

OSIsoft®

REGIONAL SEMINAR

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

**THRIVING
IN A
WORLD OF
CHANGE**



Gaining and Sharing Insights Across the Enterprise from Anywhere

Presented by **Mana Afshari**



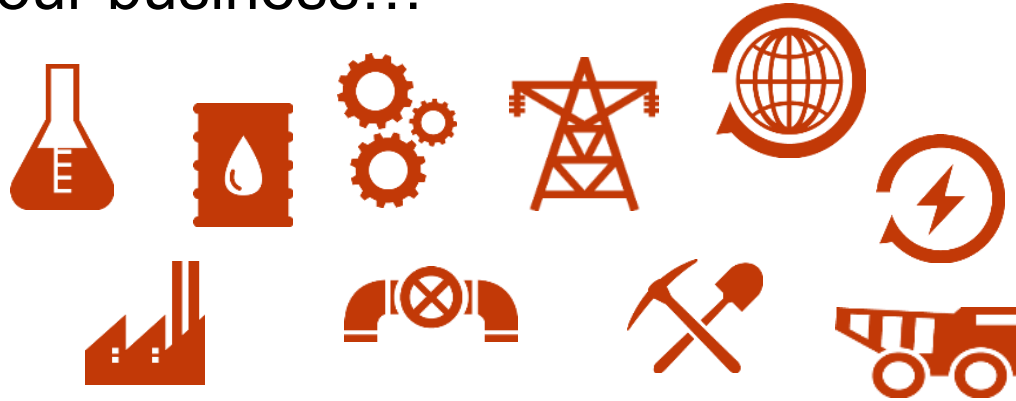
Data-driven Decisions

A recent **study at MIT** showed that organizations **relying on data** to make decisions **performed** at rates 4-6 % **higher** than their peers.*

**Erik Brynjolfsson,
MIT Professor*

Sharing Insights Across the Enterprise

Operational **insights** are discovered frequently throughout your business...



...but is everyone able to **share** their discoveries **quickly**, **easily** and **effectively**?

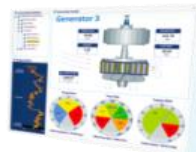


Any Data, Anytime, Anywhere

PI Visualization Suite

- Gives **every tool** at your fingertips
- To **fit your needs**
- And facilitate **enterprise-wide collaboration**

PI ActiveView



PI BatchView



PI Coresight



PI WebParts



PI ProcessBook



PI Manual Logger



PI Visualization Suite



PI DataLink



The PI System Client Tools

- **PI Coresight** for ad hoc analysis and collaboration with mobility
- **PI ProcessBook** for display building and monitoring
- **PI DataLink** for analysis and reporting
- **PI WebParts** for enterprise-wide collaboration
- **PI Manual Logger** for manual data collection



PI Manual Logger

Explore

Report

Monitor

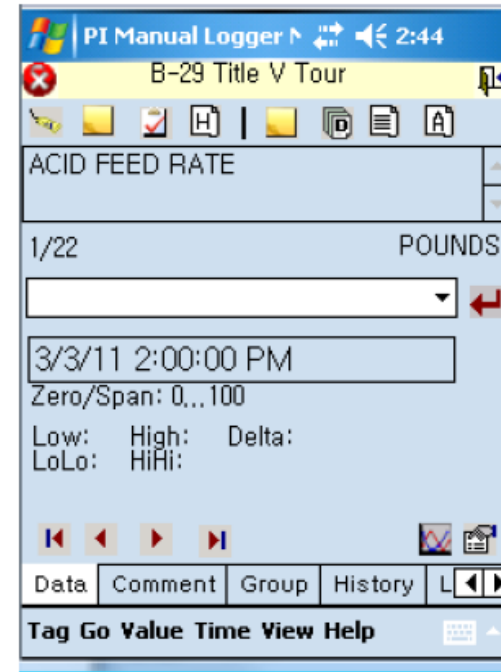
Collaborate

Review

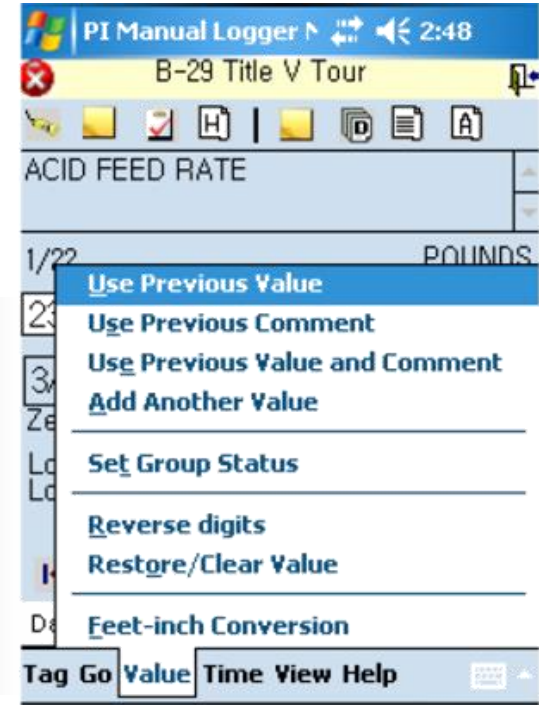
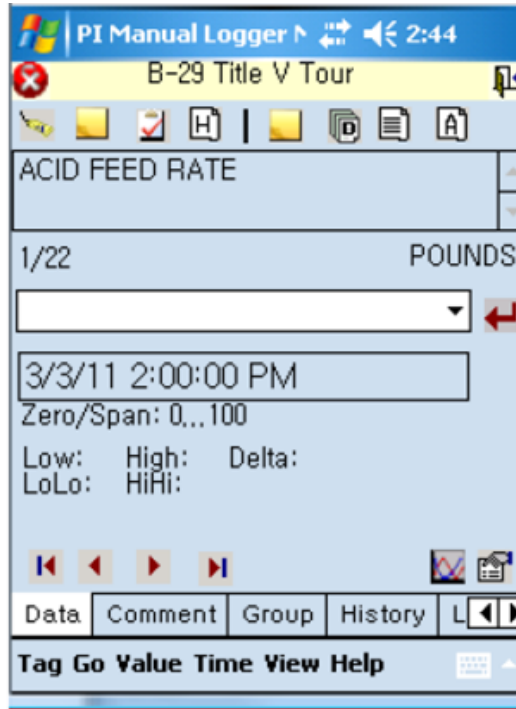
Collect

Share

- **Manual entries** are oftentimes crucial
- **Centralized** configuration based on **tours** and **rounds**
- Available on computers and mobile devices (**Windows Mobile**)

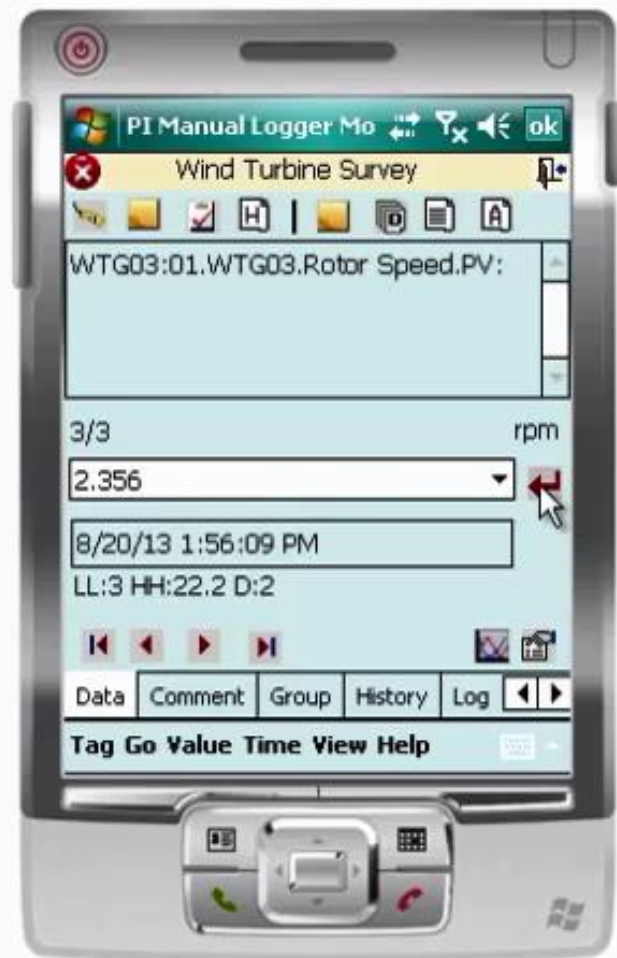


Case Study – Eastman Chemical

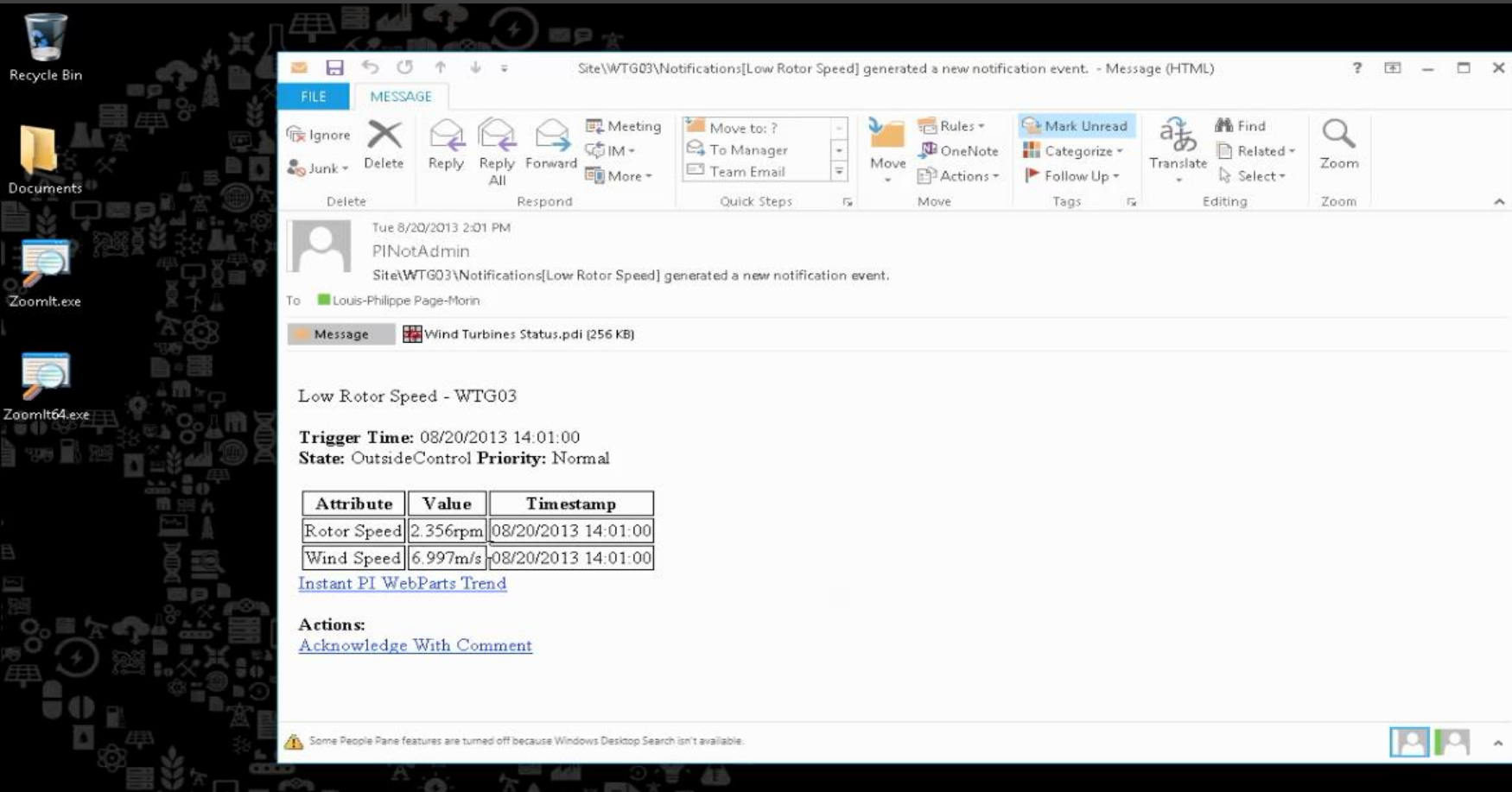




DEMO



PI Notifications and Visualization Tools



The screenshot shows a Windows desktop environment. The background is a dark grey with a dense pattern of small, light grey icons representing various technical and scientific concepts like wind turbines, gears, DNA, and charts. On the left side, there are standard Windows desktop icons: Recycle Bin, Documents, and two instances of ZoomIt.exe. The main focus is a Microsoft Outlook window titled "Site\WTG03\Notifications[Low Rotor Speed] generated a new notification event. - Message (HTML)". The window displays an email from "PINotAdmin" to "Louis-Philippe Page-Morin". The email content includes a subject line "Low Rotor Speed - WTG03", a "Trigger Time" of "08/20/2013 14:01:00", a "State" of "OutsideControl", and a "Priority" of "Normal". Below this, there is a table with three columns: Attribute, Value, and Timestamp. The table contains two rows of data: Rotor Speed (2.356rpm) and Wind Speed (6.997m/s), both timestamped at 08/20/2013 14:01:00. At the bottom of the email content, there is a link "Instant PI WebParts Trend" and a section titled "Actions:" with a link "Acknowledge With Comment". The Outlook window's ribbon shows various tabs like FILE, MESSAGE, and options for actions like Ignore, Delete, Reply, Forward, and Mark Unread. A status bar at the bottom of the Outlook window indicates "Some People Pane features are turned off because Windows Desktop Search isn't available."

Recycle Bin

Documents

ZoomIt.exe

ZoomIt64.exe

Site\WTG03\Notifications[Low Rotor Speed] generated a new notification event. - Message (HTML)

FILE MESSAGE

Ignore Delete Reply Reply All Forward IM+ More+ Move to: ? To Manager Team Email Move Rules OneNote Actions Mark Unread Categorize Follow Up Translate Find Related Select Zoom

Delete Respond Quick Steps Move Tags Editing Zoom

Tue 8/20/2013 2:01 PM

PINotAdmin

Site\WTG03\Notifications[Low Rotor Speed] generated a new notification event.

To: Louis-Philippe Page-Morin

Message Wind Turbines Status.pdf (256 KB)

Low Rotor Speed - WTG03

Trigger Time: 08/20/2013 14:01:00

State: OutsideControl **Priority:** Normal

Attribute	Value	Timestamp
Rotor Speed	2.356rpm	08/20/2013 14:01:00
Wind Speed	6.997m/s	08/20/2013 14:01:00

[Instant PI WebParts Trend](#)

Actions:

[Acknowledge With Comment](#)

Some People Pane features are turned off because Windows Desktop Search isn't available.



DEMO

PI WebParts

Explore

Report

Monitor

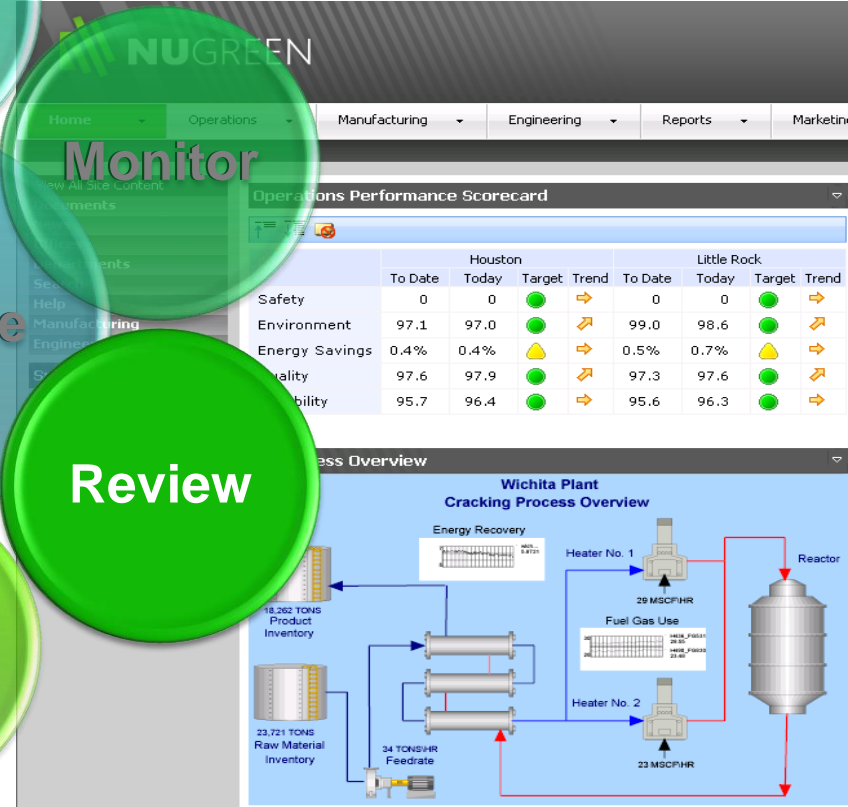
Collaborate

Share

Review

Collect

- Interactive web parts for **Microsoft SharePoint**
- Allow **real-time** visualization of operational data
- **Share** displays and reports to a wider audience





Sandbox

EDIT LINKS

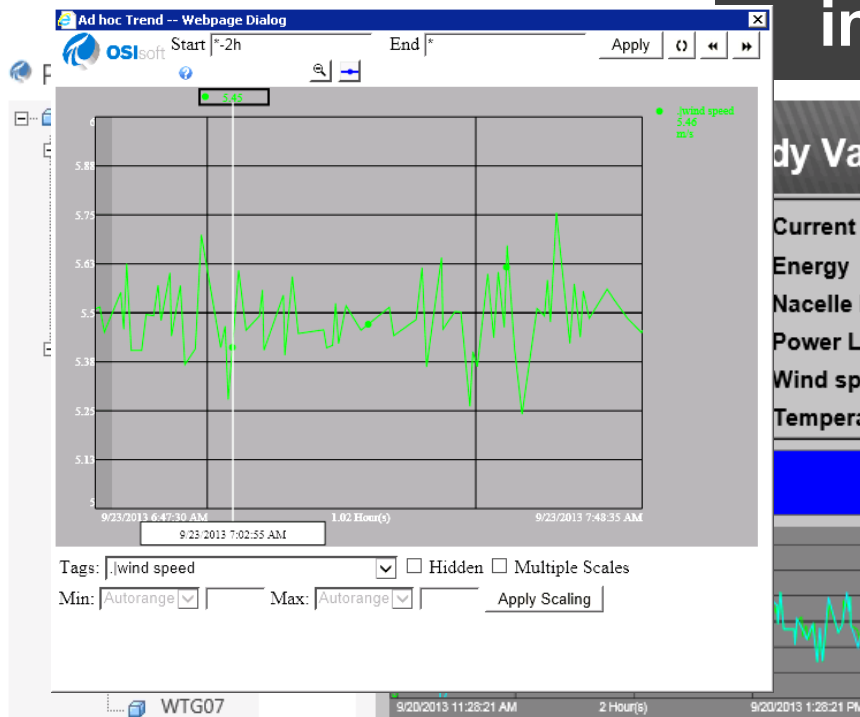
NuGreen Energy

Home

Documents

Site Contents

EDIT LINKS



PI ProcessBook Displays in Microsoft SharePoint

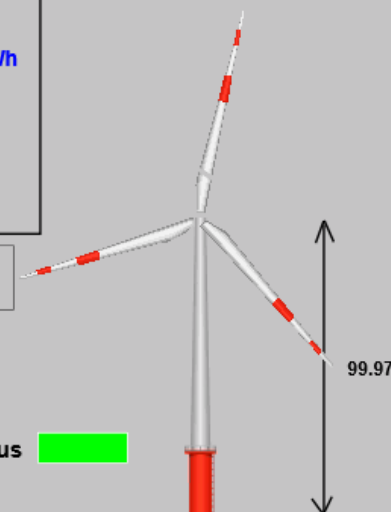
dy Valley WTG01

PI Coresight Display

Current L1 358.05 kA
Energy 903.44 kWh
Nacelle Position 358.75 °
Power Load 59.62
Wind speed 5.40 m/s
Temperature 14.86 °C



Status





Sandbox

EDIT LINKS

NuGreen Energy

PI DataLink Reports in Microsoft SharePoint

Home

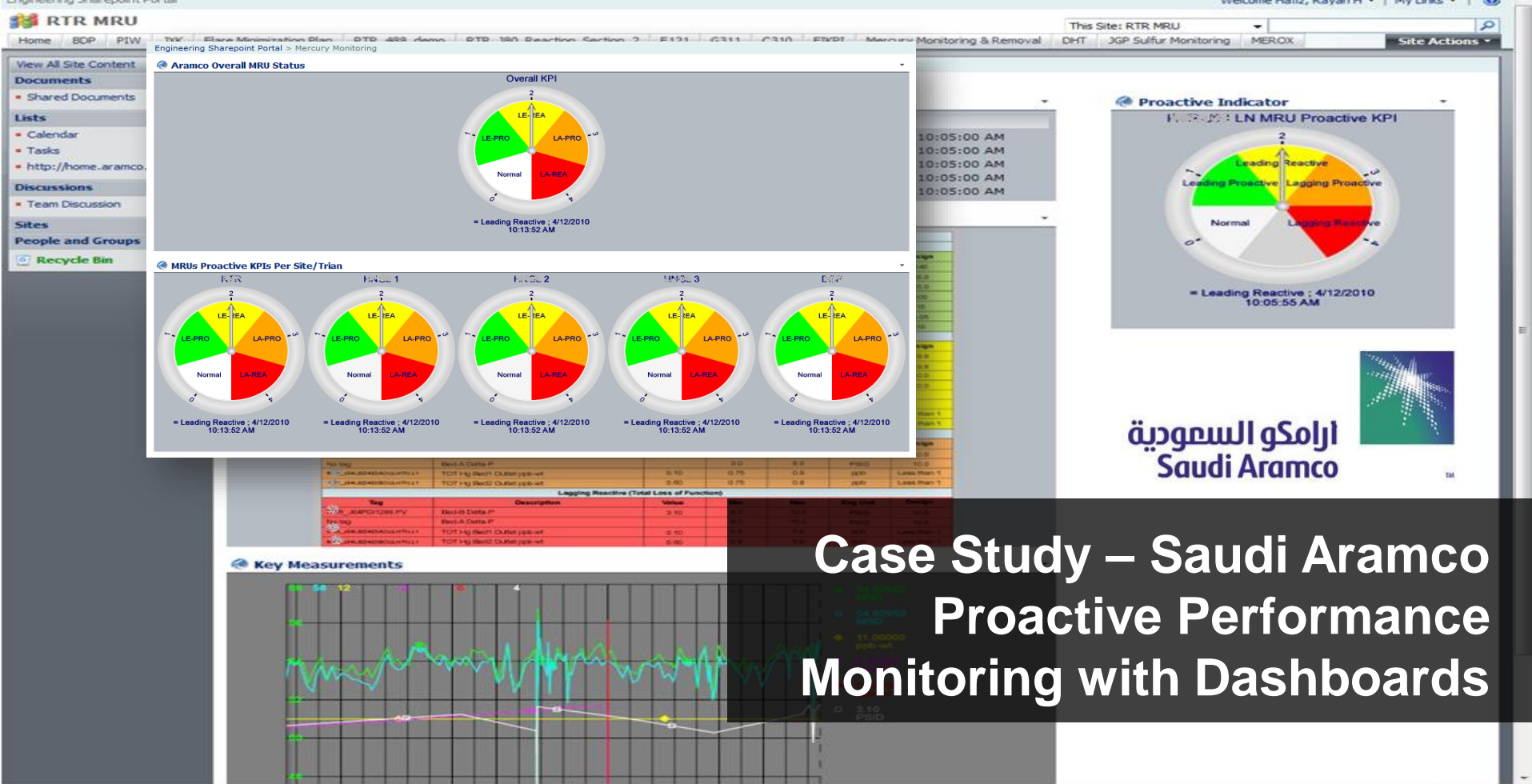
Documents

Site Contents

EDIT LINKS

Excel Web Access - Wind Turbines Daily Report_RS2013_DLES

	A	B	C	D	E	F	G	H
1	NUGREEN	Wind Turbines Daily Report						
2								
3	From	Wind Farm	Windy Valley	Wind Turbine	WTG01			
4	September 22, 2013	Turbine				Environmental Conditions		
5	To	Model	1.5s		Wind Speed	5.53	m/s	
6	September 23, 2013	Nominal Power	1.5	MW	Outside Temperature			
8		Energy	Rotor Speed	Nacelle Position	Current L1	Previous Values		
9		kWh	rpm	°	kA	Wind Speed	Outside Temperature	
10								
11	12:00 AM	905.73	17.50	163.34	360.14	5.42	14.98	
12	1:00 AM	905.29	17.50	164.28	360.05	5.50	15.03	
13	2:00 AM	905.70	17.51	144.69	360.13	5.45	15.09	
14	3:00 AM	906.06	17.51	161.13	360.17	5.40	15.14	
15	4:00 AM	907.02	17.52	225.30	360.37	5.56	15.20	
16	5:00 AM	905.36	17.50	158.31	360.07	5.38	15.24	
17	6:00 AM	906.21	17.51	138.86	360.22	5.50	15.23	



Case Study – Saudi Aramco Proactive Performance Monitoring with Dashboards

PI ProcessBook

Explore

Report

Monitor

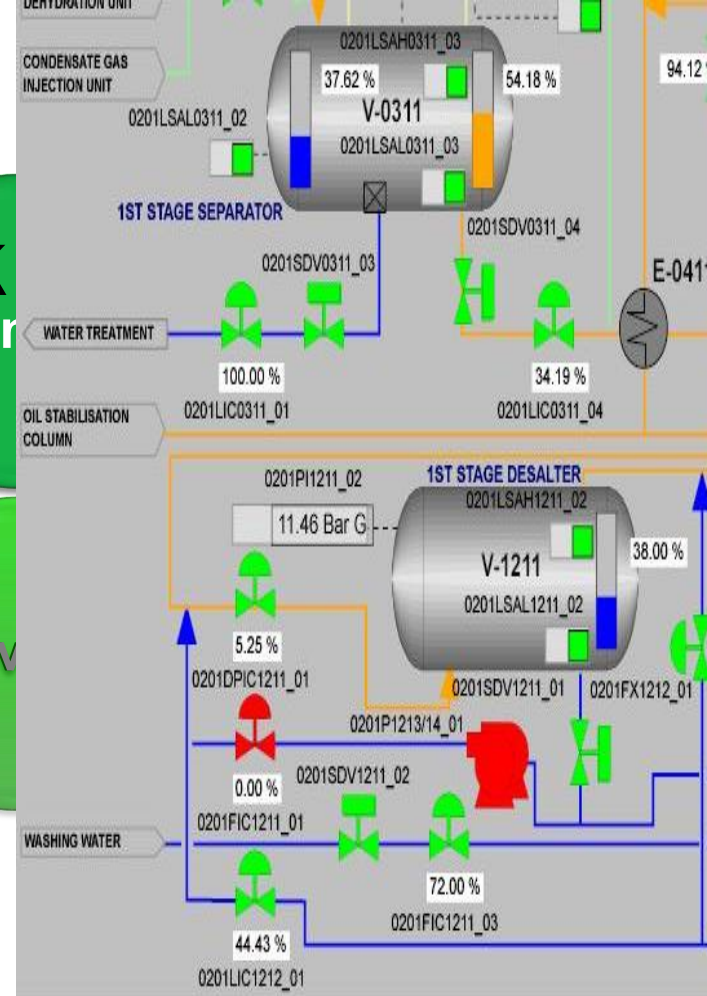
Collaborate

Review

Share

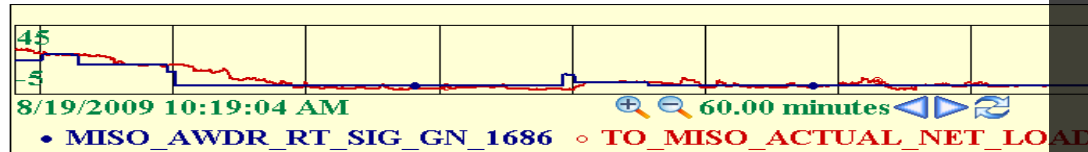
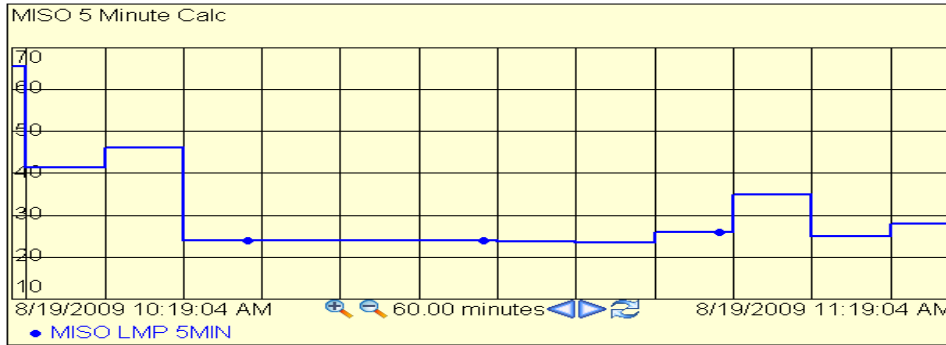
Collect

- Display of **real-time and historical data**
 - Process representation
 - **Trend** with traces
 - Context management with PIAF
- Allow for **process monitoring** and review of problematic events



Demand Response Overview

	Real Energy	Regulation	Spin Reserve
Cleared	19	18	00
Deployed	19	00	00



TOTAL POT LINE LOAD: **455.39 MW**

OCB 1500	<div style="width: 91.3%;"></div>	91.3
OCB 1502	<div style="width: 90.8%;"></div>	90.8
OCB 1503	<div style="width: 92.8%;"></div>	92.8
OCB 1504	<div style="width: 90.4%;"></div>	90.4
GCS 3805	<div style="width: 0%;"></div>	00.0
GCS 3806	<div style="width: 90.0%;"></div>	90.0
GCS 3800	<div style="width: 0%;"></div>	00.0

Current Average Price **28.50 dollars**
 5-MIN LMP Price **28.05 dollars**
 Last Hour LMP Price **31.75 dollars**

**Case Study – Alcoa
 Demand/Response and
 Adaptation**

Homepage

Energy Flow

WPP Switchyard

Generation Trends

Warrick Overview

Pot Line Trends

Dispatch Status

PI DataLink

Explore

Report

Collaborate

- Allows **summary calculations** and **filtering** of the data
- Enhances PI System Data with access to **Microsoft Excel reporting** features

	A	B	C	D
1	Début	5/27/2010 13:40		
2	Fin	5/28/2010 13:40		
3				
4	Date	BA:CONC.1	BA:LEVEL.1	BA:TEMP.1
5	27-May-10 13:51:28	43.80355835	0.69	5.41
6	27-May-10 13:51:58	0	0.00	0.00
7	27-May-10 14:07:28	5.801473618	12.40	10.64
8	27-May-10 14:19:58	18.39671898	21.03	20.03
9	27-May-10 14:45:58	25.30208397	39.79	45.05
10	27-May-10 14:55:28	40.00126648	33.46	28.58
11	27-May-10 15:12:28	42.83501053	0.65	0.83
12	27-May-10 15:12:58	0	0.00	0.89
13	27-May-10 15:27:28	5.907530308	10.27	10.69
14	27-May-10 15:42:28	20.59512711	22.60	20.78
15	27-May-10 16:06:58	27.59270096	37.20	42.05
16	27-May-10 16:13:28	39.76164246	35.06	27.03
17	27-May-10 16:33:28	43.08703995	0.53	0.92
18	27-May-10 16:33:58	0	0.60	0.98
19	27-May-10 16:50:58	6.635637283	13.87	13.76
20	27-May-10 17:06:58	19.4419651	24.95	20.57
21	27-May-10 17:26:58	25.28218265	27.14	21.21

Current Value
 Archive Value
 Single Value

Compressed Data
 Sampled Data
 Timed Data
 Multiple Value

Calculated Data
 Time Filtered
 Calculation

Search
 Properties
 Update
 Search
 Properties
 Update

Settings
 About
 Help
 Resources

Notification Search
 Notifications



D7 : X ✓ fx []

CRITICAL CONTROL POINT PERFORMANCE													
Filter		Date From		Date To		Data Last Updated							
Month / Year		01/07/2010		31/07/2010		21/09/2010 12:40							
31 day period													
District/Locality	% Hours Recorded	Critical Limit - % Good			Target Limit - % Good			# Alarms	Critical Alarms		Target Alarms		Last Refresh
CCP		In Band	Low	High	In Band	Low	High		Low	High	Low	High	
SWR													
▼ Bunbury													
Australind													
Chlorine_Residual_Inlet	R 31.1	G 98.2	G 99.5	G 98.7	G 85.8	G 96.6	G 88.4	G 0	G 0	G 0	G 0	G 0	21/09/2010 12:40
Turbidity	R 31.1	G 100.0	G 100.0	G 100.0	O 98.7		G 98.7	G 0		G 0			21/09/2010 12:40
UV_Dose	R 31.1	R 88.7	G 88.7		N/A			G 0	G 0				21/09/2010 12:40
Boyanup													
Chlorine_Residual_Inlet	R 31.1	O 98.2	O 99.5	O 98.7	R 85.8	O 96.6	R 88.4	G 0	G 0	G 0	G 0	G 0	21/09/2010 12:40
Turbidity	R 31.1	G 100.0	G 100.0	G 100.0	O 98.7		R 98.7	G 0		G 0			21/09/2010 12:40
UV_Dose	R 31.1	R 88.7	G 88.7		N/A			G 0	G 0				21/09/2010 12:40
Collie													
Chlorine_Residual_Inlet	R 31.1	G 98.2	G 99.5	G 98.7	G 85.8	G 96.6	G 88.4	G 0	G 0	G 0	G 0	G 0	21/09/2010 12:40
Turbidity	R 31.1	G 100.0	G 100.0	G 100.0	O 98.7			G 0		G 0			21/09/2010 12:40
UV_Dose	R 31.1	R 88.7	O 88.7		N/A			G 0	G 0				21/09/2010 12:40
Darkan													
Chlorine_Residual_Inlet	R 31.1	G 98.2	G 99.5	G 98.7	R 85.8	O 96.6	R 88.4	G 0	G 0	G 0	G 0	G 0	21/09/2010 12:40
Turbidity	R 31.1	G 100.0	G 100.0	G 100.0	O 98.7			G 0		G 0			21/09/2010 12:40
UV_Dose	R 31.1	R 88.7	G 88.7		N/A			G 0	G 0				21/09/2010 12:40
► Busselton													
▼ Mandurah													
Dwellingup													
Chlorine_Residual_Inlet	R 31.1	G 98.2	G 99.5	G 98.7	R 85.8	O 96.6	R 88.4	G 0	G 0	G 0	G 0	G 0	21/09/2010 12:40
Turbidity	R 31.1	G 100.0	G 100.0	G 100.0	O 98.7			G 0		G 0			21/09/2010 12:40
UV_Dose	R 31.1	R 88.7	G 88.7		N/A			G 0	G 0				21/09/2010 12:40
Mandurah													
Chlorine_Residual_Inlet	R 31.1	O 98.2	O 99.5	O 98.7	R 85.8	O 96.6	R 88.4	G 0	G 0	G 0	G 0	G 0	21/09/2010 12:40
Turbidity	R 31.1	G 100.0	G 100.0	G 100.0	O 98.7			G 0		G 0			21/09/2010 12:40

Case Study – Water Corporation of Western Australia

Critical Control Point Performance

Home

GSR

IMS_Trial

NWR

SWR

Thresholds

Case Study – Water Corporation of Western Australia

Critical Control Point Performance

PI DataLink 2013 & Microsoft Excel 2013

- **PI DataLink 2013**
 - **PI AF** support with the new **PI System Search** engine
- **Microsoft Excel 2013**
 - Business Intelligence (BI) tools are integrated
 - Microsoft **PowerPivot**
 - Microsoft **Power View**

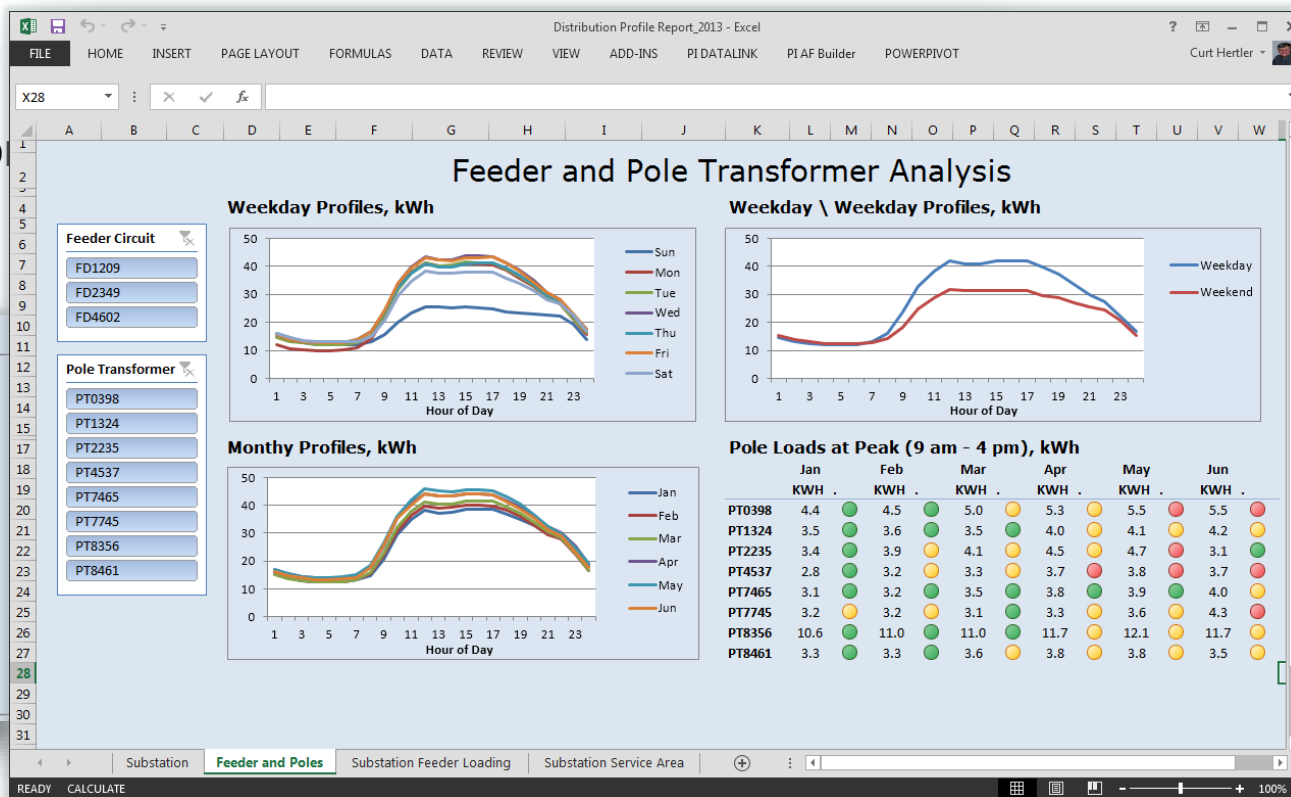
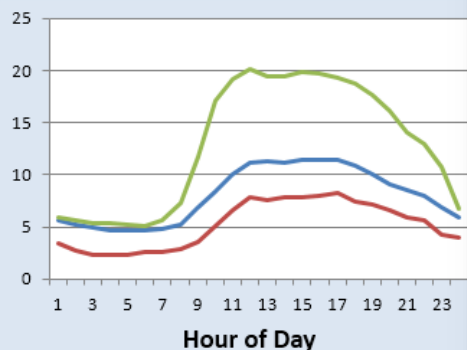


Demand Profiling and Grid Analysis



Substation

Feeder Distribution, kWh



Feeder and Pole Transformer Analysis

Feeder Circuit

FD1209

FD2349

FD4602

Pole Transformer

PT0398

PT1324

PT2235

PT4537

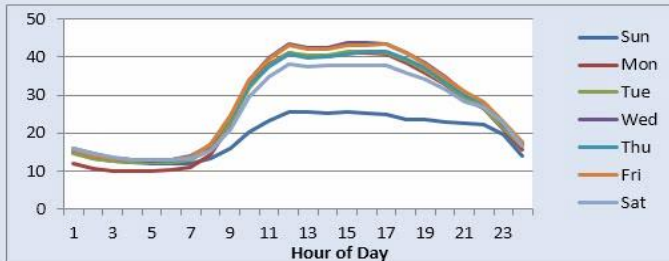
PT7465

PT7745

PT8356

PT8461

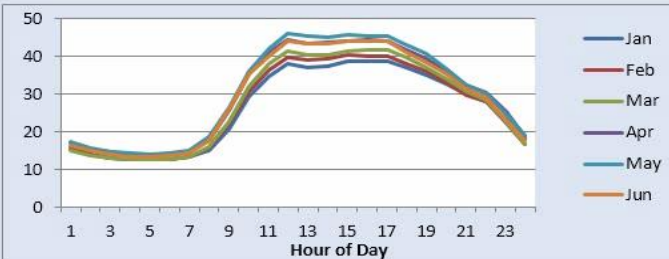
Weekday Profiles, kWh



Weekday \ Weekend Profiles, kWh



Monthly Profiles, kWh



Pole Loads at Peak (9 am - 4 pm), kWh

	Jan KWH	Feb KWH	Mar KWH	Apr KWH	May KWH	Jun KWH
PT0398	4.4	4.5	5.0	5.3	5.5	5.5
PT1324	3.5	3.6	3.5	4.0	4.1	4.2
PT2235	3.4	3.9	4.1	4.5	4.7	3.1
PT4537	2.8	3.2	3.3	3.7	3.8	3.7
PT7465	3.1	3.2	3.5	3.8	3.9	4.0
PT7745	3.2	3.2	3.1	3.3	3.6	4.3
PT8356	10.6	11.0	11.0	11.7	12.1	11.7
PT8461	3.3	3.3	3.6	3.8	3.8	3.5

PI Coresight

Explore

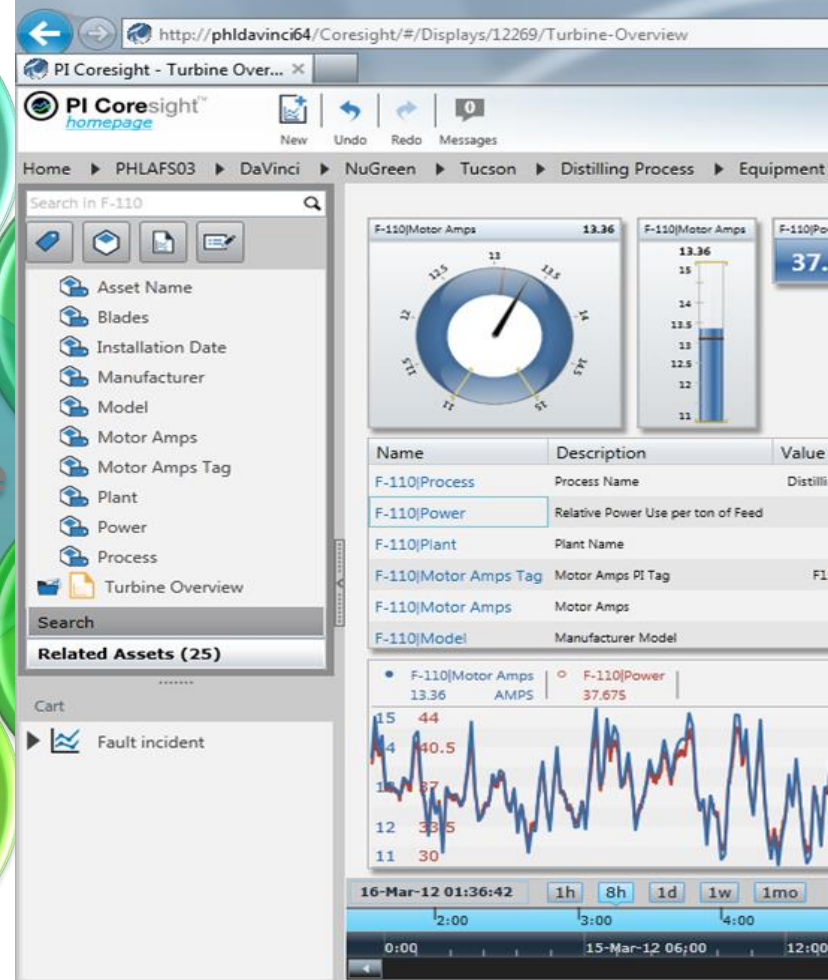
- **Modern** Web based visualization tool
- Facilitates **ad hoc** analysis
- **Instantaneous** learning
- Software with a **fast release cycle** to fit your needs
- **No client-side** installation

Report

Collaborate

Share

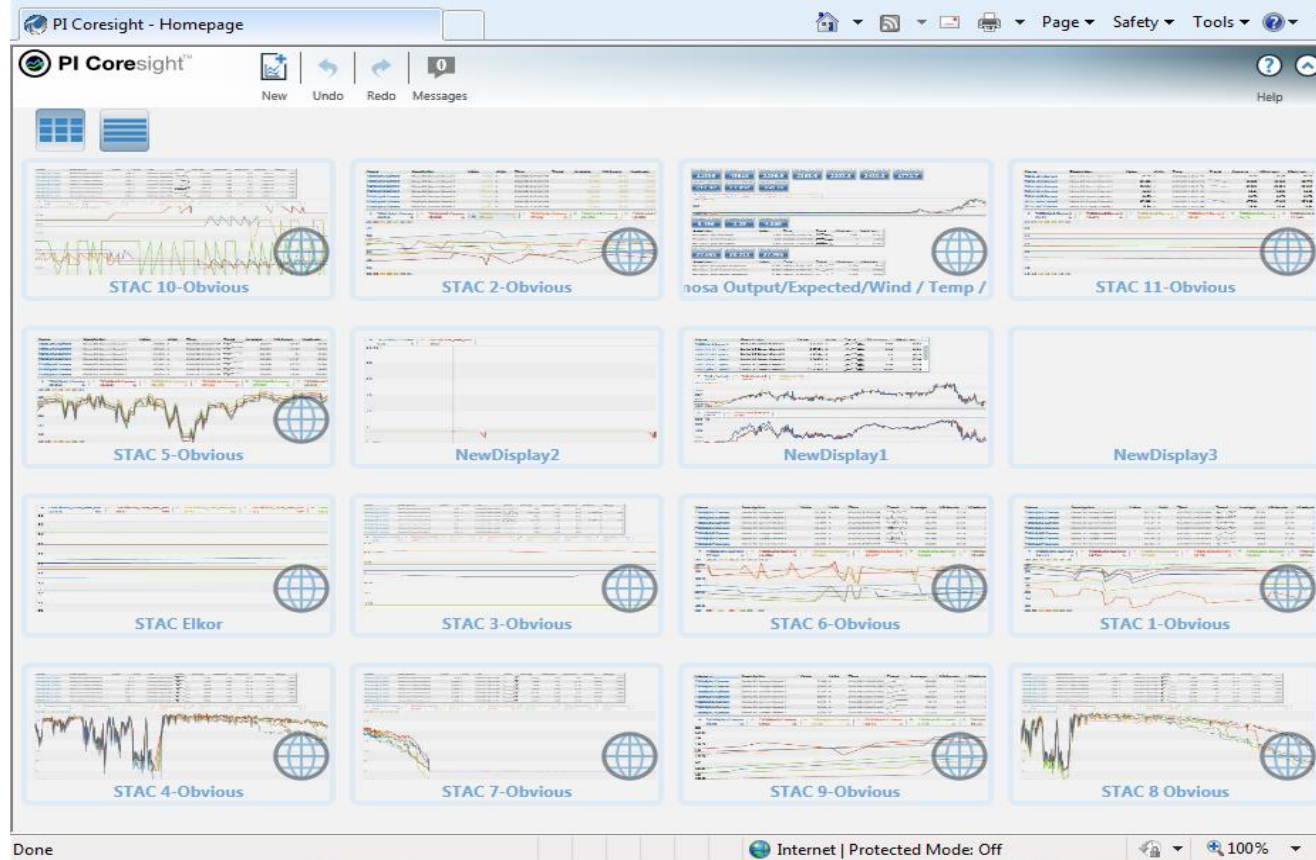
Collect



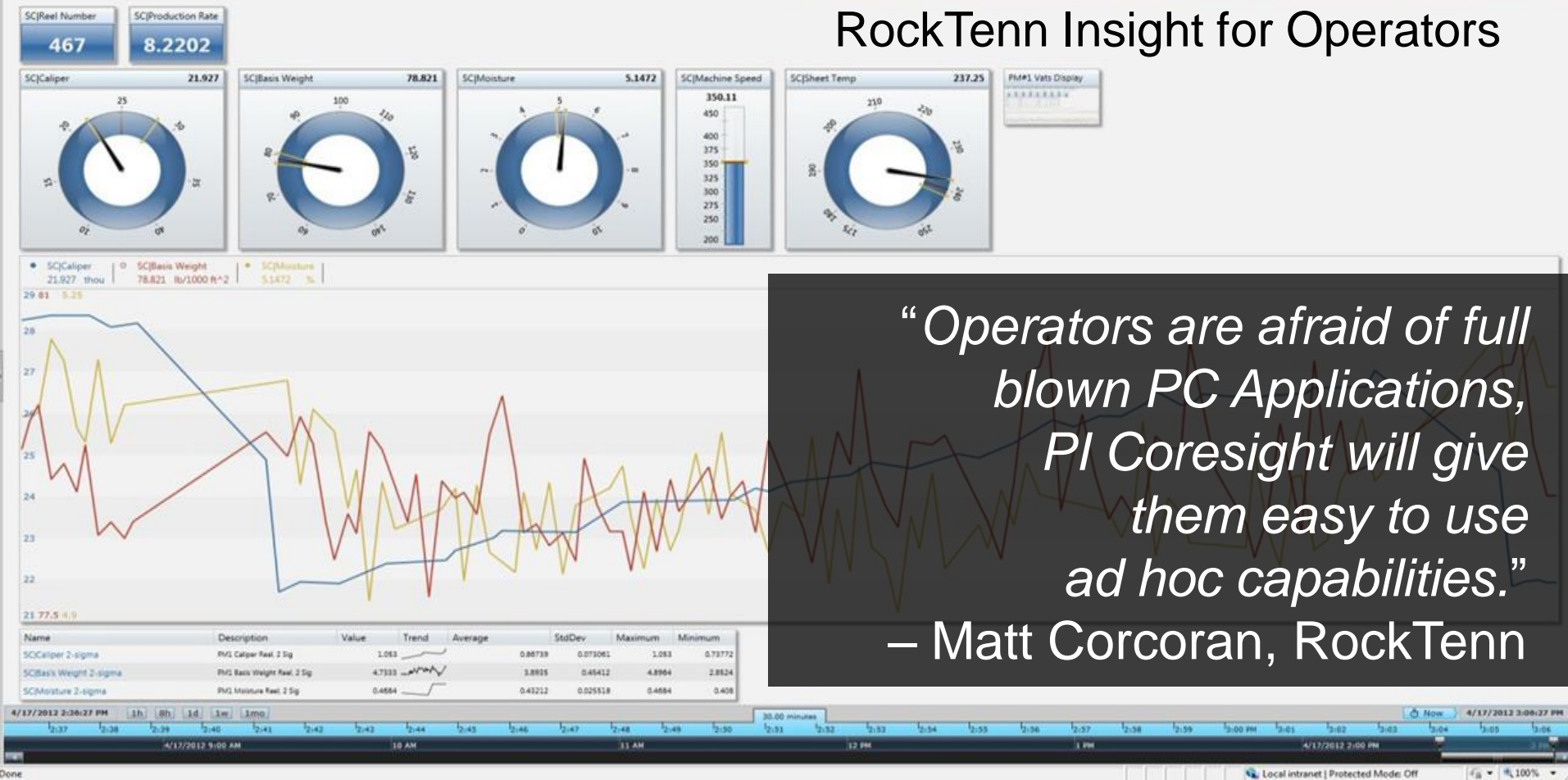
Benefits of PI Coresight at AMONIX™

POWERING THE FUTURE NOW™

- **Minimal learning curve**
- **Rapid trend analysis**
- **Leveraging PI AF structure and data**



RockTenn Insight for Operators



“Operators are afraid of full blown PC Applications, PI Coresight will give them easy to use ad hoc capabilities.”

— Matt Corcoran, RockTenn

Visualization and Mobility



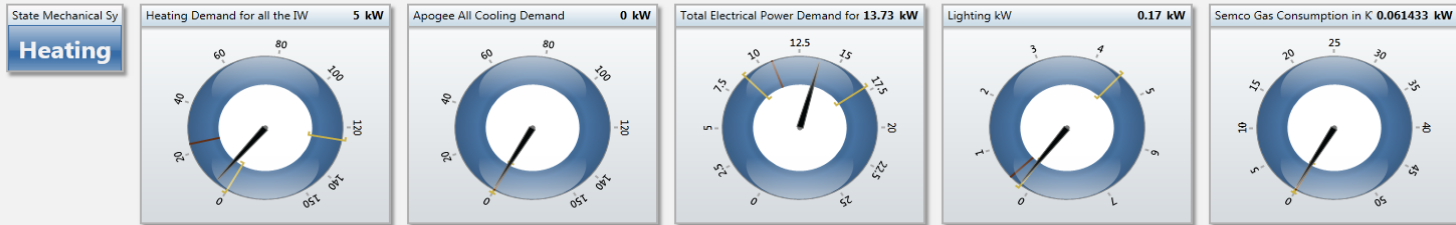
Your needs are evolving:

- **Remote** access
- Access at **any time**
- **Self-service** usage

Mobility and the PI System

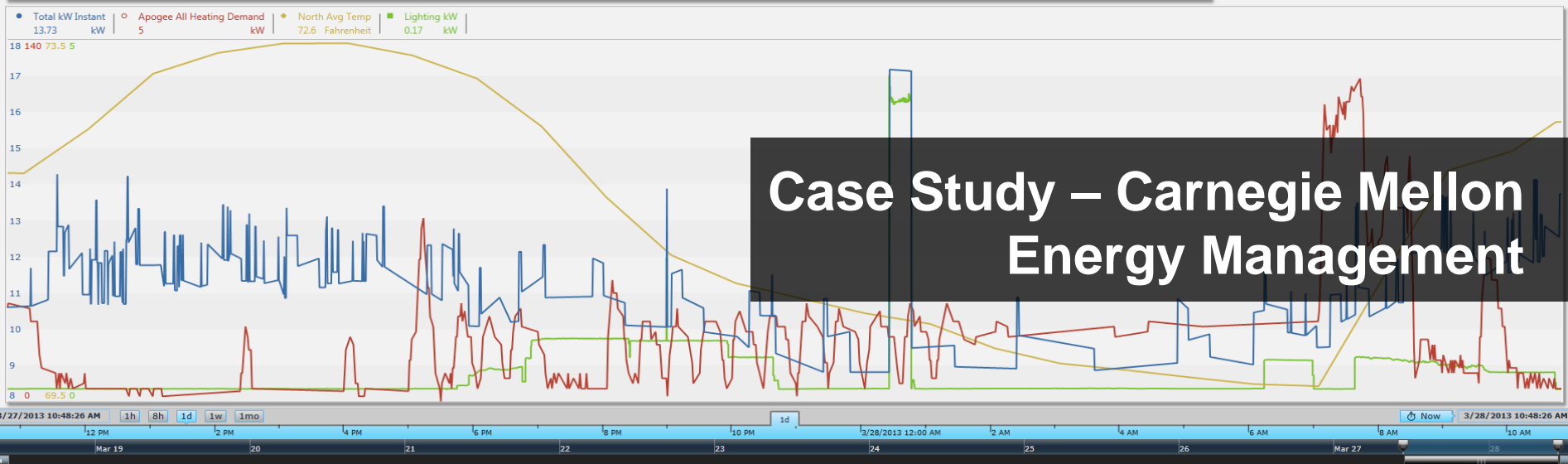
- Mobile **PI Coresight** application for the **iPad** and the **iPhone** now available!
 - Native application
 - Free download on the Apple App Store™
 - Test it now with **sample data**





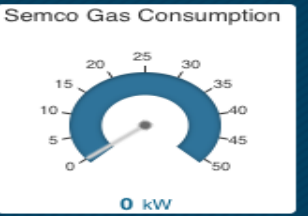
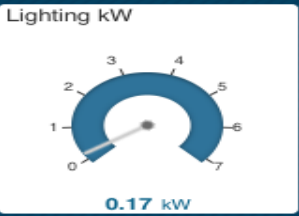
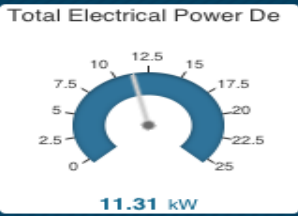
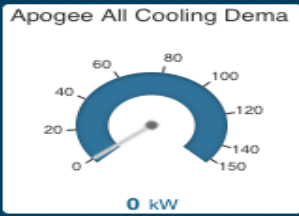
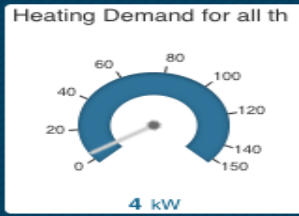
Name	Description	Value	Units	Trend	Average	Minimum	Maximum	StdDev	Range
Apogee All Heating Demand	Heating Demand for all the IW	5	kW		23.64	0	125	21.44	125
Total kW Instant	Total Electrical Power Demand for all IW	13.73	kW		10.77	8.812	17.18	1.402	8.365

Name	Description	Value	Units	Trend	Average	Minimum	Maximum	StdDev	Range
North Avg Temp	North Average Temperature	72.6	Fahrenheit		71.5	69.7	73.5	1.34	3.79
North IW/North Avg Ill	North Average Illuminance	857.8	Lux		336.3	0	1,469	461.7	1,469



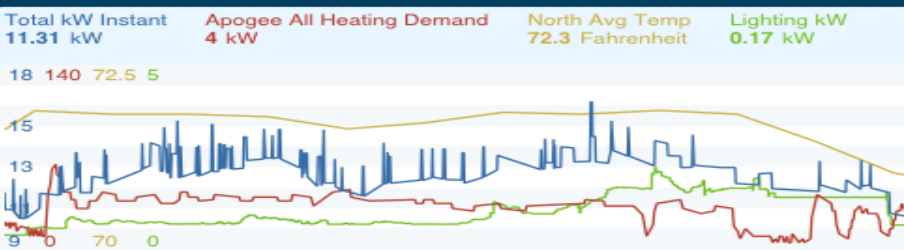
Case Study – Carnegie Mellon Energy Management

State Mechanical System
Heating



Name ▲	Description	Value	Units	Trend	Average	Minimum	Maximum
Apogee All Heating Demand	Heating Demand for all the IW	4	kW		28.82	2	124
Total kW Instant	Total Electrical Power Demand for all IW	11.31	kW		11.38	9.497	17.95

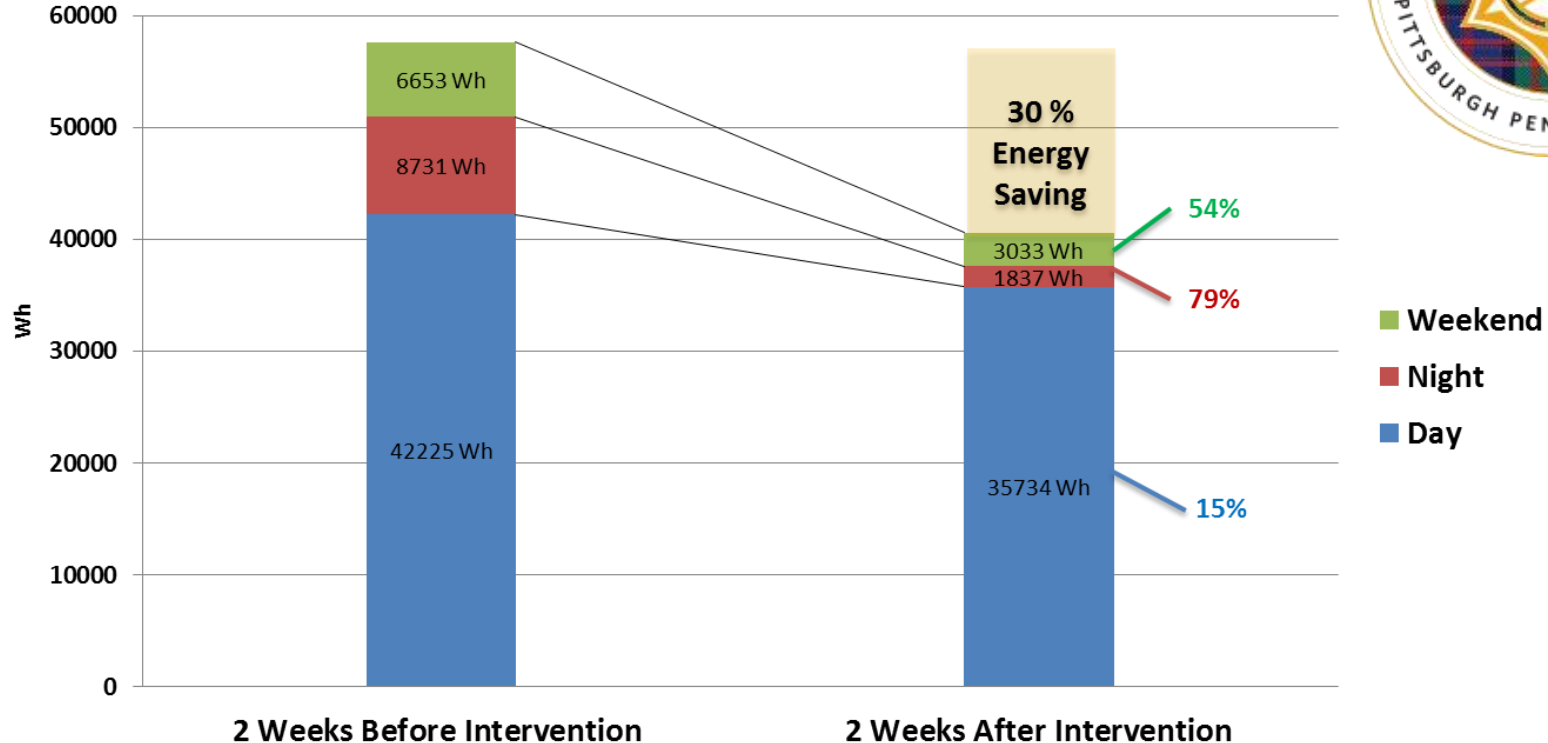
Description ▼	Value	Units	Trend	Average	Minimum	Maximum	StdDev
North Average Temperature	72.3	Fahrenheit		71.2	70.1	72.3	0.622
Daylight Level Apogee	1,418	Lux		1,236	1,500	226.57	



Case Study – Carnegie Mellon Energy Management

Case Study – Energy Management

Energy Savings (CFA n=7)



Support for iPad and iPhone



Support the Devices you Use

How can you tell now what every team member
will use...

tomorrow...

next week...

especially next year!



Collect Data with Different Devices

PI Manual Logger

TOURS

Back

Apr 09 2013 - 12:34:14 pm
1 / 8 tags

Pump P250 Temp
South Reflux Pump 1 Pump1

Instructions
Use the vibration probe to measure the Temperature for Pump P250.

Value
190
Limits violated: Hi(185)
H:185 L:155
Previous value: 184 - Apr 09 2013 - 12:34:14 pm
> more values

Timestamp
Apr 09 2013 - 12:34:14 pm

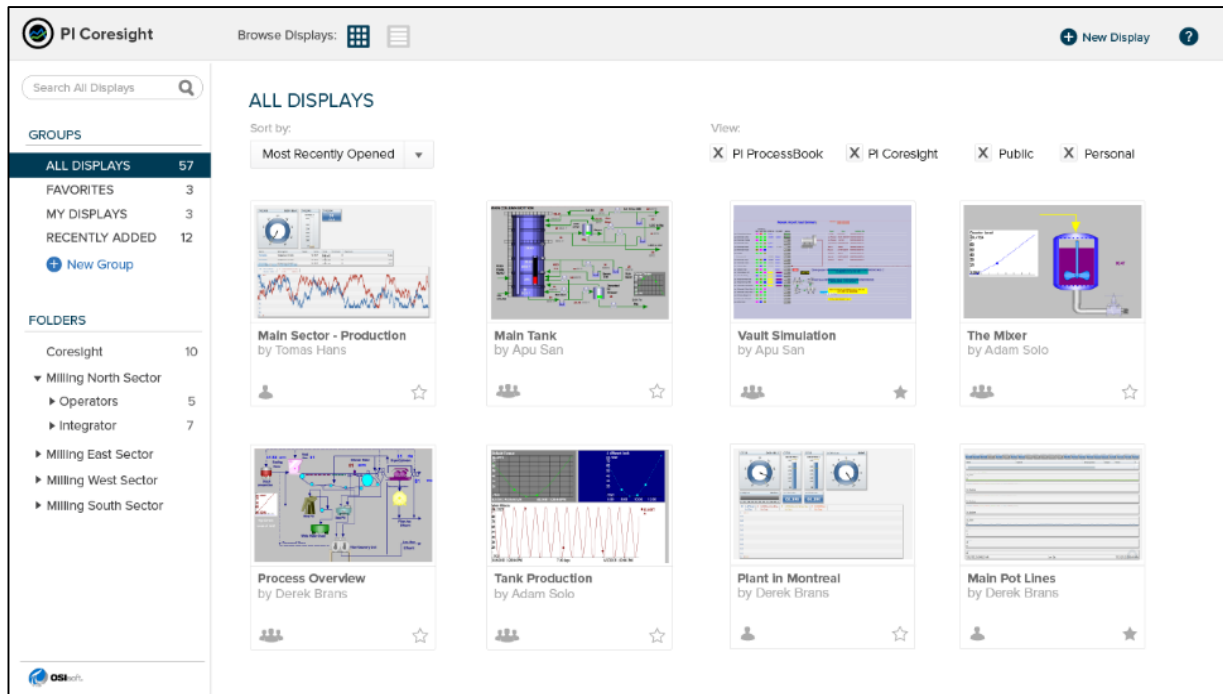
Comment

Next / Prev All Missing

- Browser interface is device agnostic
- Simplified screen
- Android phone & tablet
- iPhone and iPad
- Any modern browser (HTML5 support)



View PI ProcessBook Content on Different Devices



- **Browse PI ProcessBook displays** the same way as PI Coresight
- Any modern browser (**HTML5** support)

PI Visualization Suite Benefits

- Access to the data in the format you want **reduces the time to insight**
- Access to the data when and where you want **facilitates collaboration and sharing of insights**
- **All** visualization tools to **any** user gives **the right tool** for the job **at the right time**





Questions

Please wait for
the **microphone**
before asking
your questions



State your
**name &
company**



Operational Insights Enterprise Wide



THANK YOU

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Mana Afshari

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