



## Regional Seminar Series Pittsburgh, PA



## Visualizing PI Data with Dashboards and Reports

October 28, 2010

Tom LeBay OSIsoft, LLC

Empowering Business in Real Time.

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# Experience



COLLECT



HISTORIZE



FIND



ANALYZE

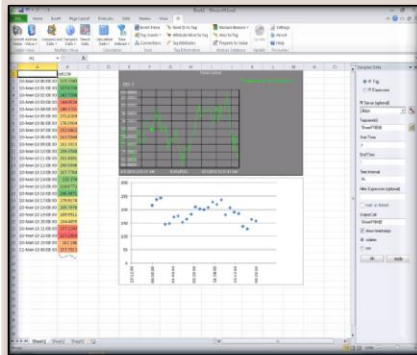


DELIVER

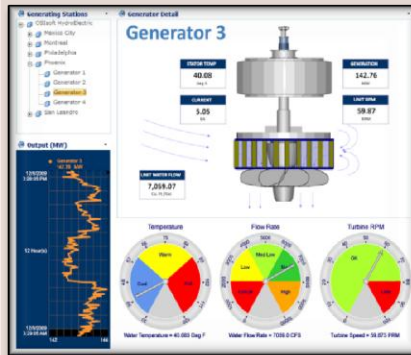


VISUALIZE

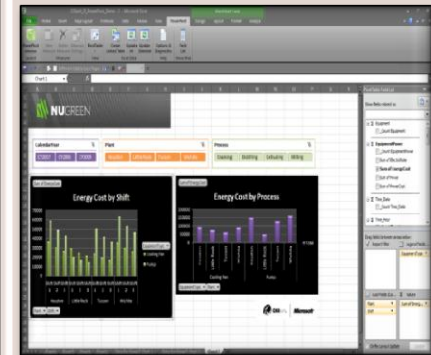
# Visualization for PI System 2010



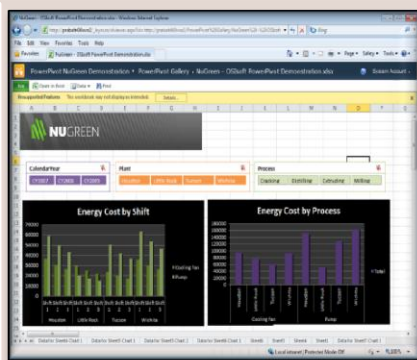
PI DataLink for  
Excel 2010



PI WebParts for  
SharePoint 2010



PI and PowerPivot for  
Excel 2010

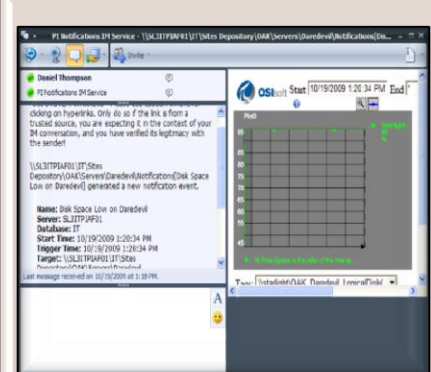


PI and PowerPivot for  
SharePoint 2010

PI OLEDB  
Enterprise 2010

PI Web Services  
2010

PI Data Access  
Technologies

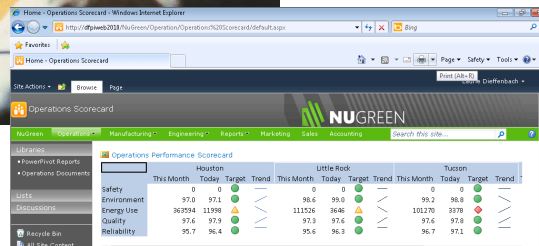
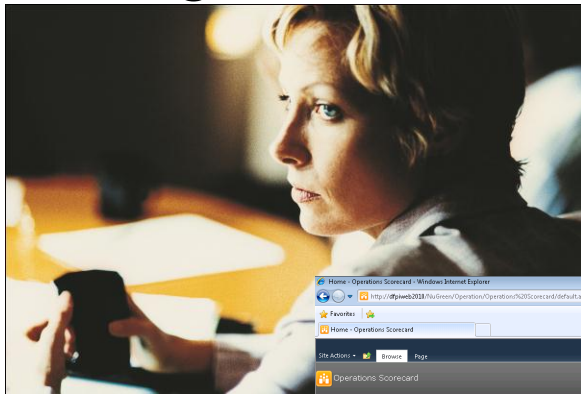


PI Notifications 1.1  
OCS R2 Delivery Channel

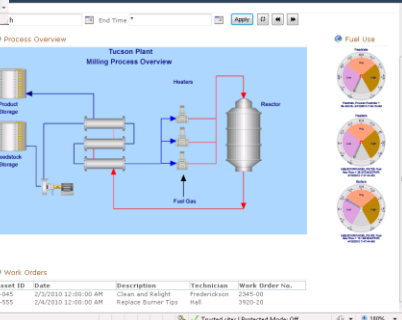
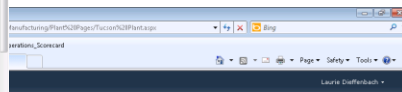
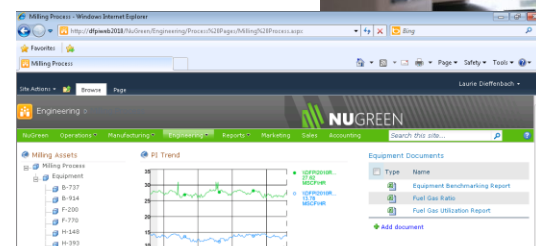
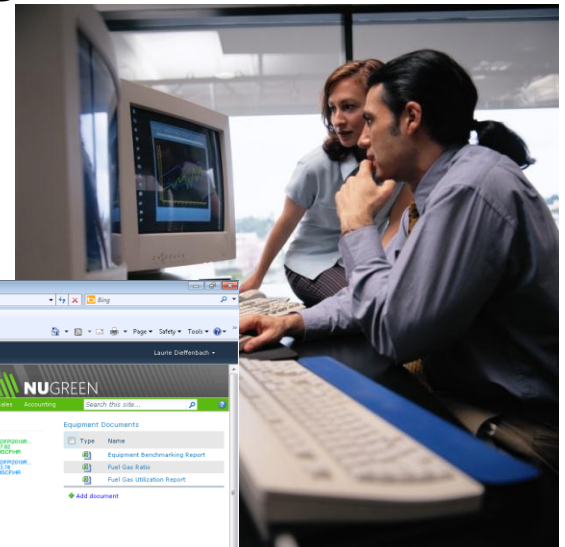
# Role-based Dashboarding



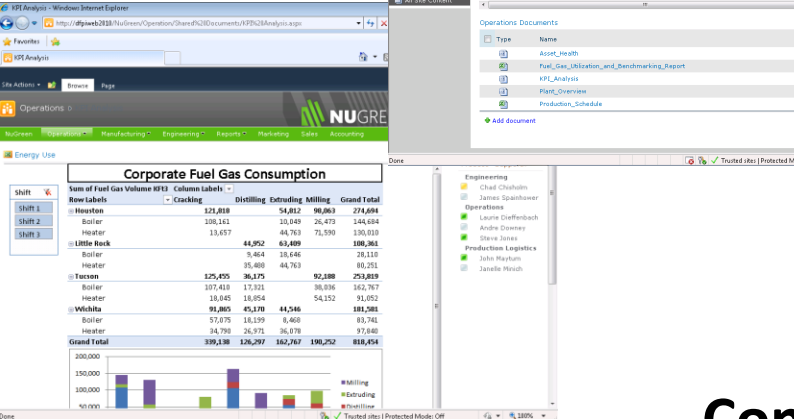
## Management



## Knowledge Worker

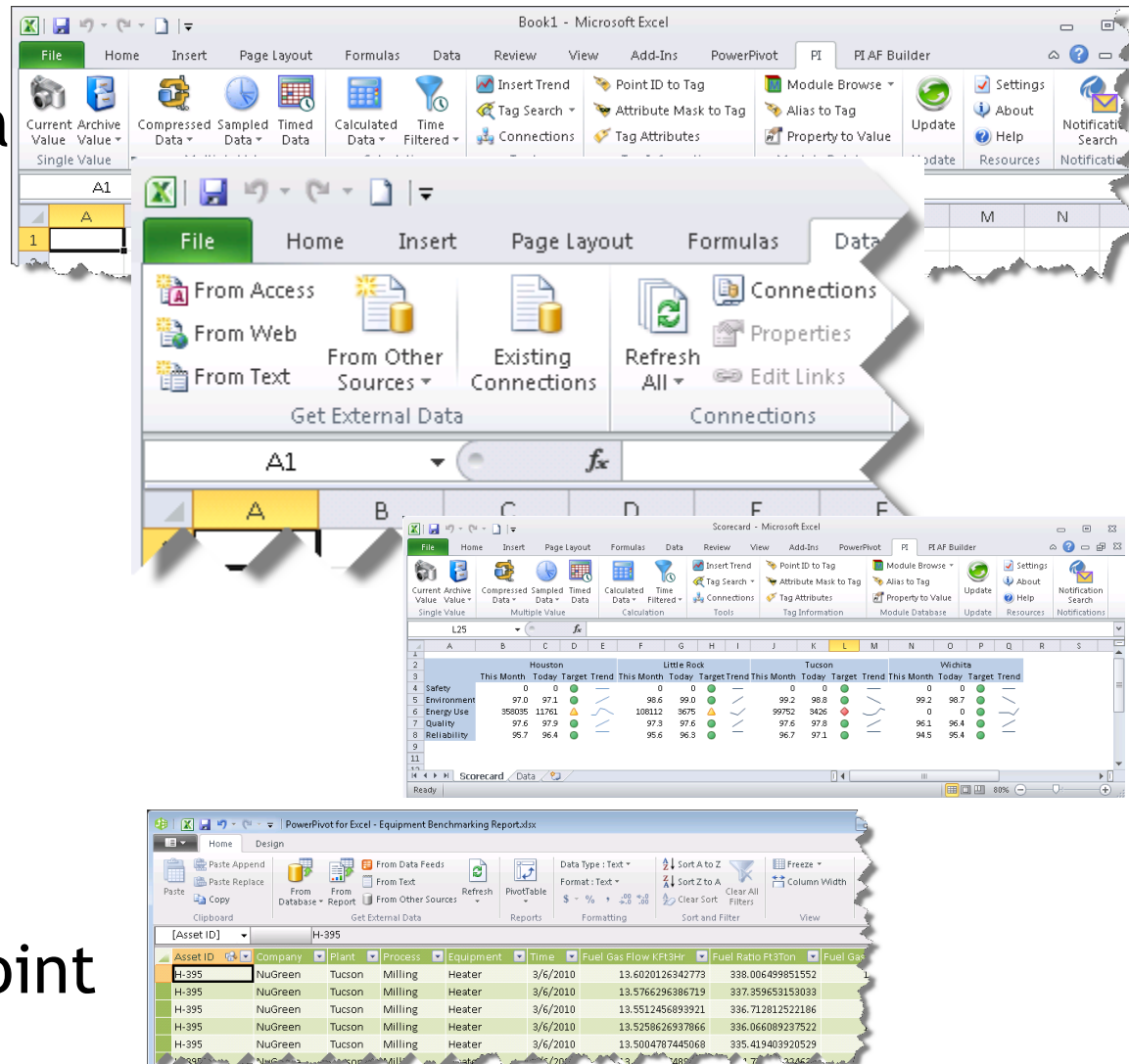


## Content Creator



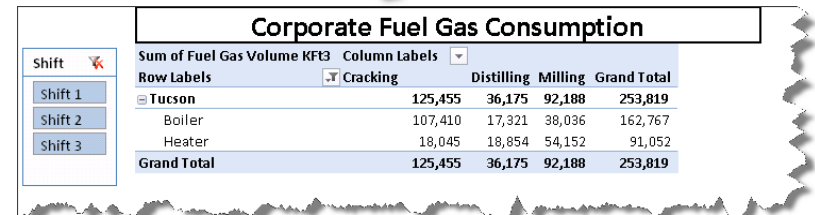
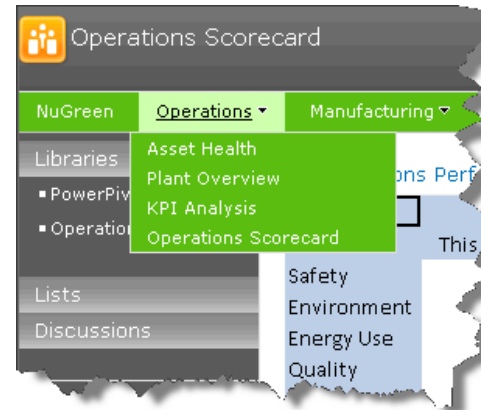
# Content Creator Roles

- Use different data sources
- Create scorecards
- Create multidimensional reports
- Publish to SharePoint



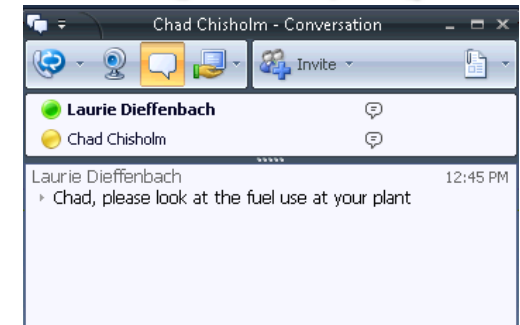


- Easy navigation to needed information
- Content is already built, but can interact with it to focus on an issue
- Easy access to assistance from experts



The screenshot shows a table titled 'Corporate Fuel Gas Consumption'. The table has columns for 'Sum of Fuel Gas Volume KPI3', 'Cracking', 'Distilling', 'Milling', and 'Grand Total'. The rows include 'Tucson', 'Boiler', 'Heater', and 'Grand Total'.

Row Labels	Cracking	Distilling	Milling	Grand Total
Tucson	125,455	36,175	92,188	253,819
Boiler	107,410	17,321	38,036	162,767
Heater	18,045	18,854	54,152	91,052
Grand Total	125,455	36,175	92,188	253,819

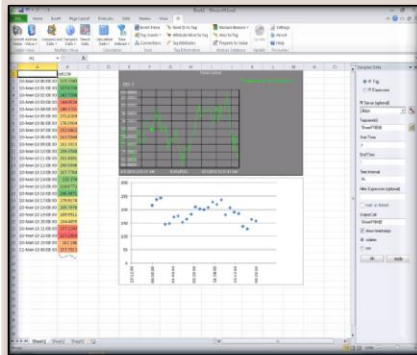


# Knowledge Worker Roles

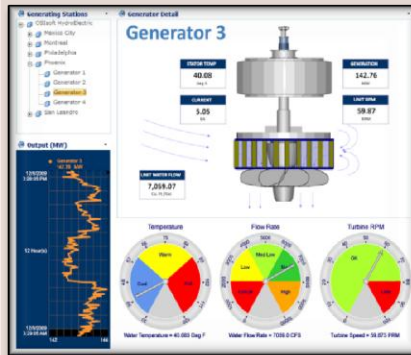
- Access to all needed tools
- Contribute material for use by others
- Act to resolve problems and prevent recurrence



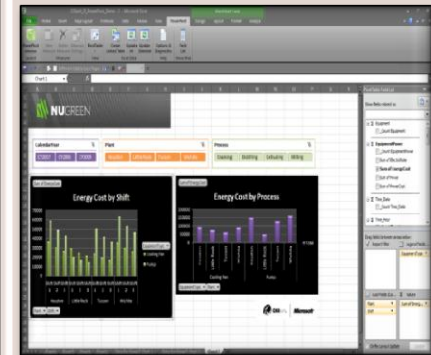
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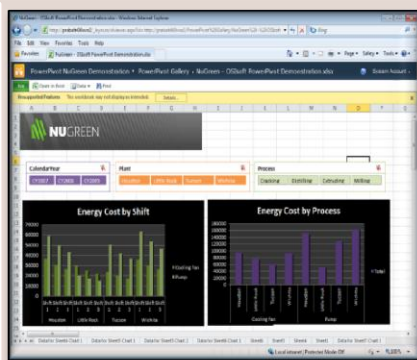
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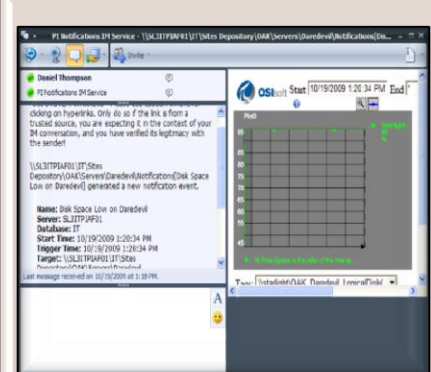


PI and PowerPivot for  
SharePoint 2010

PI OLEDB  
Enterprise 2010

PI Web Services  
2010

PI Data Access  
Technologies



PI Notifications 1.1  
OCS R2 Delivery Channel



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General

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Format  
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FilterFind &  
Select  
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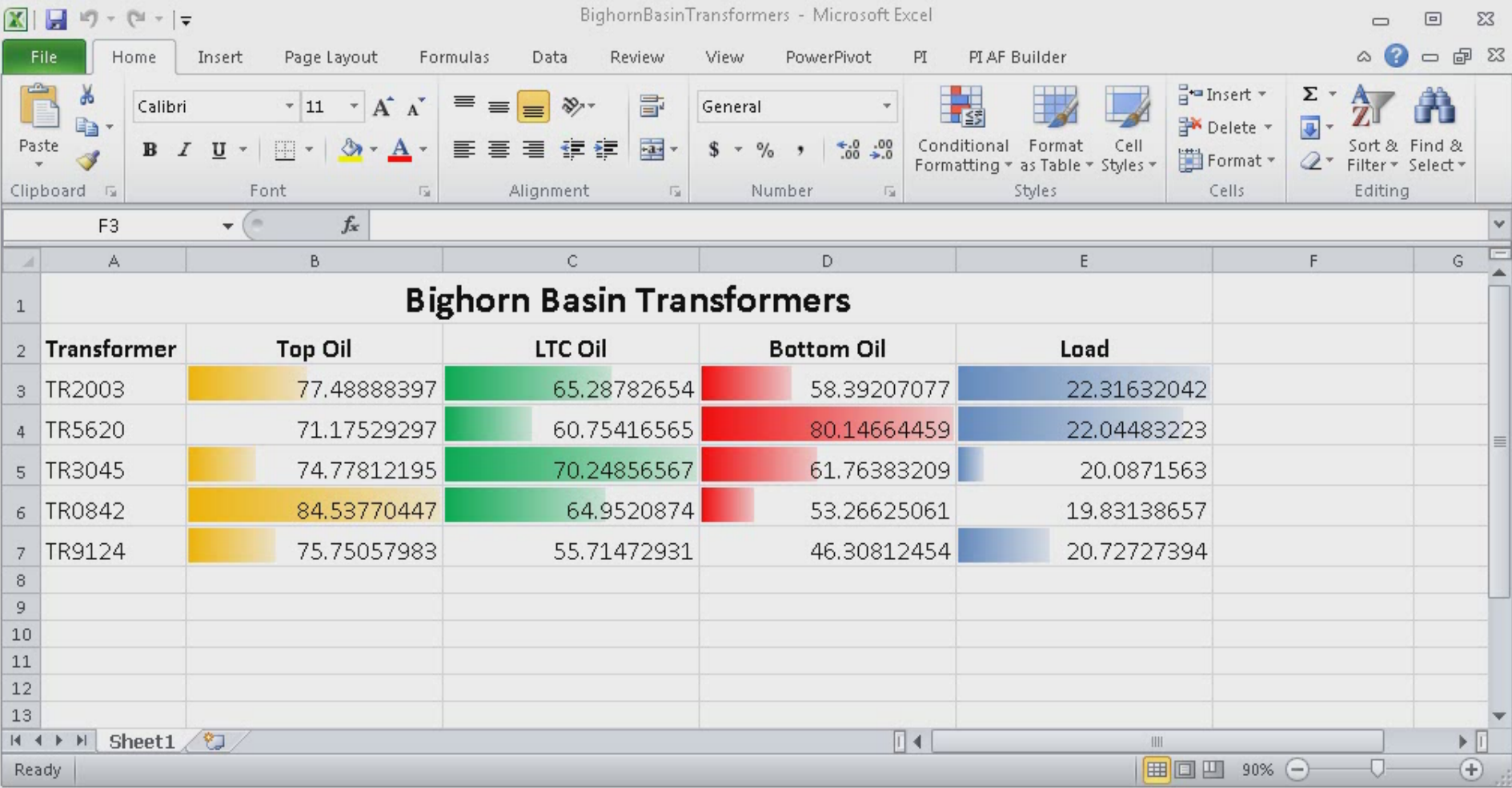
M

N

Tucson

Houston

Timestamp B309\_FG903 B555\_FG120 B210\_FG005 B235\_FG293



- Supports Microsoft Office 2010 (32-bit)  
*(Office 2007 and Office 2003 as well)*

- Internationalization and Localization

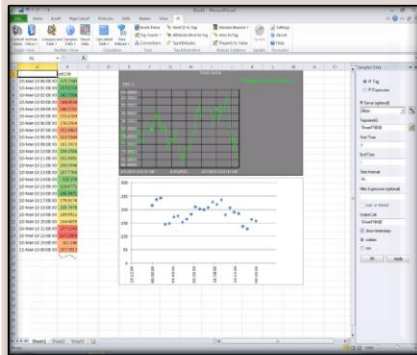
*English, French, German, Spanish, Portuguese, Russian, Simplified Chinese, Japanese, Korean*

- Supports SharePoint 2010 (64-bit)  
*(Microsoft Office SharePoint Server 2007 as well)*

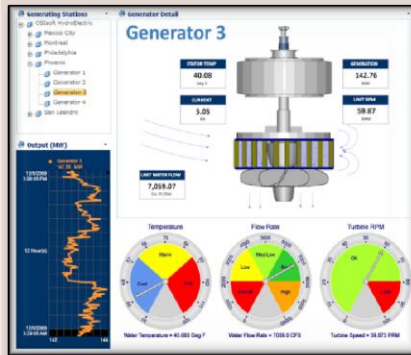
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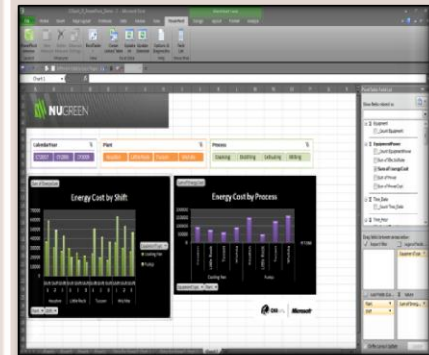
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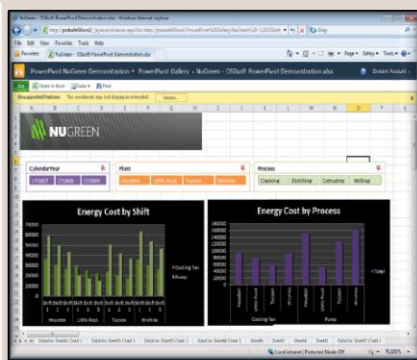
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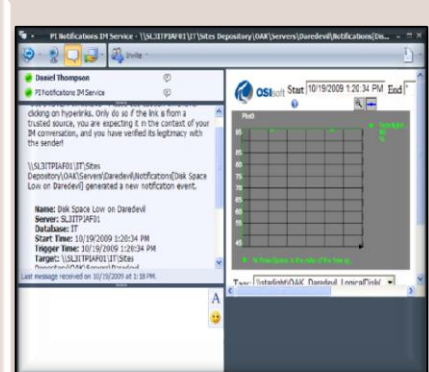


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# Scorecards and Dashboards in SharePoint

Home - Operations Scorecard - Windows Internet Explorer

http://dfpiweb2010/NuGreen/Operation/Operations%20Scorecard/default.aspx

Home - Operations Scorecard

Print (Alt+R) Laune Dieffenbach

Operations Scorecard

NuGreen Operations Manufacturing Engineering Reports Marketing Sales Accounting Search this site...

Libraries

- PowerPivot Reports
- Operations Documents

Lists

Discussions

Recycle Bin

All Site Content

Operations Performance Scorecard

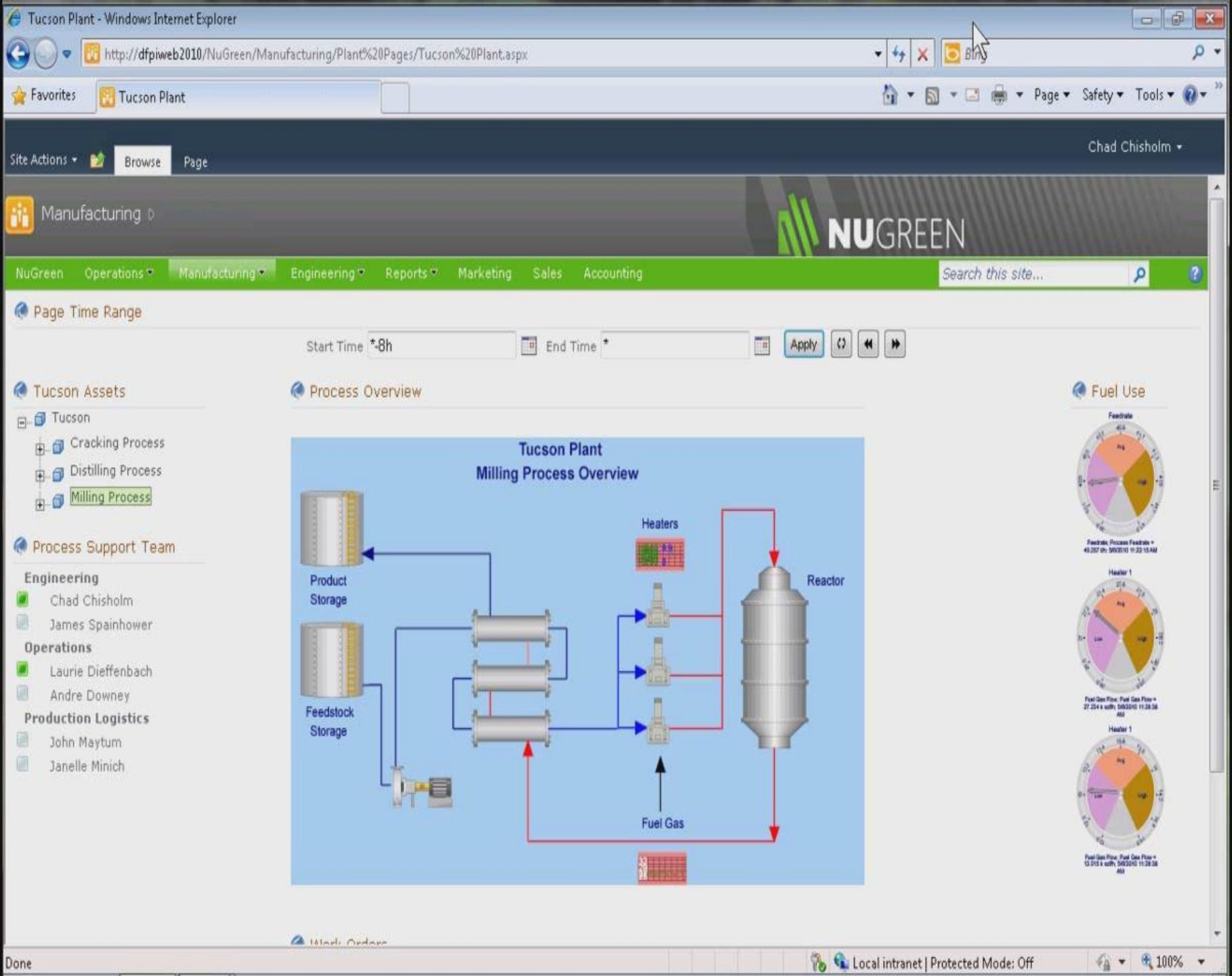
	Houston				Little Rock				Tucson			
	This Month	Today	Target	Trend	This Month	Today	Target	Trend	This Month	Today	Target	Trend
Safety	0	0	●	—	0	0	●	—	0	0	●	—
Environment	97.0	97.1	●	↗	98.6	99.0	●	↗	99.2	98.8	●	↘
Energy Use	363594	11998	▲	↘	111526	3646	▲	↘	101270	3378	◆	↘
Quality	97.6	97.9	●	↗	97.3	97.6	●	↗	97.6	97.8	●	↗
Reliability	95.7	96.4	●	↗	95.6	96.3	●	↗	96.7	97.1	●	↗

Operations Documents

Type	Name	Modified
Document	Asset_Health	4/13/2010 2:39 PM
Document	Fuel_Gas_Utilization_and_Benchmarking_Report	4/13/2010 2:39 PM
Document	KPI_Analysis	4/13/2010 2:39 PM
Document	Plant_Overview	4/13/2010 2:39 PM
Document	Production_Schedule	4/13/2010 2:31 PM

+ Add document

Done Trusted sites | Protected Mode: Off 100%





Favorites



Tucson Plant

Site Actions ▾



Browse

Page



Manufacturing ▸ Tucson Plant

NuGreen

Operations ▾

Manufacturing ▾

Engineering ▾

Reports ▾

Market



Page Time Range



Tucson Assets

Cracking Process

Extruding Process

Milling Process

Data Entry

Process Overview

Milling Assets

- Milling Process
- Equipment
  - B-737
  - B-914
  - F-200
  - F-770
  - H-148
  - H-393
  - H-395
  - K-384
  - P-009
  - P-509

PI Trend

No Data Configured

Equipment Documents

Type	Name
	<a href="#">Equipment Benchmarking Report</a>
	<a href="#">Fuel Gas Ratio</a>
	<a href="#">Fuel Gas Utilization Report</a>

[Add document](#)

Production Schedule

Milling Production Schedule

Production			Inventories						Today's Performance		
Rate (Tons\Hr)	Target (Tons\Hr)	Capacity (Tons\Hr)	Raw Material Available		Product			Energy 2%	Reliability 95%	Quality 98%	
			Tons	Days	Sales (Tons\Day)	Available Tons	Days				
Houston	32.9	35.0	50	30,128	35.9	1,200	10,638	8.9	86208%	9557%	9847%
Tucson	33.7	29.0	30	24,236	34.8	750	18,900	25.3	34410%	9671%	9671%

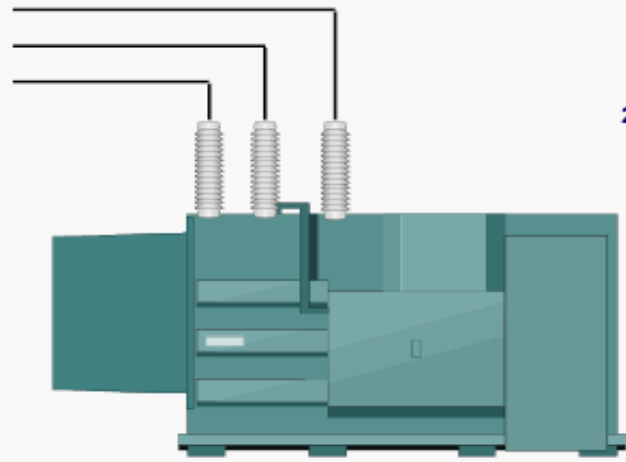
Station: **Bighorn Basin**  
Asset ID: **TR0842**

Oil Temperatures (C)

Top Oil  
84.1 Deg C

LTC Oil  
63.5 Deg C

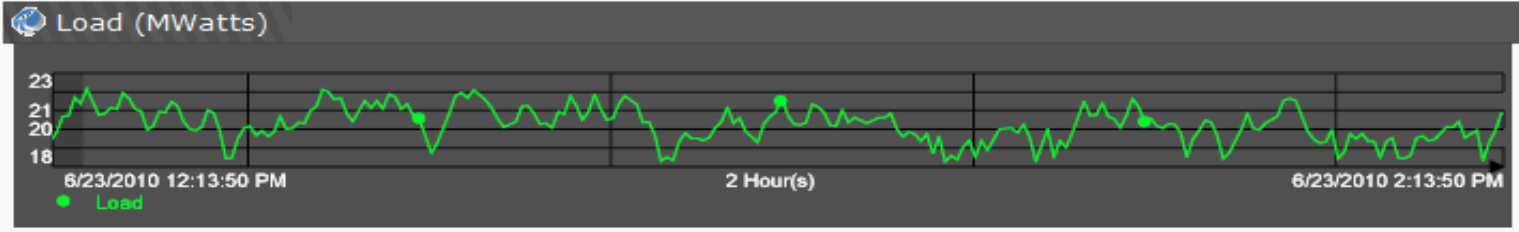
Bottom Oil  
52.4 Deg C



LTC Motor  
21.8 Amps **STOP**

Cooling Fans  
21.8 Amps **STAGE 1**

Load (MWatts)  
20.8 Mwatts

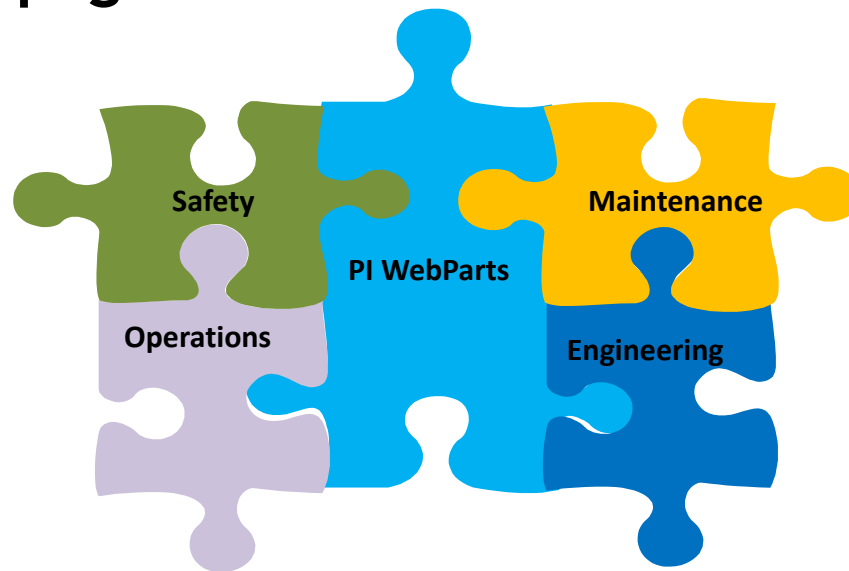




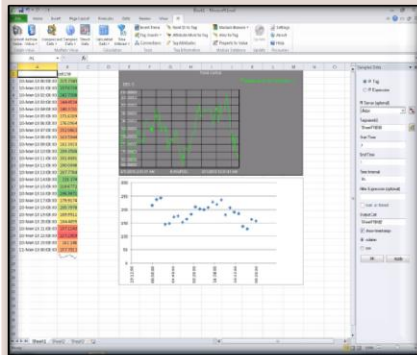
# Value of PI WebParts 2010



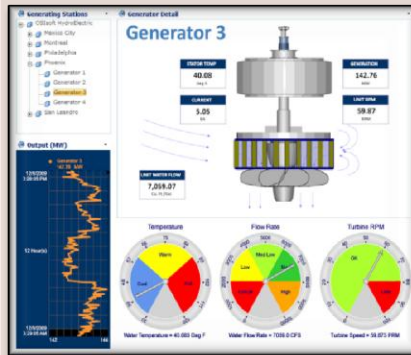
- Aligns with
  - PI for Office 2010 (2007 still supported)
  - PI Server 2010
- **Easy configuration, no code programming**
- **Leverage existing applications**
- **Fewer pages to maintain**



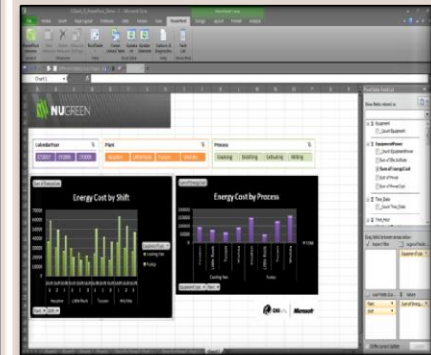
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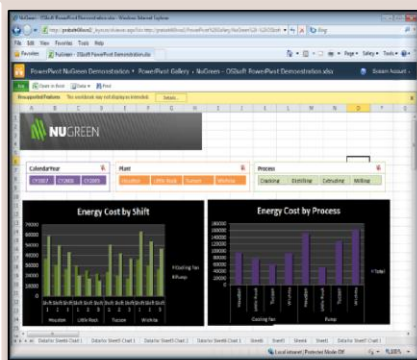
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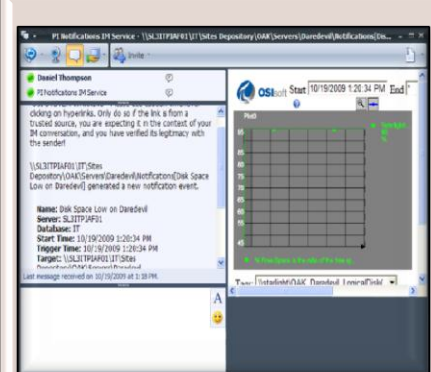


PI and PowerPivot for  
SharePoint 2010

PI OLEDB  
Enterprise 2010

PI Web Services  
2010

PI Data Access  
Technologies



PI Notifications 1.1  
OCS R2 Delivery Channel

## Microsoft BI Vision and Strategy

Improving organizations by providing business insights to ***all*** employees leading to better, faster, and more relevant decisions

Delivered through a familiar environment

Integrated into business productivity infrastructure

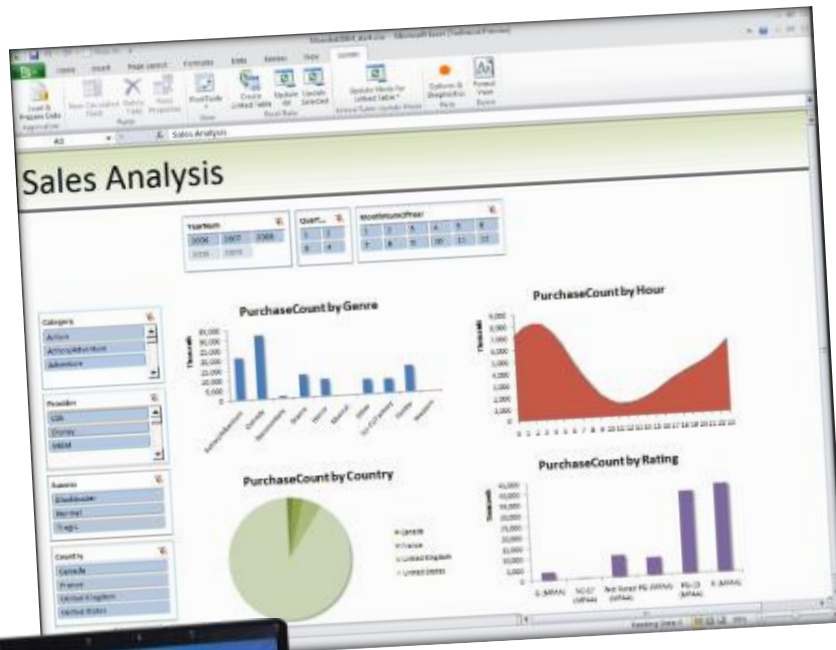
Built on a trusted and extensible platform



# Self Service BI



## PowerPivot for Excel



Microsoft®  
Excel 2010

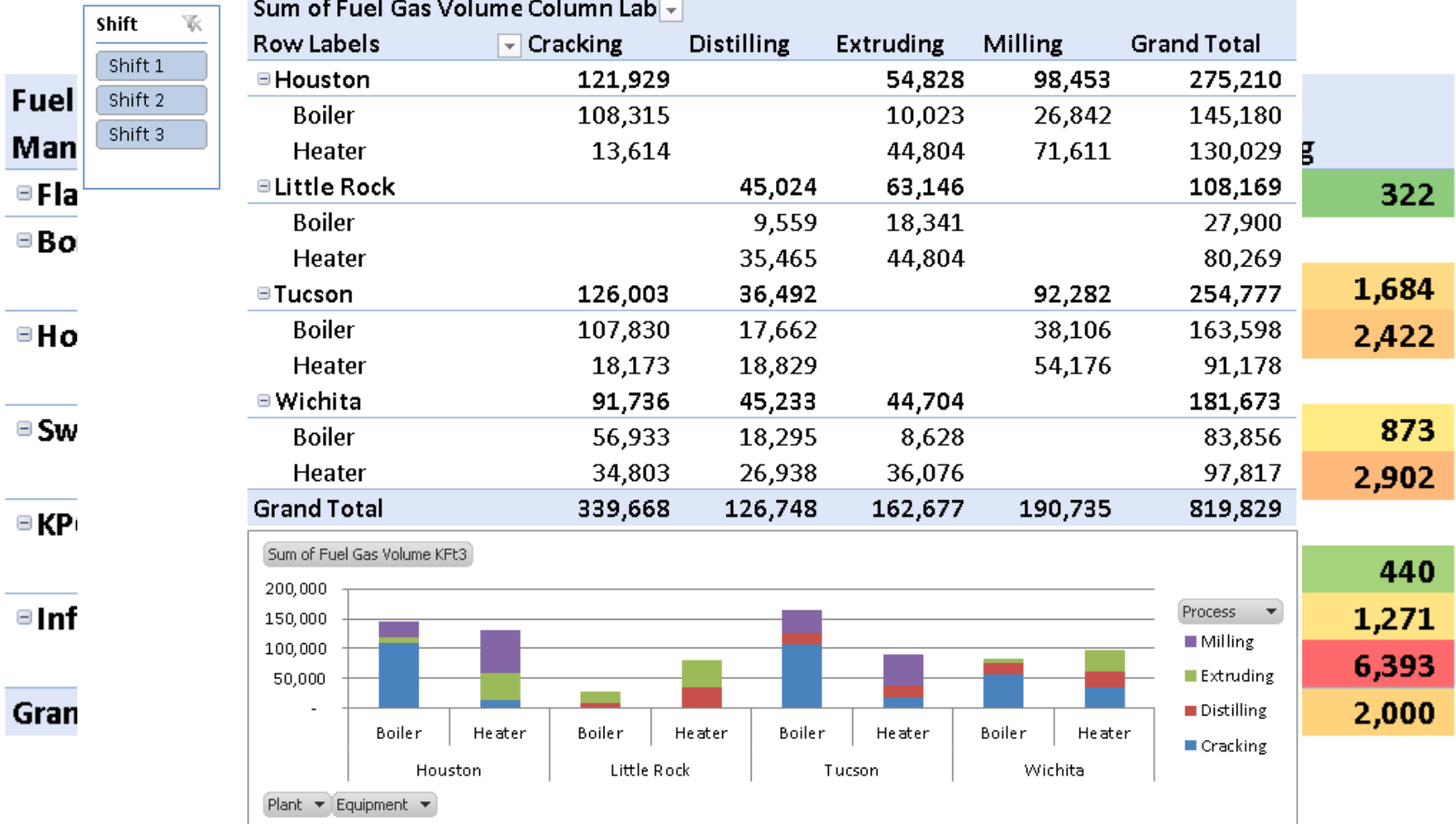
## PowerPivot for SharePoint



Microsoft®  
SharePoint® 2010  
Microsoft®  
SQL Server® 2008 R2



## 30 Day Corporate Fuel Gas Consumption



Sum of Fuel Gas Volume Kft3



Process

- Milling
- Extruding
- Distilling
- Cracking

Plant Equipment



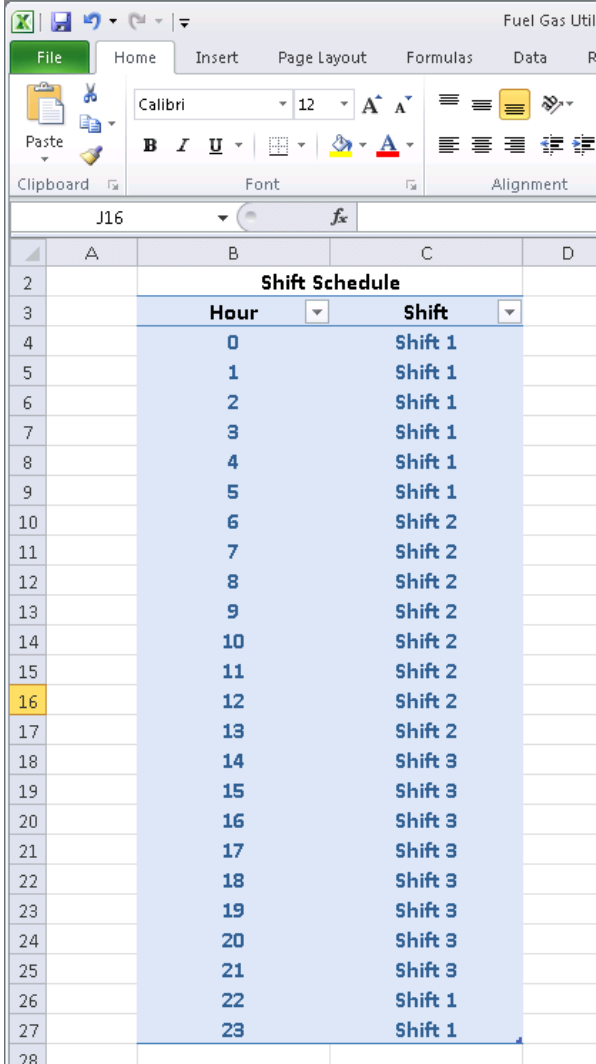
# Slicing Data by Shifts

- Link in an Excel Table containing shift schedule
- Use DAX<sup>1</sup> to add an “Hour” column to the “Fuel Use” table;

=HOUR([Time])

- Create a Relationship between the “Hour” columns in each table.

1. Data Analysis Expression Language



The screenshot shows an Excel spreadsheet with a table titled "Shift Schedule". The table has two columns: "Hour" and "Shift". The "Hour" column lists hours from 0 to 23, and the "Shift" column lists the corresponding shift (Shift 1, Shift 2, or Shift 3). The table is highlighted in blue.

Hour	Shift
0	Shift 1
1	Shift 1
2	Shift 1
3	Shift 1
4	Shift 1
5	Shift 1
6	Shift 2
7	Shift 2
8	Shift 2
9	Shift 2
10	Shift 2
11	Shift 2
12	Shift 2
13	Shift 2
14	Shift 3
15	Shift 3
16	Shift 3
17	Shift 3
18	Shift 3
19	Shift 3
20	Shift 3
21	Shift 3
22	Shift 1
23	Shift 1

File

Home

Insert

Page Layout

Formulas

Data

Review

View

PowerPivot

PI

Calibri

11

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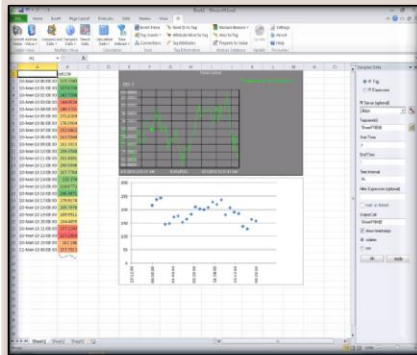
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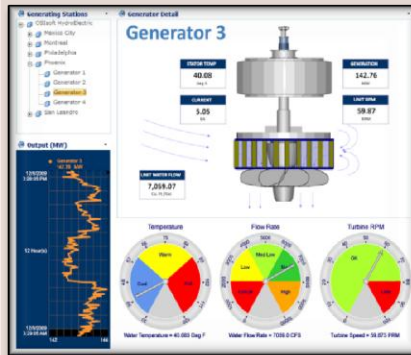
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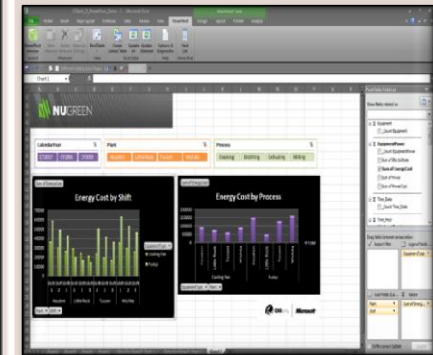
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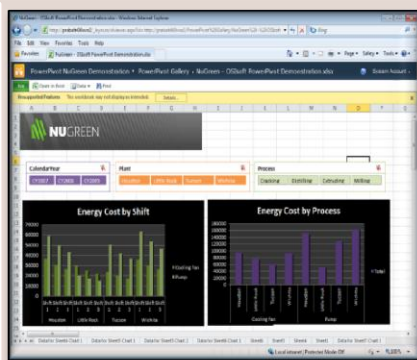
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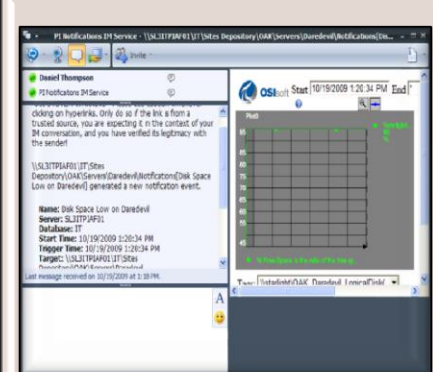


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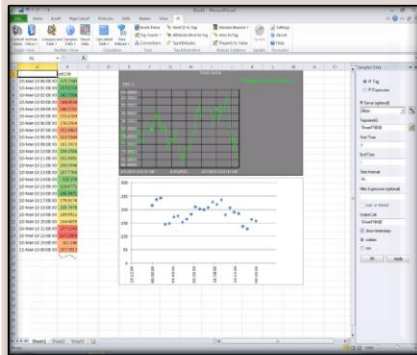
# Keeping Insights Up to Date



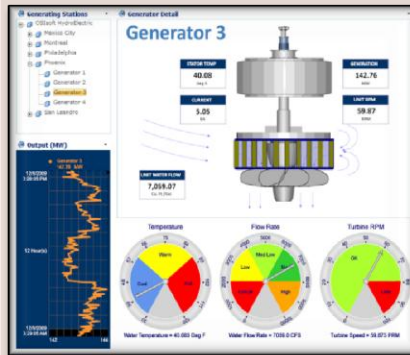
## Refreshing Data in SharePoint 2010

SharePoint can refresh the data from the specified data sources over the Web, in the cloud, from internal databases, PI System 2010, Excel files, and any other location with network connectivity.

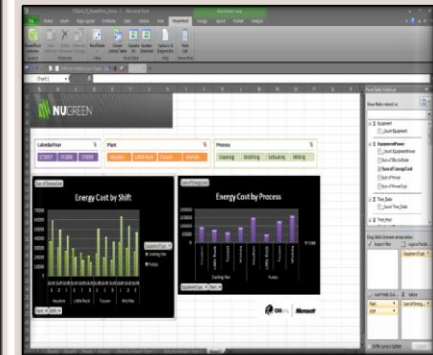
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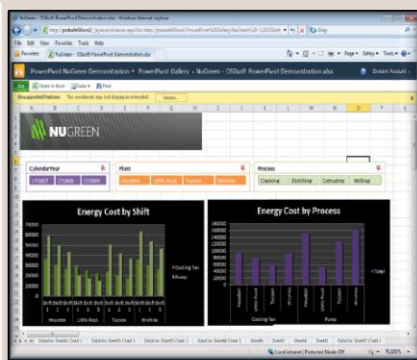
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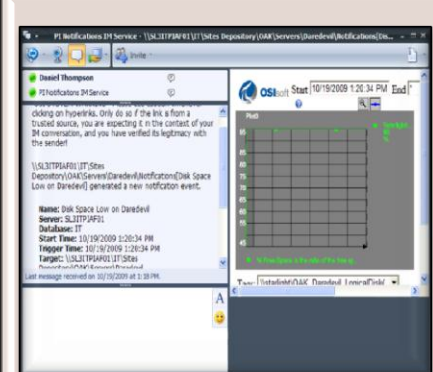


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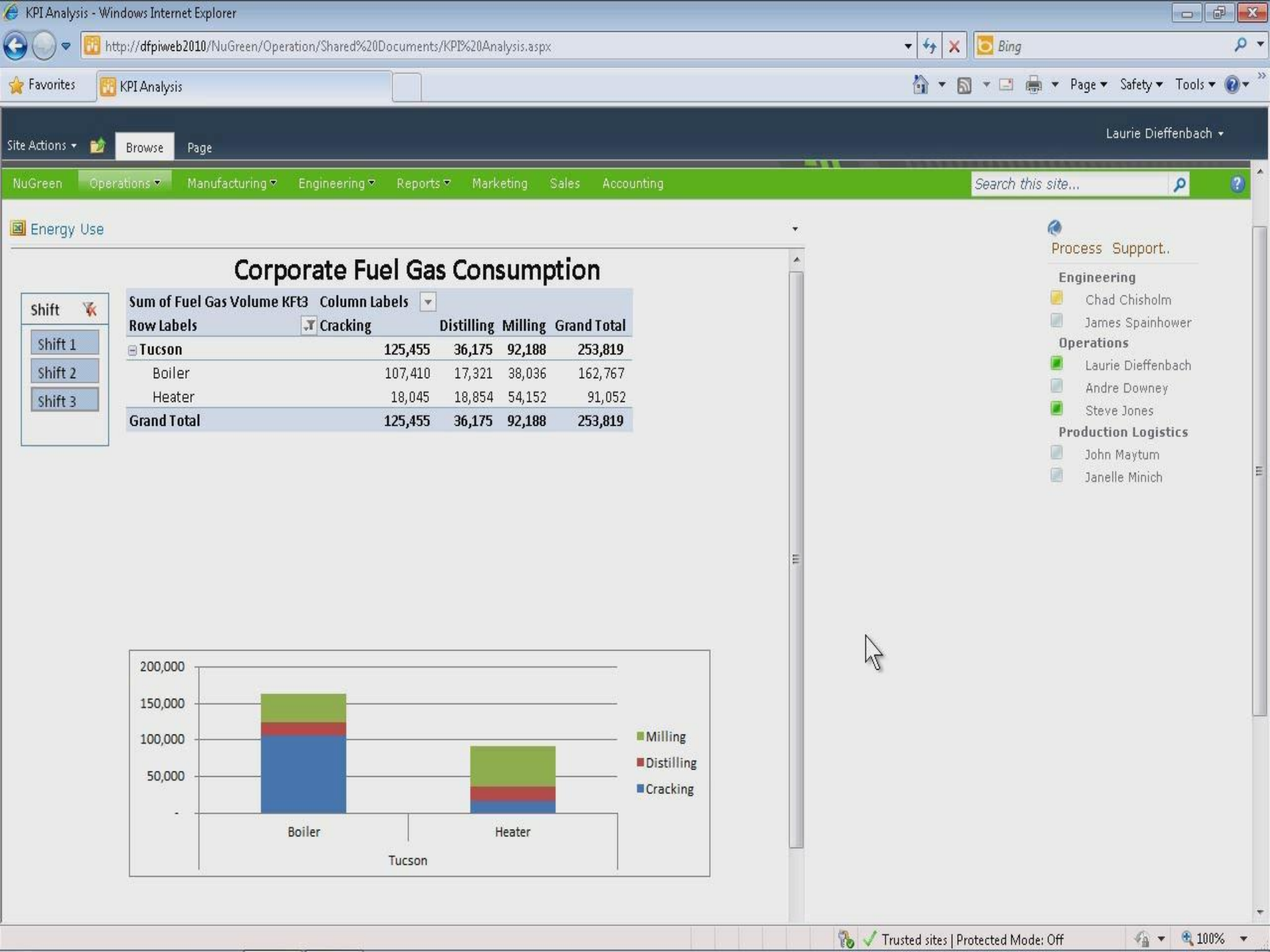
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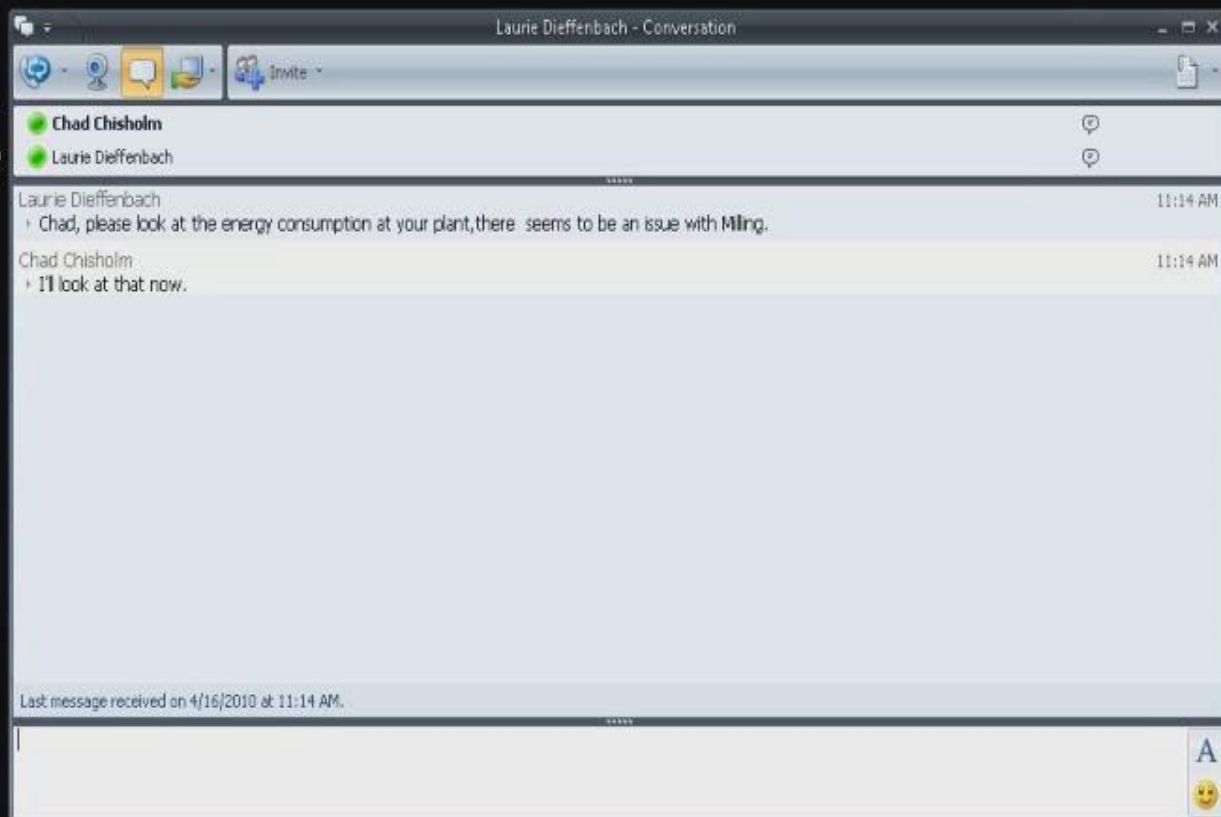




Recycle Bin



Camtasia  
Studio 7



# Experience



COLLECT



HISTORIZE



FIND



ANALYZE



DELIVER



VISUALIZE



# Thank you

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