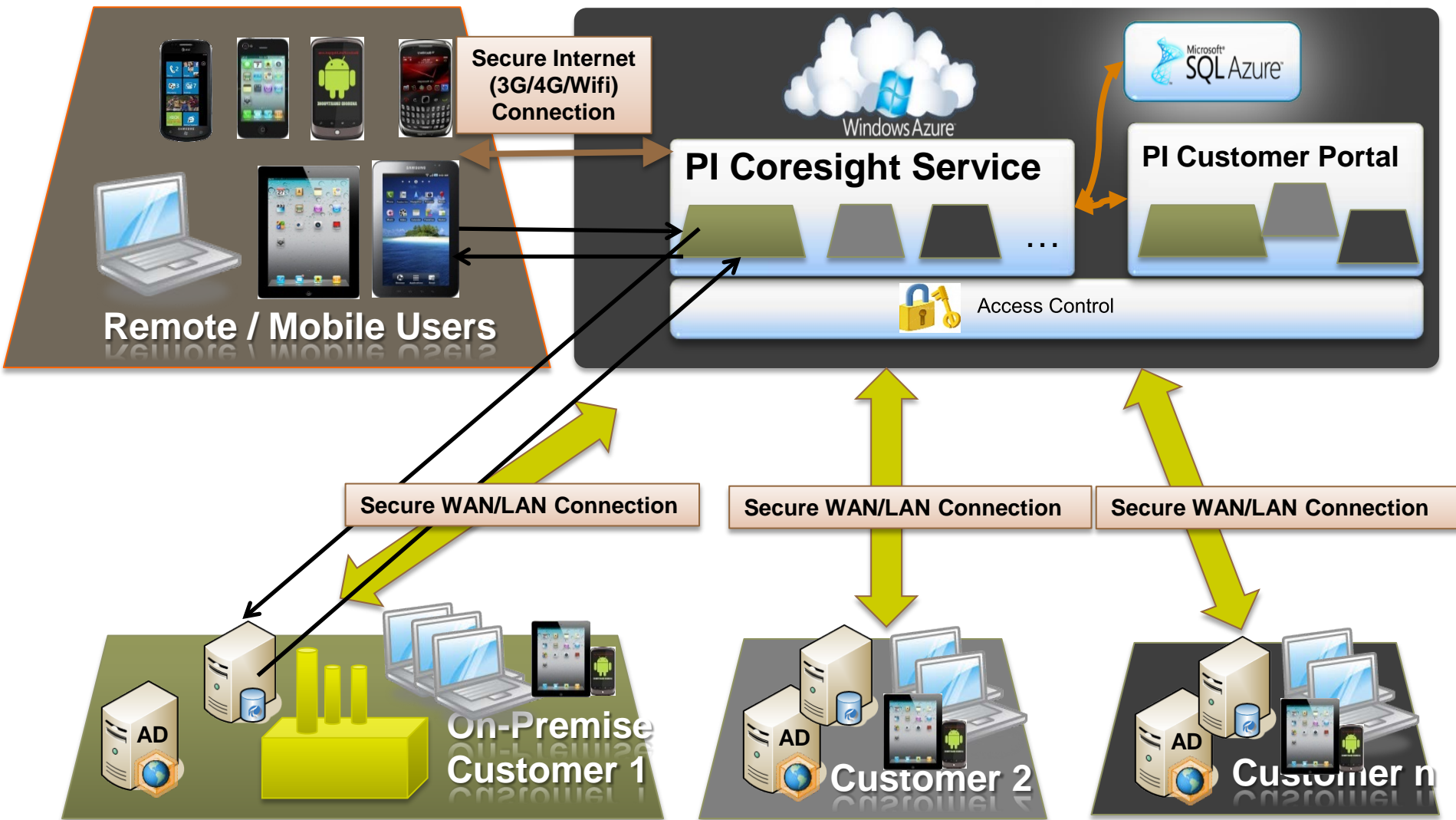
Full PI System Deployment in the Cloud

- Simplified Deployment and Management
- Take advantage of the Windows Azure Platform (PaaS)
- Functionality you know in the PI System today plus much more
- Highly efficient and elastic

PI Data Exchange Service



PI Coresight Service with Mobility



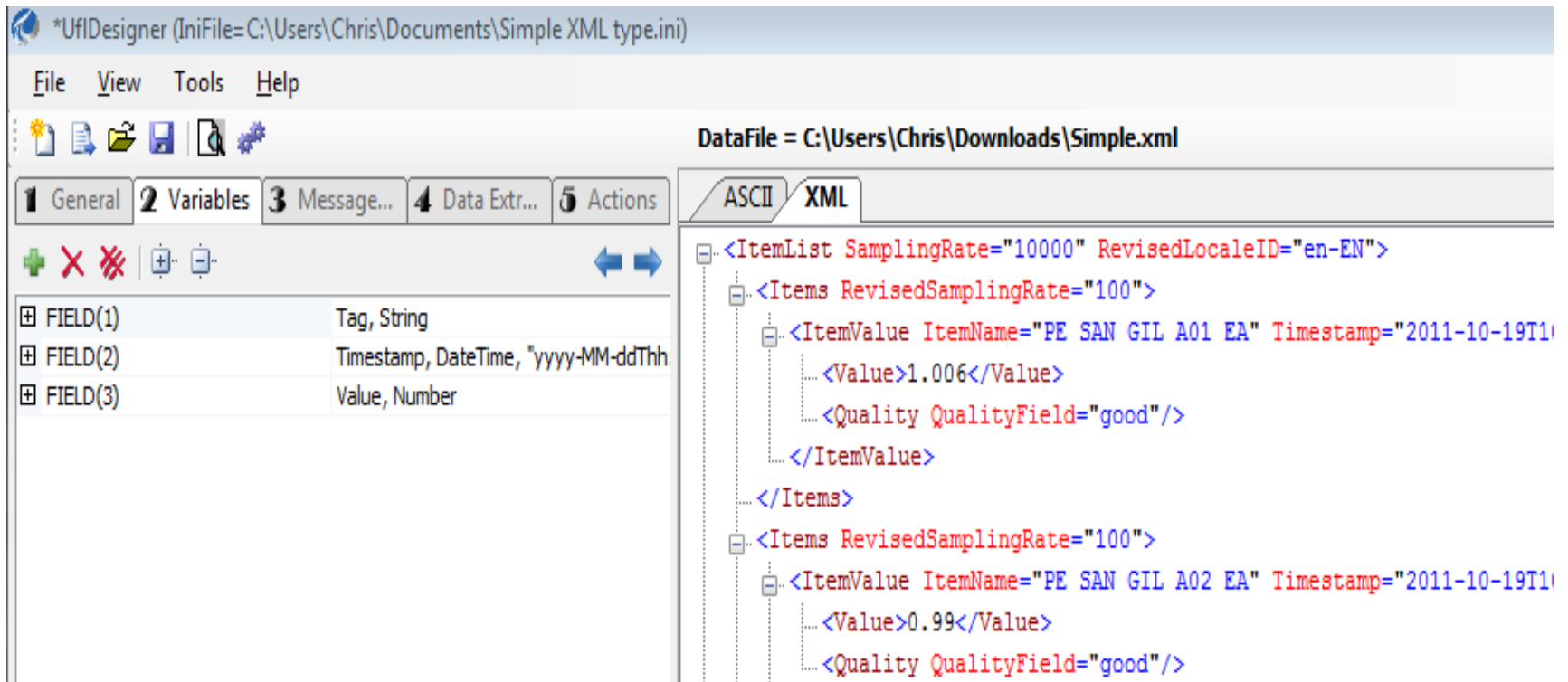
PI Interfaces

Collect and store the data from all your sensors and systems



UFL Designer: better for XML files

- Coming soon



PI Interfaces and PI Server 2012

- Easier backfilling for any PI Interface
- PI Interface for IEEE C37.118
 - High-speed phasor data
- PI Interfaces for AMI
 - Collect data from many meters
- PI Interfaces for batch and manufacturing execution systems
 - Population of Assets and Event Frames

New PI Interfaces on the Horizon

- Continuous improvements to many
- PI Interface for OPC UA
- PI Interface for Emerson DeltaV (OPC .Net)
- PI Interface for Bachmann Controller
- PI Interface for IEC 61850 (substations, wind, ...)
- PI Interface for OpenPDC
- PI Interface for OnRamp CIMA (wireless T&D)
- PI Interface for Aker Decoder (oil and gas: drilling)



- **PI Server 2012** **Beta**
- **PI Asset Framework 2012** **Beta**
- **PI Notifications 2010** **Released**
- **PI OLEDB Enterprise 2012** **Alpha**
- **Event Frame Gen** **Alpha**
Interface **Released**
- **PI ProcessBook 2012** **Beta**
- **PI Coresight 2012** **Beta**
- **PI DataLink 2012** **Released**
- **PI Web Parts 2010**

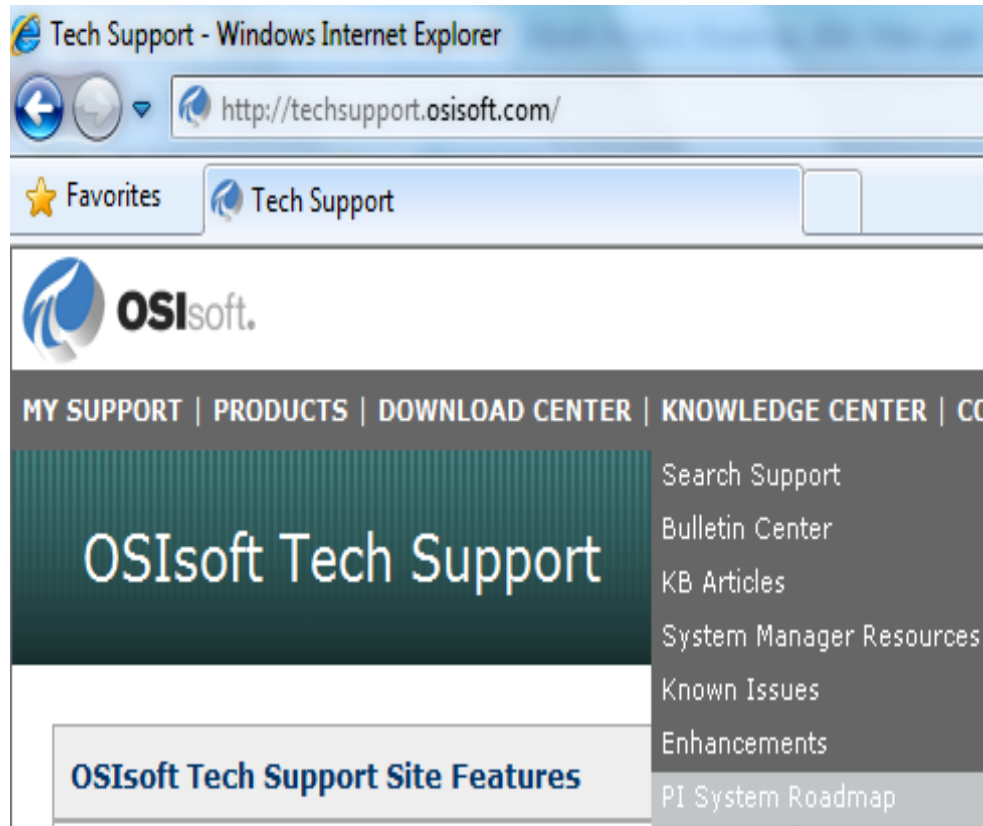


- **PI Server 2012** **Release in Q3**
- **PI Asset Framework 2012** **Release in Q3**
- **PI Notifications 2010** **Released**
- **PI OLEDB Enterprise 2012** **Release in Q3**
- **Event Frame Gen Interface** **Released**
- **PI ProcessBook 2012** **Release in Q2**
- **PI Coresight 2012** **Release in Q3**
- **PI DataLink 2012** **Released**
- **PI Web Parts 2010**

Stay Up-To-Date on the Web

- PI System Roadmap on OSIsoft Technical Support Site

<http://techsupport.osisoft.com/techsupport/NonTemplates/roadmap.aspx>



THANK YOU



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Microsoft[®]

THANK YOU

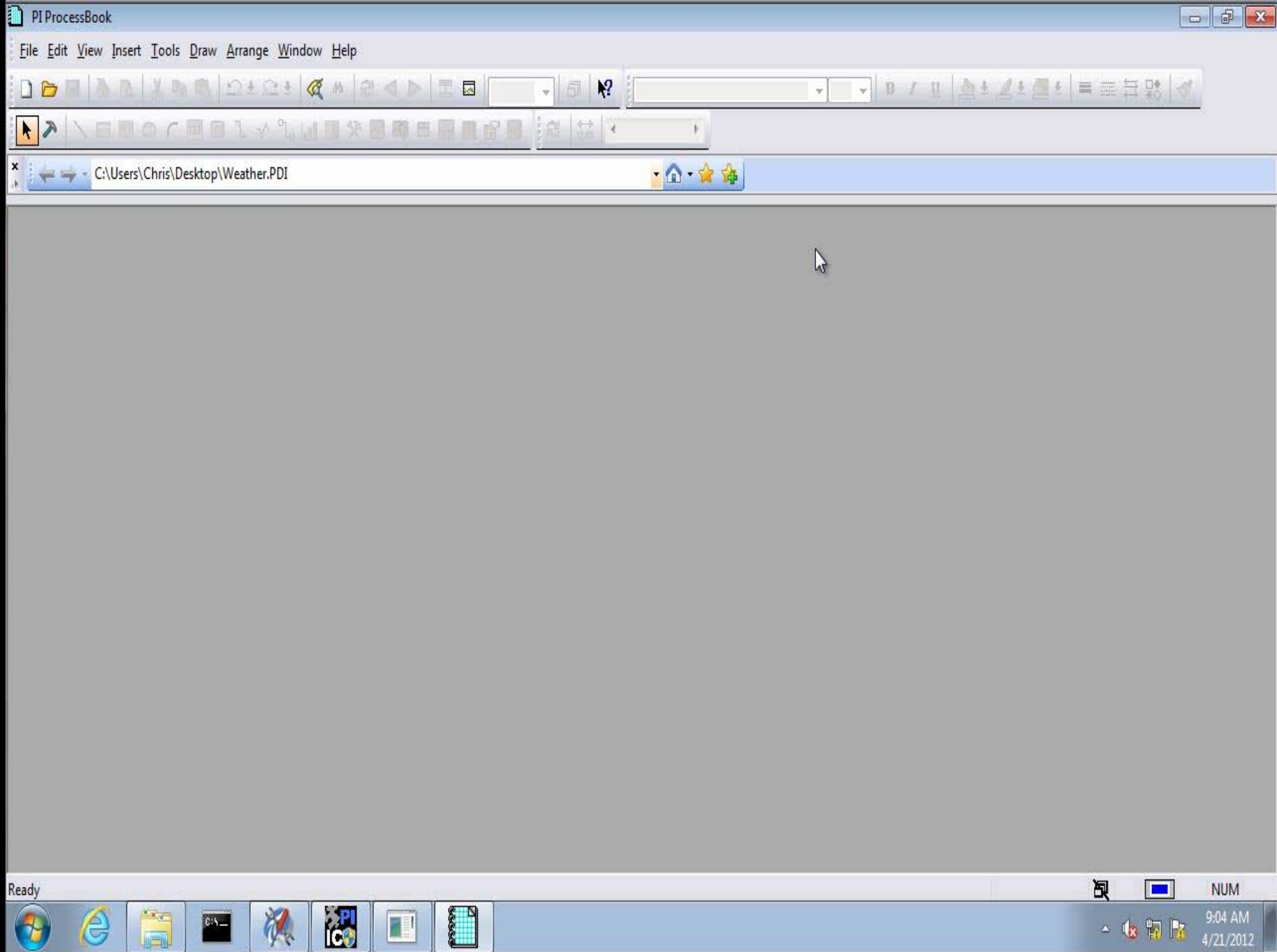
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LARSEN & TOUBRO

It's all about Imagineering





EVENT FILTERS

Duration

Longer Than

Shorter Than

0 m

200 m

Category

✓ Excursions (4)

✓ Downtime (3)

✓ Product XYZ (4)

All

None

Template

✓ Boiler Downtime (3)

✓ Boiler KPI Excursion (4)

✓ PIUnitBatch (1)

All

None

Temp.Max

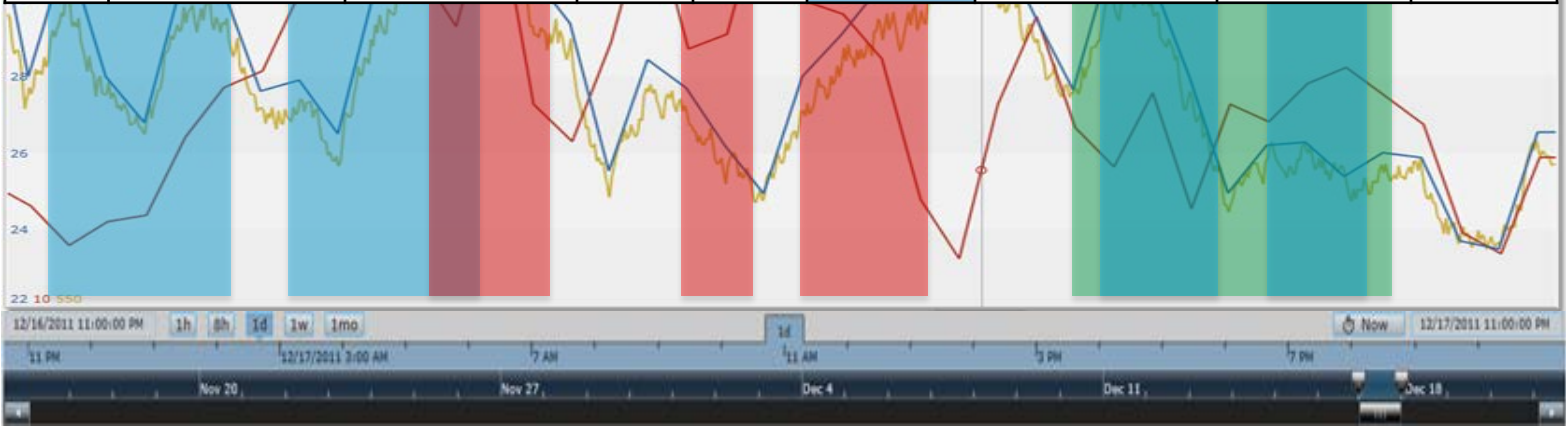
Greater Than

Less Than

0 C

100 C

Name	Start	End	Duration	Element	Category	Template	Reason Code	Temp.Max
Ex01	16-Dec-2011 23:05:48	17-Dec-2011 00:25:24	01:19:36	B-459	Excursions	Boiler KPI Excursion	High Temp	91.2
Ex02	17-Dec-2011 02:37:19	17-Dec-2011 04:12:07	01:34:48	B-459	Excursions	Boiler KPI Excursion	Low Pressure	54.1
DT45	17-Dec-2011 04:31:22	17-Dec-2011 05:20:34	00:49:12	B-459	Downtime	Boiler Downtime	Broken Thermo	32.4
DT46	17-Dec-2011 07:56:58	17-Dec-2011 08:19:46	00:22:48	B-459	Downtime	Boiler Downtime	Broken Thermo	31.7
DT47	17-Dec-2011 09:41:22	17-Dec-2011 10:52:58	01:11:36	B-459	Downtime	Boiler Downtime	Safety Shutdown	87.2
XYZ146	17-Dec-2011 13:12:34	17-Dec-2011 16:29:22	03:16:48	B-459	Product XYZ	PIUnitBatch	★ Highlight Events	
Ex03	17-Dec-2011 19:28:58	17-Dec-2011 20:41:22	01:12:24	B-459	Excursions	Boiler KPI Excursion	High Temp	95.3
Ex04	17-Dec-2011 21:44:58	17-Dec-2011 22:45:46	01:00:48	B-459	Excursions	Boiler KPI Excursion	Low Temp	20.4



Ex01

Ex02

DT45

DT46

DT47

XYZ146

Ex03

Ex04