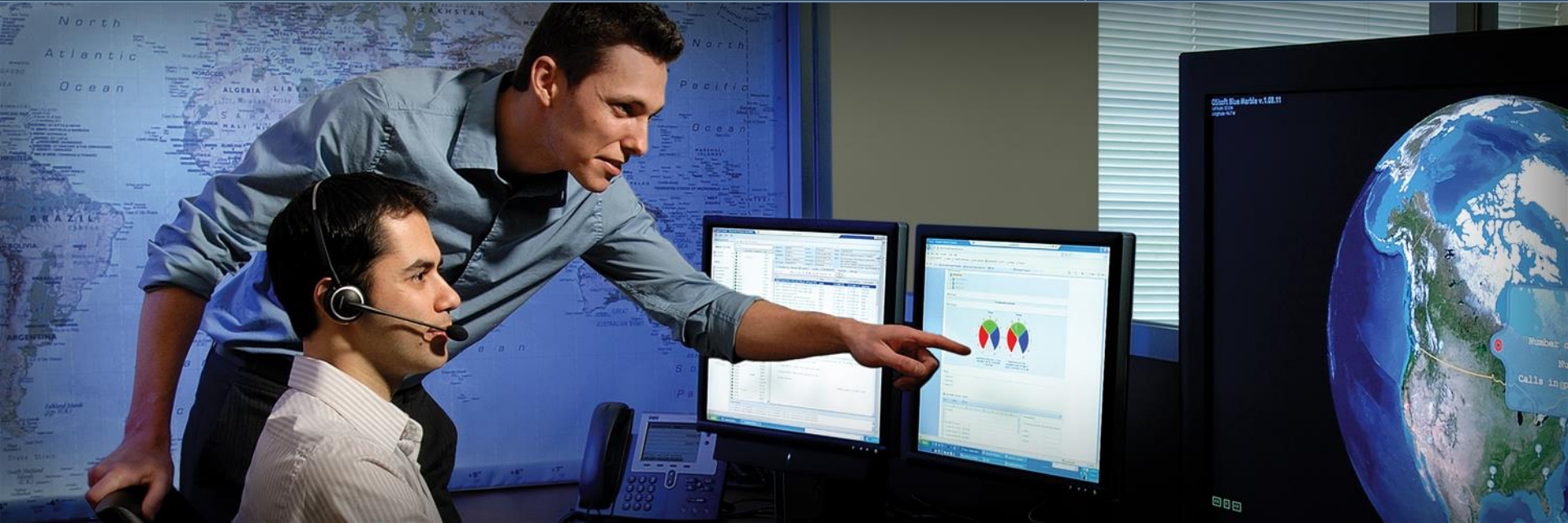




## Regional Seminar Series Raleigh



### Dashboards/Scorecards/KPIs utilizing PIWebParts & Datalink for Excel

Todd Brown  
Center of Excellence Engineer  
OSIsoft, LLC.

October 27, 2009

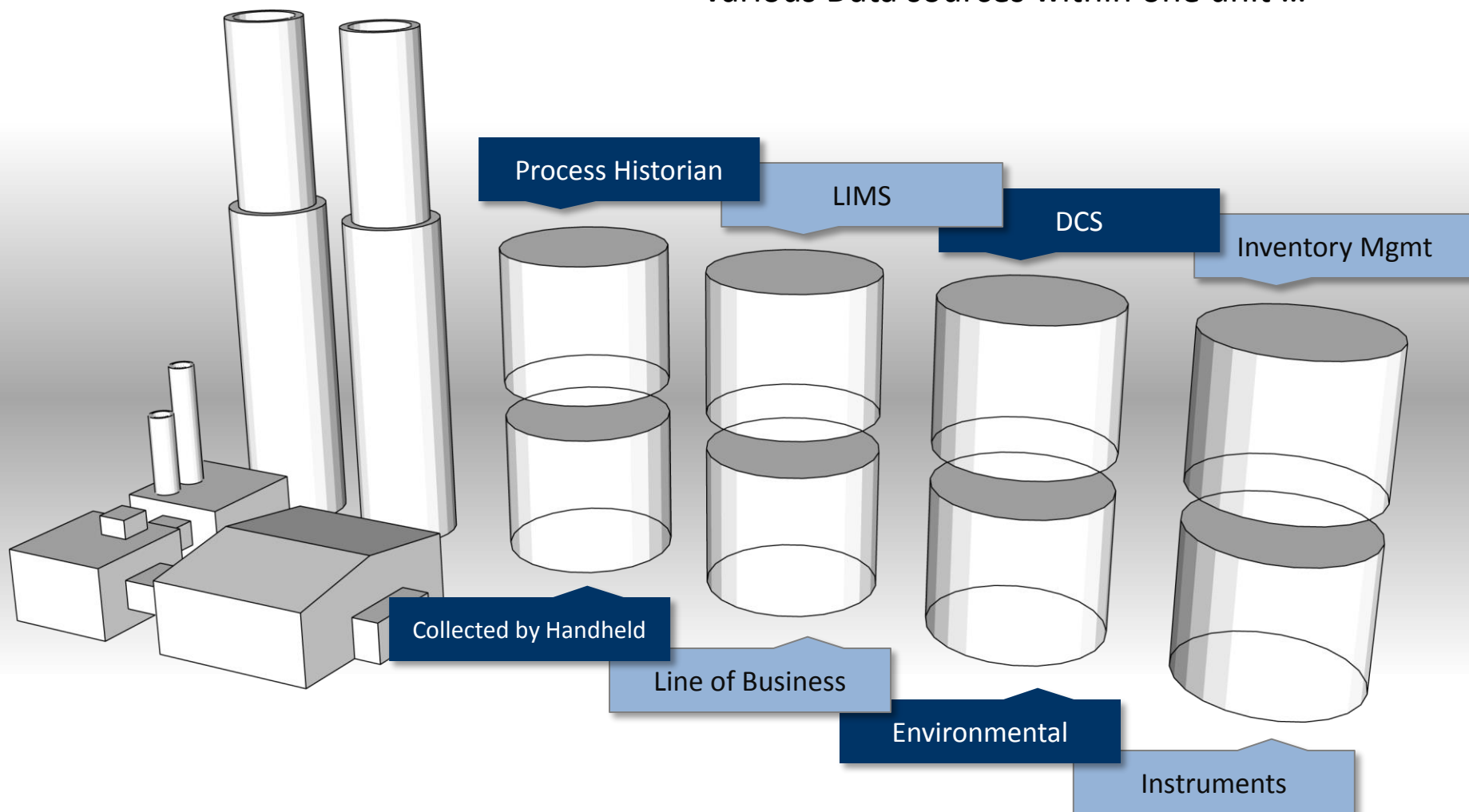
Empowering Business in Real Time.

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- Learn about the value of Microsoft and OSIsoft integration
- Learn about PIWebParts and Datalink for Excel Services and how they complement each other
- Learn about how batch data can be displayed on the web
- Answer Questions and Inspire Action

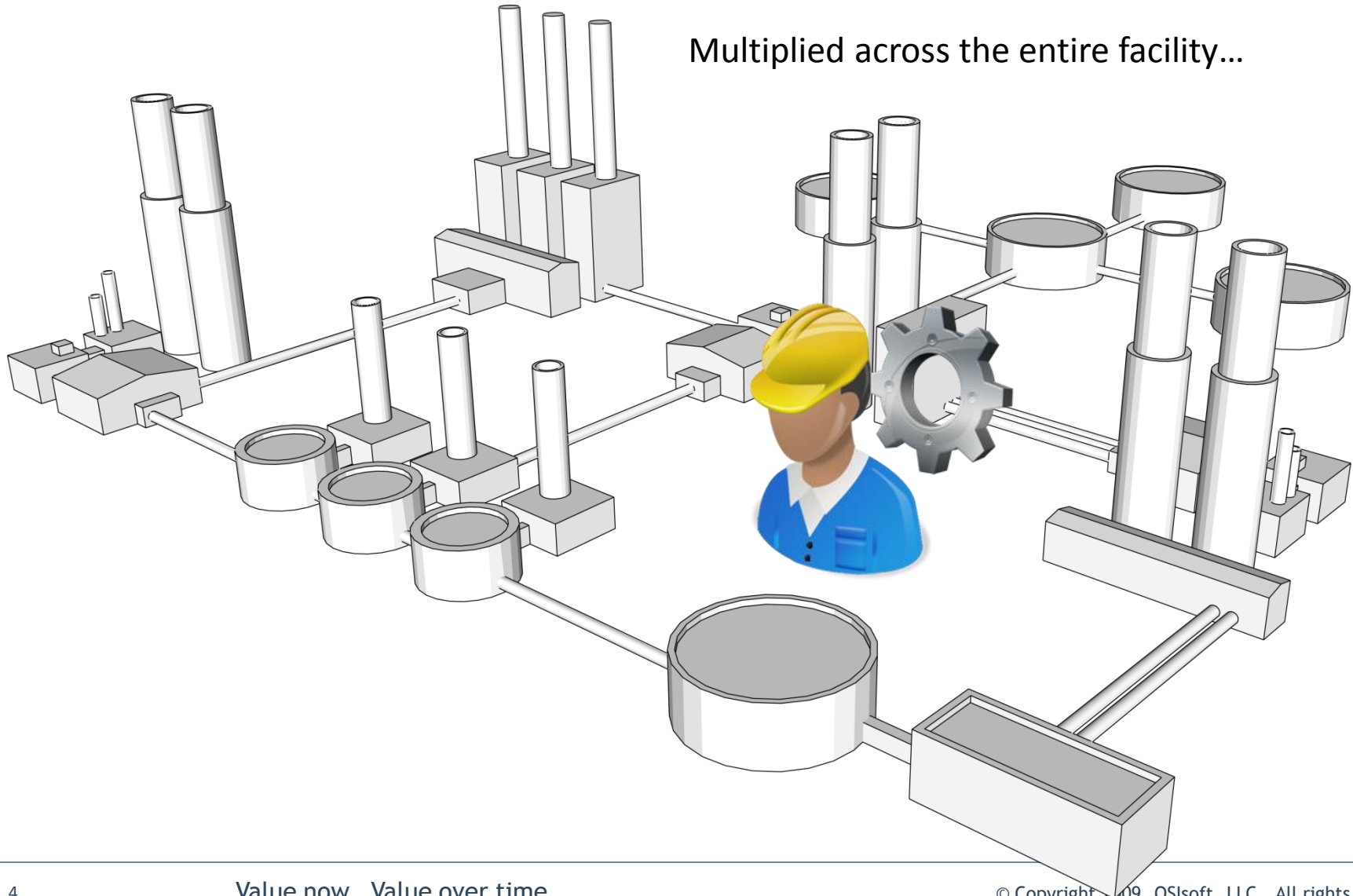
# Challenge: Islands of Information

Various Data sources within one unit ...



# Challenge: Islands of Information

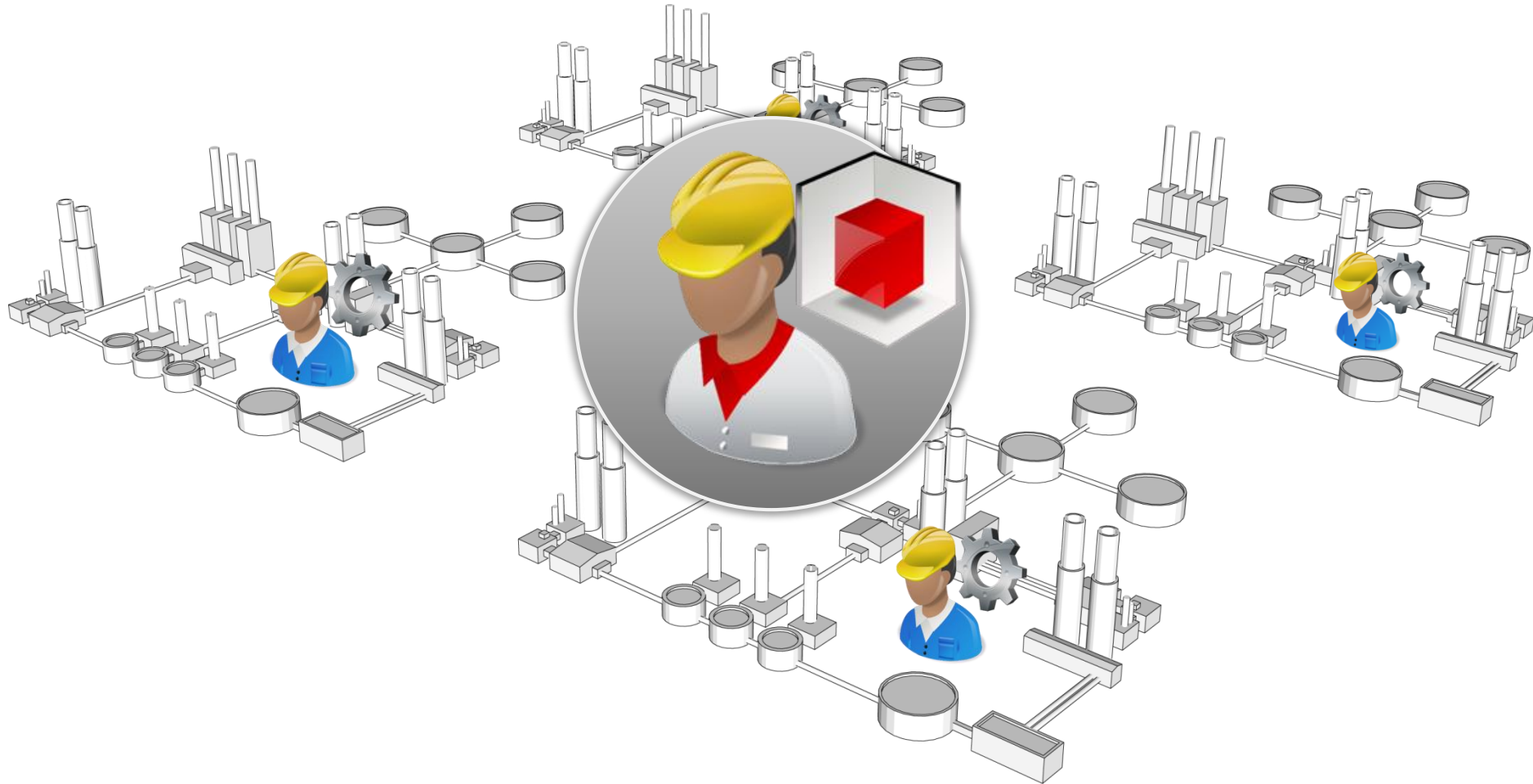
Multiplied across the entire facility...





# Challenge: Islands of Information

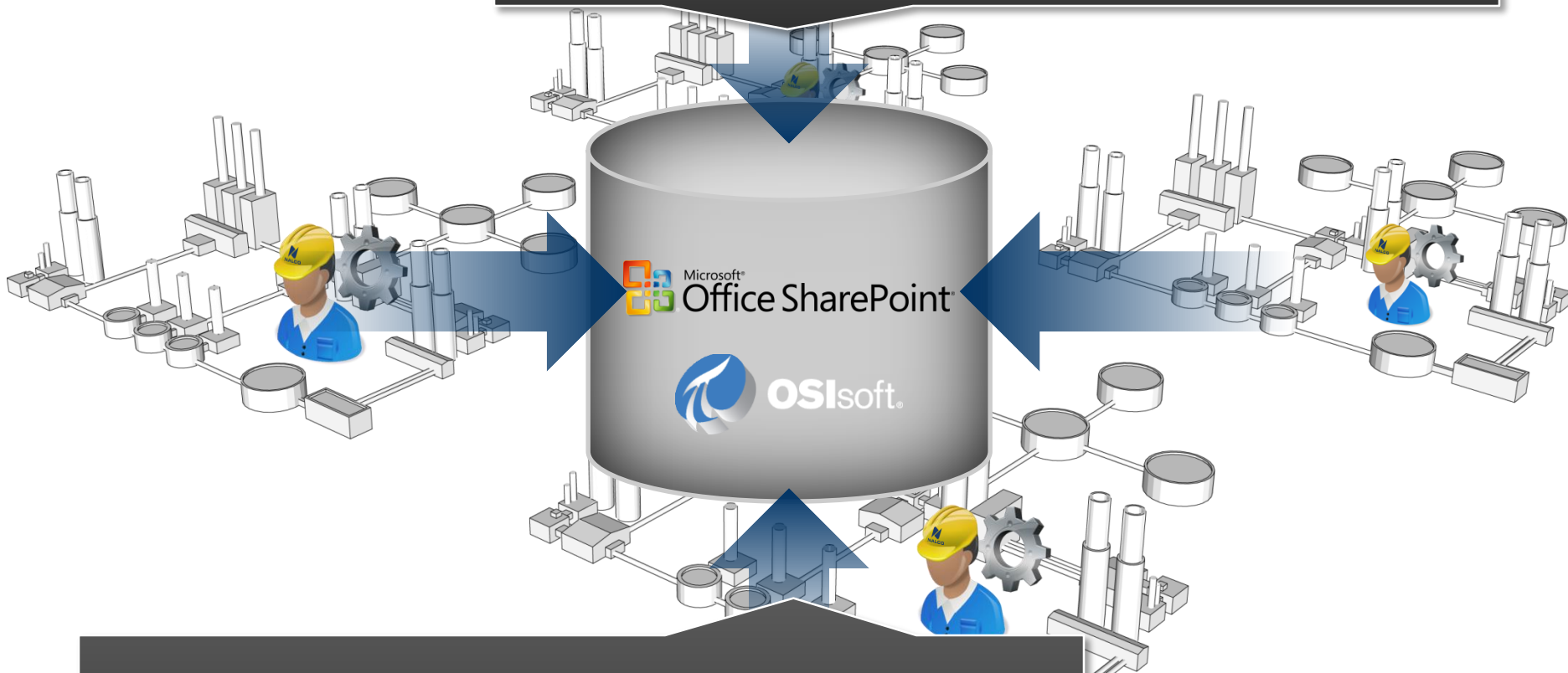
Multiplied across the entire enterprise...



# Challenge: Islands of Information



OSIsoft PI System, PIWebParts, ProcessBook, & Datalink for automated and centralized data collection and analysis



Microsoft SharePoint, PerformancePoint, and Excel to provide secure, role-based views into data

# PIWebParts & Datalink for Excel Services on Microsoft Office Sharepoint Server (MOSS)

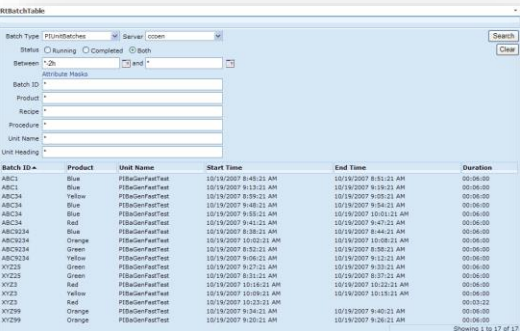


- Composed of
  - PIWebParts - Web parts for data visualization
  - RtBaseline Services - Data access for PIWebParts
    - PI Data, Relational Data, Web Services Data
  - Datalink for Excel Services (DLES) \* - thin client web front end to Datalink/Batchview reports authored in Excel
  - Rich Client Applications - Authoring environment (ProcessBook, Datalink, Batchview)
- Requires
  - Windows Server 2003
  - Windows SharePoint Services 3.0
  - SQL Server 2005 or SQL Express 2005 (can be on separate box)
- Optional
  - \* Microsoft Office SharePoint Server (MOSS) Enterprise Edition (required for Datalink for Excel Services, DLES)
  - Live Communications Server
  - Office 2007

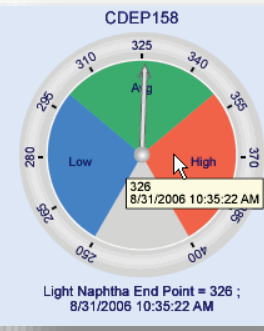
# PIWebParts 2.2 & Datalink for Excel Services



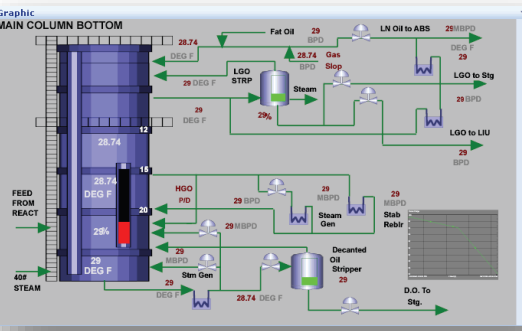
RtBatchTable



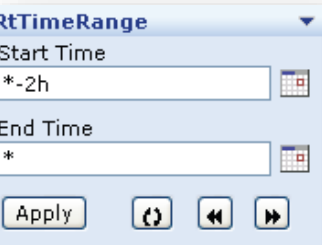
RtGauge



RtGraphic



RtTimeRange



RtTable

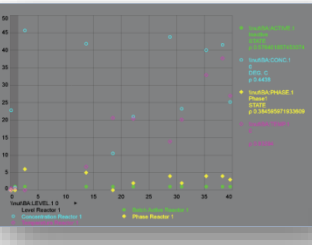
RtTable [1]

ProductID	ProductName	SupplierID	CategoryID	QuantityPerUnit
1	Chai	1	1	12 oz pkgs
2	Chang	1	1	24 - 12 oz bottles
3	Aniseed Syrup	1	2	12 - 550 ml bottles
4	Chef Antons Cajun Seasoning	2	2	48 - 6 oz jars
5	Chef Antons Gumbo Mix	2	2	36 boxes

RtTrend



RtXYPlot



RtTimeSeries

RtTimeSeries

Time	Value
9/14/2006 12:00:53 PM	70
9/14/2006 12:30:56 PM	96

RtValues

RtValues

Current State	Time	Value	Dataset
0	3/9/2009 1:31:00 PM	95.00	\\rtmp\PIWR:A1:Area:Efficiency
9900.00	3/9/2009 1:32:00 PM	9900.00	\\rtmp\PIWR:A1:Area:Gross.Heat.Rate
0	3/9/2009 1:33:00 PM	1140.16	\\rtmp\PIWR:A1:Area:Gross.mW
0	3/9/2009 1:33:00 PM	97.72	\\rtmp\PIWR:A2:Area:Efficiency
9900.00	3/9/2009 1:33:09 PM	9975.00	\\rtmp\PIWR:A2:Area:Gross.Heat.Rate
0	3/9/2009 1:33:00 PM	2127.48	\\rtmp\PIWR:A2:Area:Gross.mW

RtMessenger

Support Team

**Wichita Operations**

- Fred Smith
- Carol Berger

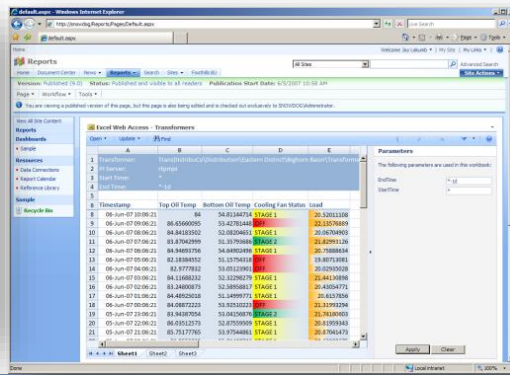
**Cracking Technology**

- Deshawn Barr
- Wilson Adams

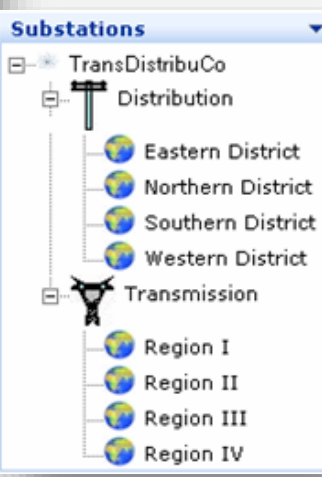
**Production Logistics**

- Carrie Frederickson

PI Datalink for Excel Services



RtTreeView



Operations - Wichita Plant - Windows Internet Explorer

http://moss/BI/Wichita%20Plant.aspx

Live Search

Operations - Wichita Plant

Welcome John Smith | My Site | My Links

NUGREEN

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Wichita Operations

Fred Smith

Carol Berger

Cracking Technology

Deshawn Barr

Wilson Adams

Production Logistics

Carrie Frederickson

Operations Performance Scorecard

	Houston				Little Rock			
	To Date	Today	Target	Trend	To Date	Today	Target	Trend
Safety	0	0			0	0		
Environment	97.1	97.0			99.0	98.6		
Energy Savings	0.4%	0.4%			0.5%	0.7%		
Quality	97.6	97.9			97.3	97.6		
Reliability	95.7	96.4			95.6	96.3		

Process Overview

Wichita Plant

Cracking Process Overview

The diagram illustrates the cracking process at the Wichita Plant. It starts with a 'Raw Material Inventory' (34 TONS/HR Feedrate) entering a 'Cracking Unit'. The output goes to a 'Product Inventory' (10,000 TONS). A 'Fuel Gas Use' section shows '29 MSCF/HR' entering 'Heater No. 1', which then feeds into a 'Reactor' (23 MSCF/HR). An 'Energy Recovery' unit is also shown, connected to the main process flow.

Production Schedule Worksheet

OpenUpdate

Cracking Production Schedule

	Current Inventories			Today's Performance		
	Raw Material	Product	Sales	Energy	Reliability	Quality
	Tons	Days	Tons	Days	T/day	2%95%98%
Houston	30,141	35.9	9,353	7.8	1200	0.5%95.1%97.4%
Tucson	30,166	47.1	8,136	8.1	1000	1.9%96.0%97.3%
Wichita	21,300	26.6	17,300	23.1	750	-0.3%94.3%94.3%

Energy Savings by Time

The chart displays energy savings percentages over time for four locations. Houston (blue line) shows a steady increase from 0.4% in January to 0.7% in August. Little Rock (red line) fluctuates between 0.5% and 0.8%. Tucson (green line) starts at 0.4% and rises to 0.7%. Wichita (grey line) remains relatively flat, starting at 0.4% and ending at 0.5%.

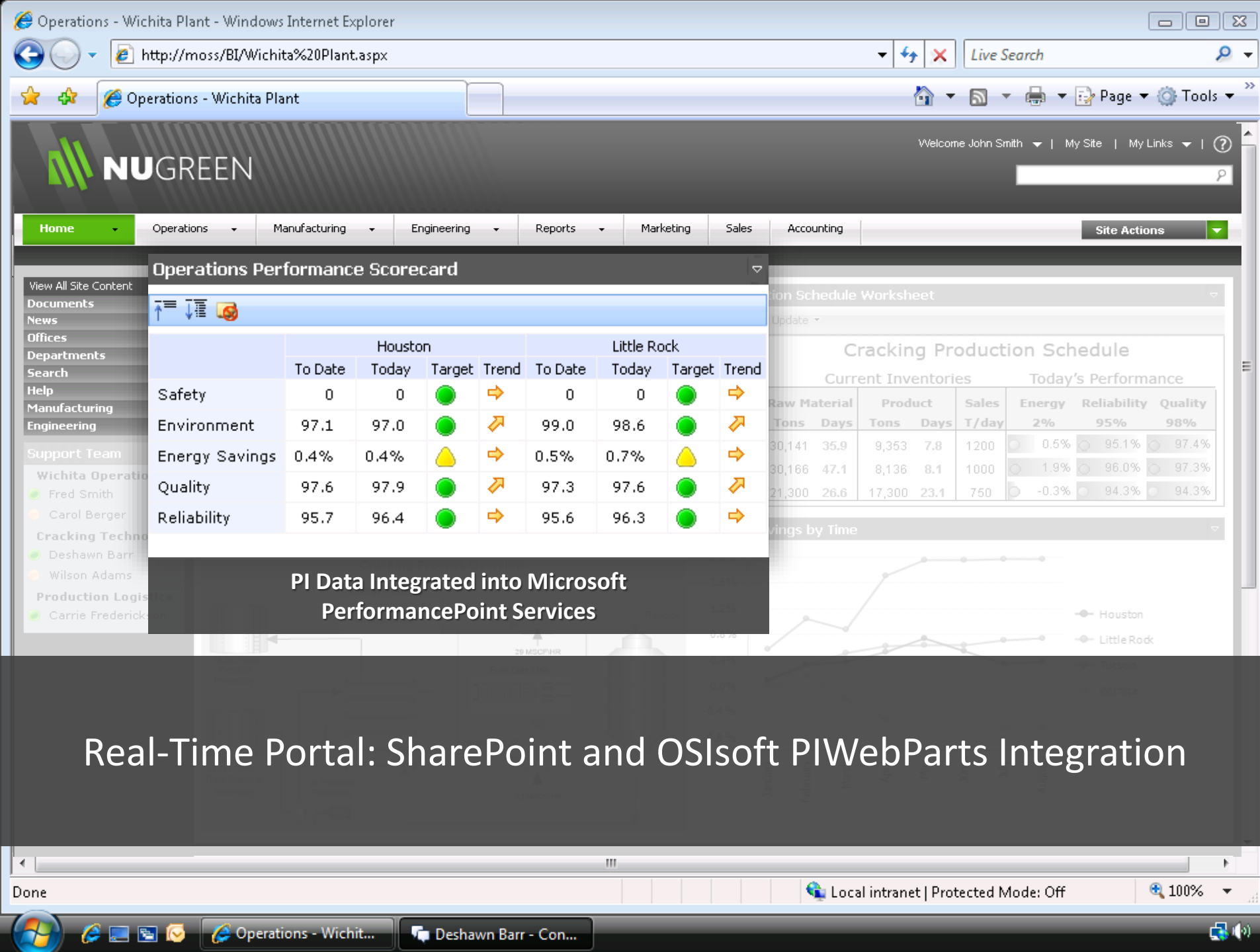
Real-Time Portal: SharePoint, PerformancePoint, and PIWebParts

Done

Local intranet | Protected Mode: Off

100%

Operations - Wichit...Deshawn Barr - Con...





Operations - Wichita Plant - Windows Internet Explorer

http://moss/BI/Wichita%20Plant.aspx

Live Search

Operations - Wichita Plant

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Home Operations Manufacturing Engineering Reports Marketing Sales Accounting Site Actions

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Support Team  
Wichita Operations  
Fred Smith  
Carol Berger  
Cracking Technology  
Deshawn Barr  
Wilson Adams  
Production Logistics  
Carrie Frederickson

### Operations Performance Scorecard

	Houston				
	To Date	Today	Target	Trend	To Date
Safety	0	0	●	→	0
Environment	97.1	97.0	●	→	99.0
Energy Savings	0.4%	0.4%	▲	→	0.5%
Quality	97.6	97.9	●	→	97.3
Reliability	95.7	96.4	●	→	95.6

### Production Schedule Worksheet

Open Update

#### Cracking Production Schedule

	Current Inventories			Today's Performance		
	Raw Material	Product	Sales	Energy	Reliability	Quality
	Tons	Days	Tons	Days	T/day	2% 95% 98%
Houston	30,141	35.9	9,353	7.8	1200	0.5% 95.1% 97.4%
Tucson	30,166	47.1	8,136	8.1	1000	1.9% 96.0% 97.3%
Wichita	21,300	26.6	17,300	23.1	750	-0.3% 94.3% 94.3%

PI Data Displayed Through Excel Services

### Real-Time Portal: SharePoint and OSIsoft PIWebParts Integration

Done

Local intranet | Protected Mode: Off

100%

Operations - Wichit...  
Deshawn Barr - Con...

- View All Site Content
- Documents
- News
- Offices
- Departments
- Search
- Help
- Manufacturing
- Engineering
- Support Team
  - Wichita Operations
    - Fred Smith
    - Carol Berger
  - Cracking Technology
    - Deshawn Barr
    - Wilson Adams
  - Production Logistics
    - Carrie Frederickson

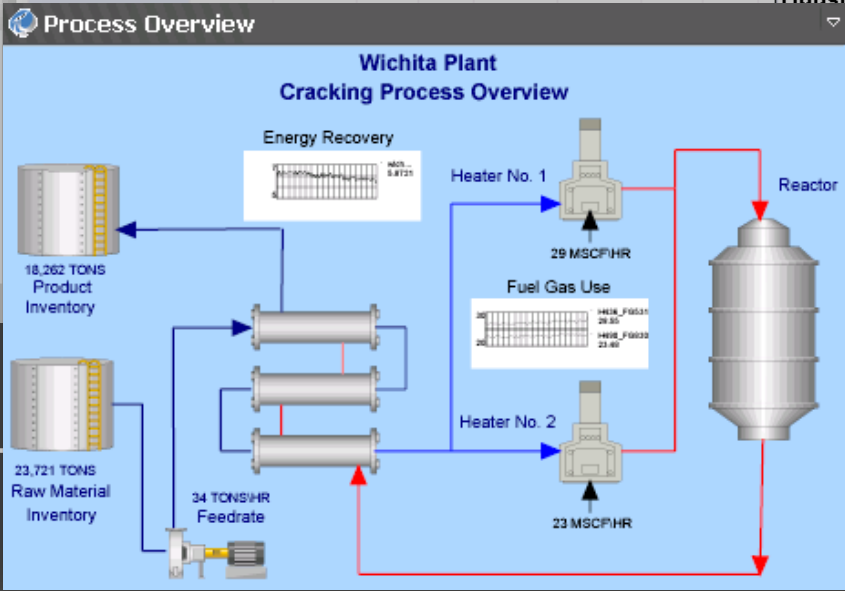
Operations Performance Scorecard

	Houston				Little Rock			
	To Date	Today	Target	Trend	To Date	Today	Target	Trend
Safety	0	0	●	➡	0	0	●	➡
Environment	97.1	97.0	●	➡	99.0	98.6	●	➡
Energy Savings	0.4%	0.4%	●	➡	0.5%	0.7%	●	➡

Production Schedule Worksheet

Cracking Production Schedule

Current Inventories					Today's Performance		
Raw Material	Product	Sales	Energy	Reliability	Quality		
Tons	Days	Tons	Days	T/day	2%	95%	98%
30,141	35.9	9,353	7.8	1200	● 0.5%	● 95.1%	● 97.4%
30,166	47.1	8,136	8.1	1000	● 1.9%	● 96.0%	● 97.3%
21,300	26.6	17,300	23.1	750	● -0.3%	● 94.3%	● 94.3%





- View All Site Content
- Documents
- News
- Offices
- Departments
- Search
- Help
- Manufacturing
- Engineering
- Support Team
  - Wichita Operations
    - Fred Smith
    - Carol Berger
  - Cracking Technology
    - Deshawn Barr
    - Wilson Adams
  - Production Logistics
    - Carrie Frederickson

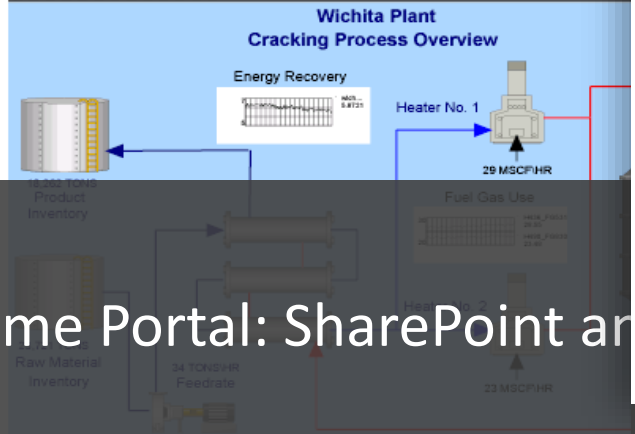
Operations Performance Scorecard

	Houston				Little Rock			
	To Date	Today	Target	Trend	To Date	Today	Target	Trend
Safety	0	0	●	→	0	0	●	→
Environment	97.1	97.0	●	→	99.0	98.6	●	→
Energy Savings	0.4%	0.4%	▲	→	0.5%	0.7%		
Quality	97.6	97.9	●	→	97.3	97.6		
Reliability	95.7	96.4	●	→	95.6	96.3		

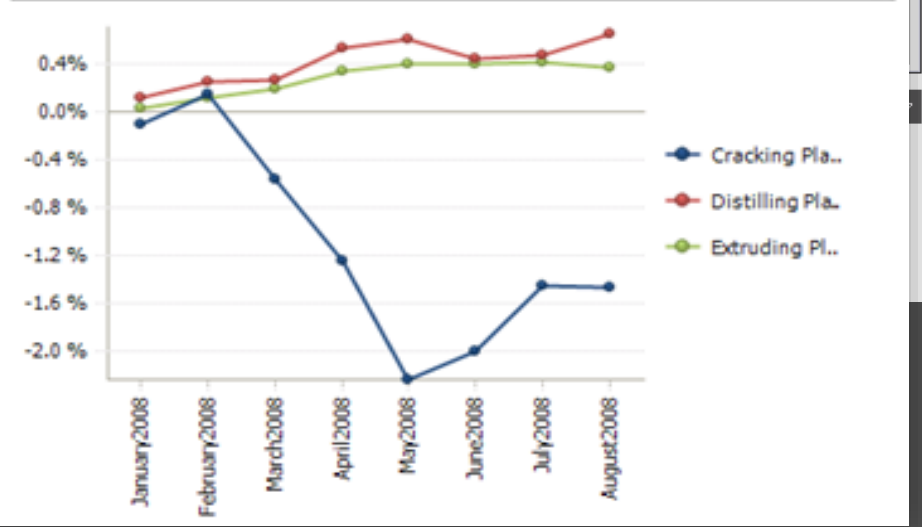
Production Schedule Worksheet

Current Inventories					Today's Performance		
Raw Material	Product	Sales	Energy	Reliability	Quality		
Tons	Days	Tons	Days	T/day	2%	95%	98%

Process Overview

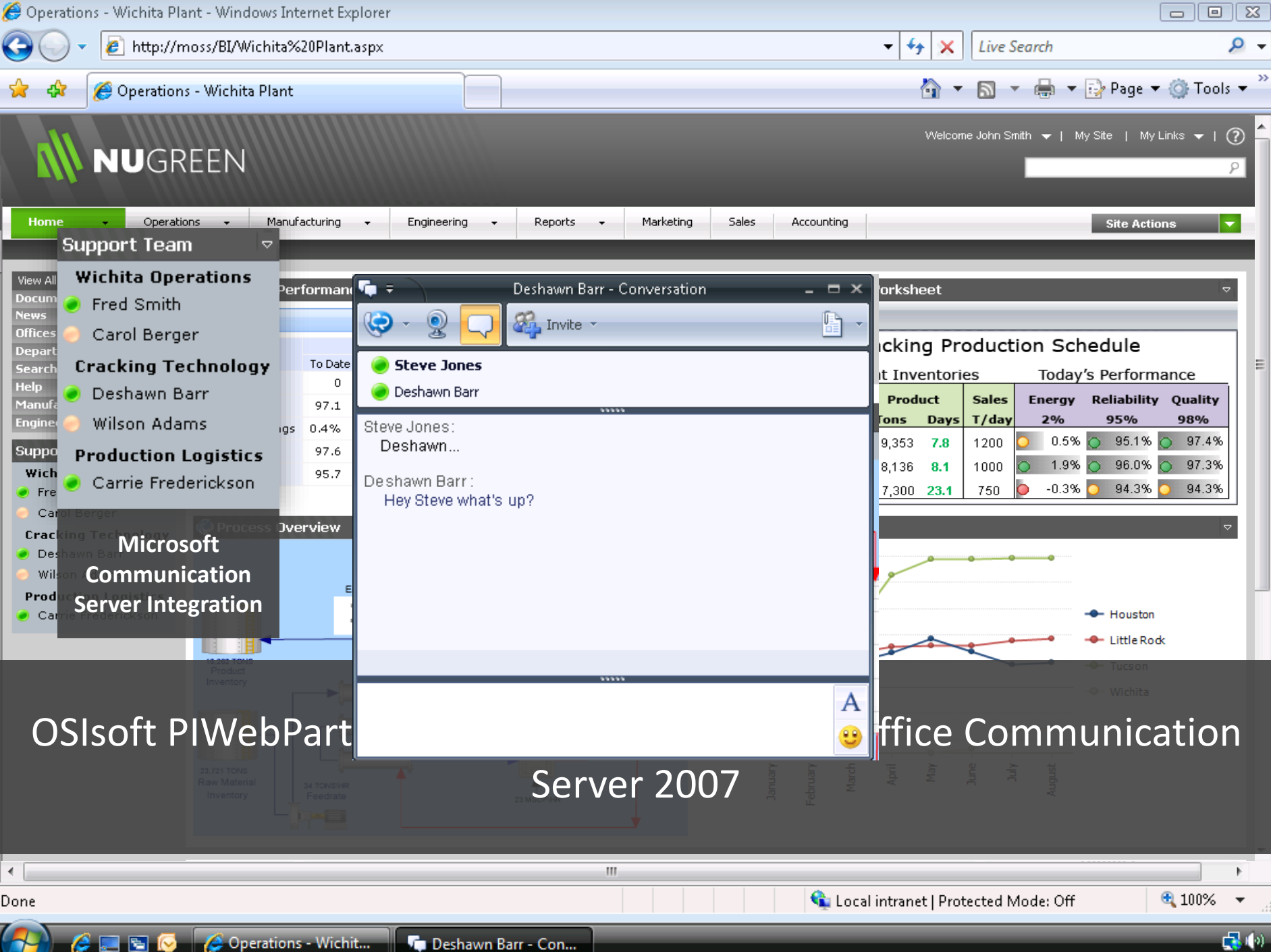


Cracking Production Schedule



Real-Time Portal: SharePoint and

PI Data Integrated into Microsoft PerformancePoint Services



OSIsoft PIWebPart

Server 2007

Office Communication

Operations - Wind Power Portfolio Overview - Windows Internet Explorer

PINotifications Alert - Alert: OCS Notifications Demo

Live Search

Welcome Daniel

All Sites

Reports Marketing Sales Accounting

RtGauge

KW

RtTrend

Done

Local intranet | Protected Mode: Off

100%

PI Notifications:  
Delivery Through Microsoft Office Communication Server 2007

The screenshot displays a web application interface for a wind power portfolio. A notification window is open in the foreground, showing a list of contacts (Daniel Thompson, Tom Daniels) and a message from 'PINotifications Alert' at 12:35 PM. The message content includes an attention alert about a primary turbine failure, an ad-hoc trend link, and a wind power link. The background application shows a dashboard with a map of turbine locations, a circular gauge chart (RtGauge) showing power output in KW, and a line chart (RtTrend) showing power output over time. The interface is accessed via a web browser (Internet Explorer) and includes a search bar and navigation tabs.

[View All Site Content](#)**Documents**

- Shared Documents
- Process Data Document Library

**Lists**

- Calendar
- Tasks

**Discussions**

- Team Discussion

**Sites****People and Groups**[Recycle Bin](#)[Home](#) > [BioPharma](#)**RtGraphic: BioPharma Plant Summary****BIOPHARMA PLANT STATUS****MON OCT 26 2009 12:21:52**

BioPharma Plant Batch Activity

BioPharma Plant Equip Utilization

Recent Batch Activity: 10/26/2009 5:20:44 PM BATCH START: RE\_20091026\_121928 [Product: S12345 | Recipe: API\_REC1PE | Unique ID: 37 ]

# PI Batches This Month: **57**# PI Batches This Week: **7**# PI Batches Yesterday: **0**# PI Batches Today: **7****FACTORY 1**

Factory 1

**MEDIA\_PREP Overview** **TA001**

MP\_20091026\_121837

ABC123

UP\_MP\_FORM-1-1

Elapsed Time

0. hrs, 2. min, 53. sec

**TA002**

MP\_20091026\_111425

ABC123

UP\_MP\_END-1-1

0. hrs, 1. min, 47. sec

**BF008**

Inactive

Inactive

Inactive

0. hrs, 21. min, 52. sec

**BF009**

MP\_20091026\_111425

ABC123

UP\_BF\_END-1-1

0. hrs, 1. min, 45. sec

**CIP Overview** **CIP005**

Inactive

Inactive

Inactive

1. hrs, 54. min, 13. sec

**CIP006**

Inactive

Inactive

Inactive

97. hrs, 9. min, 42. sec

**FACTORY 3****FINISHED\_PHARM** **TABLET****PRESS\_401**

TP\_20091026\_121950

S12345

UP\_TABLET\_START:1

Elapsed Time

0. hrs, 1. min, 46. sec

**FACTORY 2****BLENDED** **MIXER\_101**

BL\_20091026\_122014

S12345

0. hrs, 1. min, 14. sec

**REACTOR\_102**

Inactive

Inactive

Inactive

1. hrs, 56. min, 1. sec

**COOLER\_103**

Inactive

Inactive

Inactive

1. hrs, 54. min, 16. sec

**REACTORS** **RE1200**

RE\_20091026\_121928

S12345

RE1200-1

0. hrs, 0. min, 28. sec

**RE1260**

Inactive

Inactive

Inactive

121. hrs, 43. min, 38. sec

**RE1300**

RE\_20091026\_121900

S12345

RE1300-1

0. hrs, 2. min, 5. sec

**RE1360**

Inactive

Inactive

Inactive

141. hrs, 48. min, 5. sec

# Current Batch Production Status Across Different Sites or Factories





View All Site Content

Documents

- Shared Documents
- Process Data
- Document Library

Lists

- Calendar
- Tasks

Discussions

- Team Discussion

Sites

People and Groups

Recycle Bin

Home > BioPharma

RtGraphic: BioPharma Plant Summary

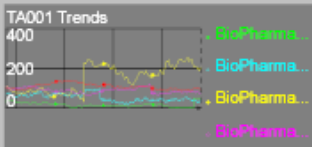
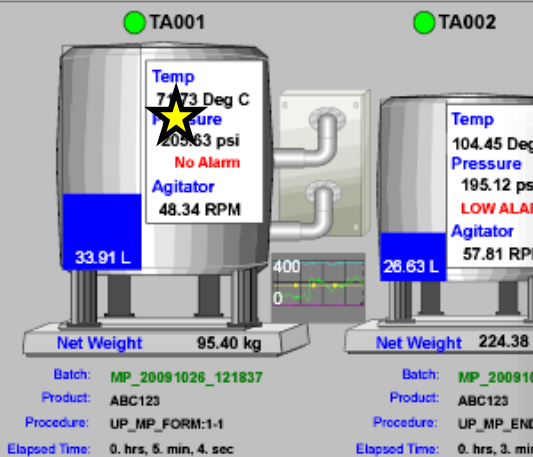
BIOPHARMA FACTORY 1 MEDIA\_PREP OVERVIEW

MON OCT 26 2009 12:24:3

BioPharma Plant Status

Factory 1 Overview

Factory 1 CIP



Operation: OPERATION START: PR\_MP\_FORMUP\_MP\_FORM-1-1/OP\_MP\_SETUP-1-1  
Phase: PHASE END: PR\_MP\_FORMUP\_MP\_FORM-1-1/OP\_MP\_SETUP-1-1/IS  
TA002 Operation: OPERATION: PHASE ST

F1 MEDIA\_PREP Multi Batch

F1 MEDIA\_PREP Single Batch

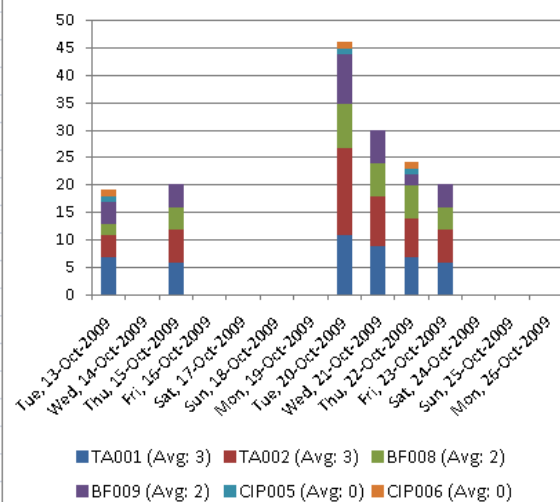


Drill Down Into a Process Area for More Details

## BioPharma Plant: Factory 1 - Batch Production Metrics

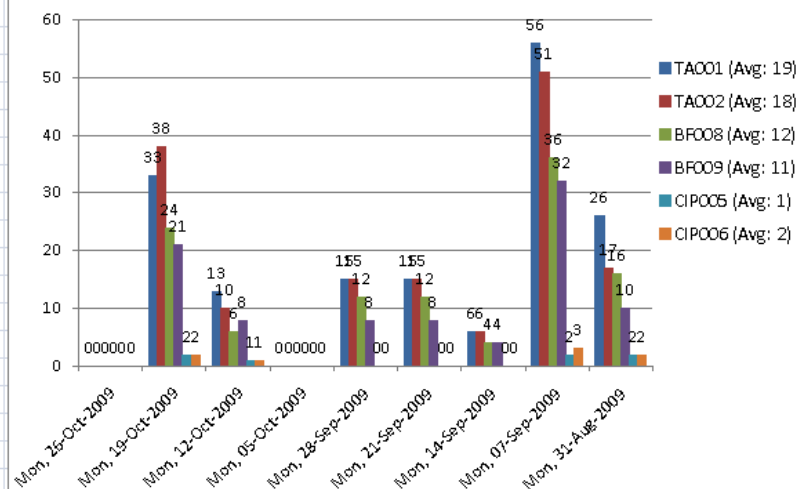
Stacked Column

### Factory 1: Daily Total PI UnitBatches



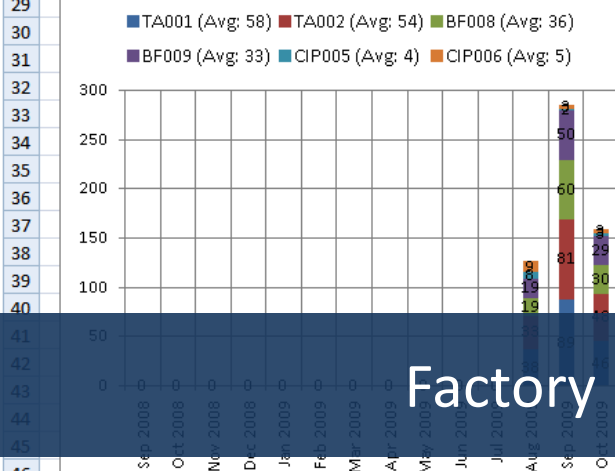
Clustered Column

### Factory 1: Weekly Total # PI UnitBatches



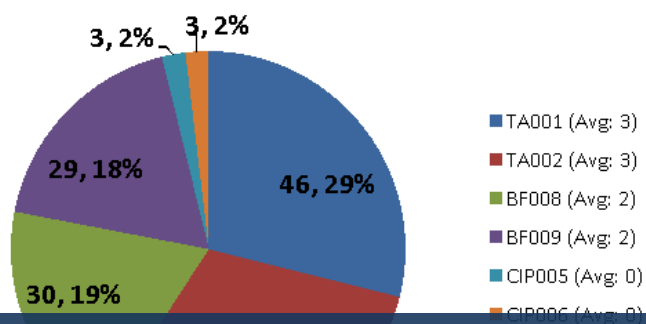
Stacked Column

### Factory 1: Monthly Total # PI UnitBatches



PIE Chart

### Factory 1: Total Daily PI Batches



# Factory 1 Batch Production Metrics by Unit

Start Time 10/20/2009 9:00:00

End Time 10/20/2009 16:00:00

Apply



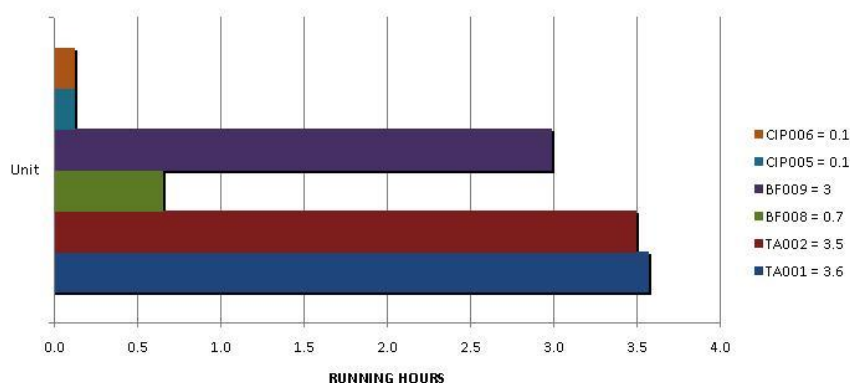
Web Page Links BioPharma Home Factory 1 Home Factory 1 Overview Factory 1 Alarms Events by Batch Factory 1 Alarms Events by Unit Factory 1 Equipment Utilization Factory 1 Batch Log Factory 1 Batch CPP Analysis UP\_MP\_FORM Factory 1 Batch Cycle Time Factory 1 Batch Trend Comparison Factory 1 Batch Trend Comparison DLES Add new link

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
--	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

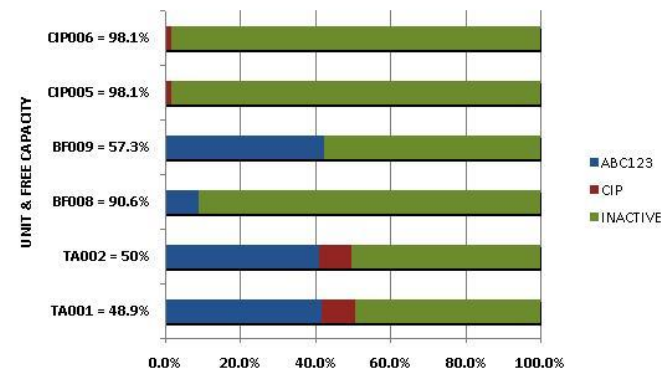
**START TIME:** 2009-10-20T09:00:00  
**END TIME:** 2009-10-20T16:00:00

**TIME DURATION:** 420 minutes  
7.0 hours  
0.29 days

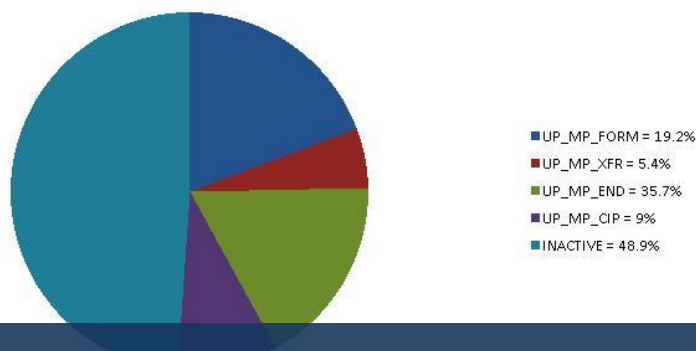
EQUIPMENT UTILIZATION RUNNING HOURS



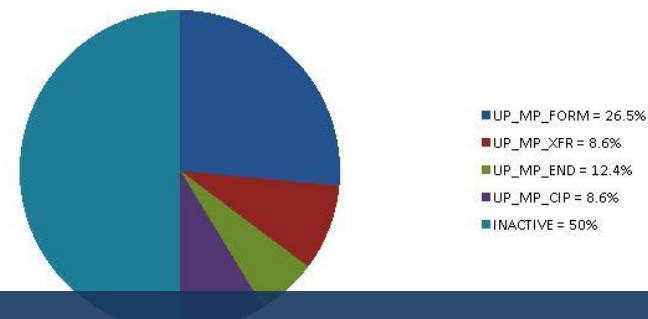
EQUIPMENT UTILIZATION BY PRODUCT



TA001 EQUIPMENT UTILIZATION BY UNIT PROCEDURE



TA002 EQUIPMENT UTILIZATION BY UNIT PROCEDURE



## Factory 1 Equipment Utilization



# Factory 1 Equipment Utilization History



# MOSS & PI WebParts & DLES

## BioPharma Factory 1 Alarms & Events by Unit TA001

**RTTimeRange**

Select Time Range

Start Time: \*-10d

End Time: \*

Apply [Refresh] [Previous] [Next]

Excel Web Access - BioPharma Factory 1 Alarm Events

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
--	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

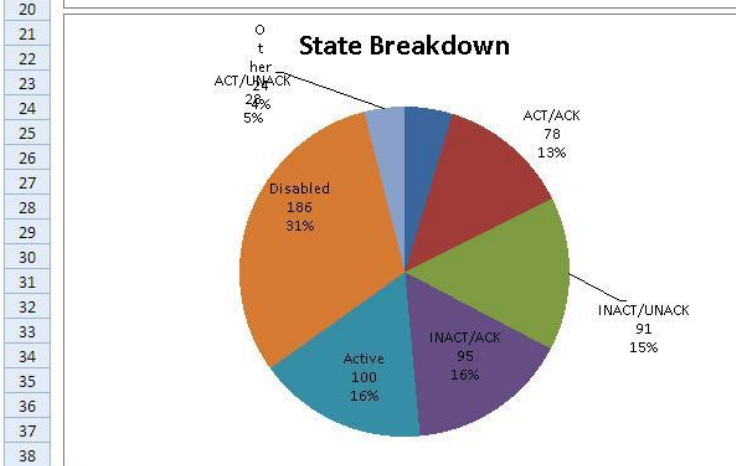
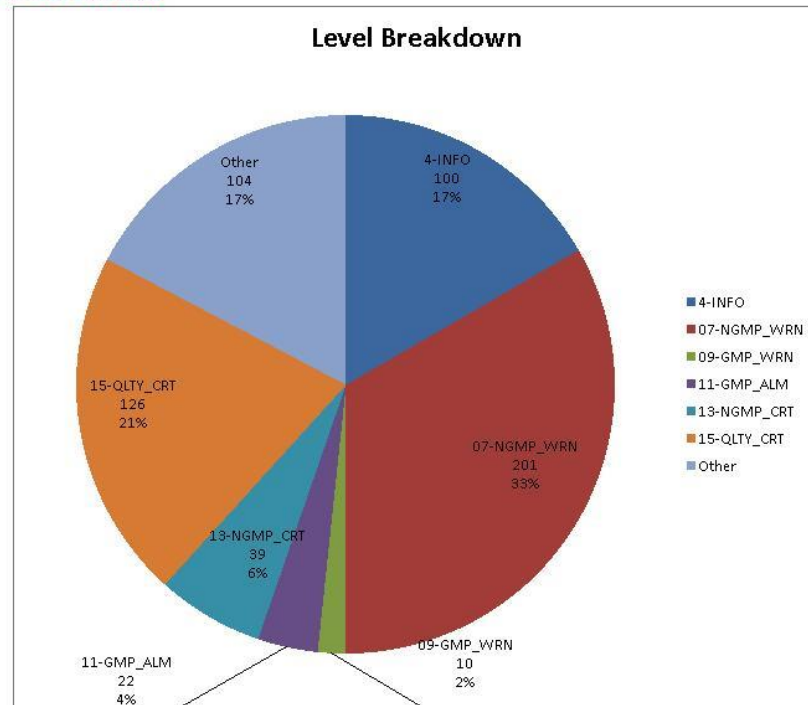
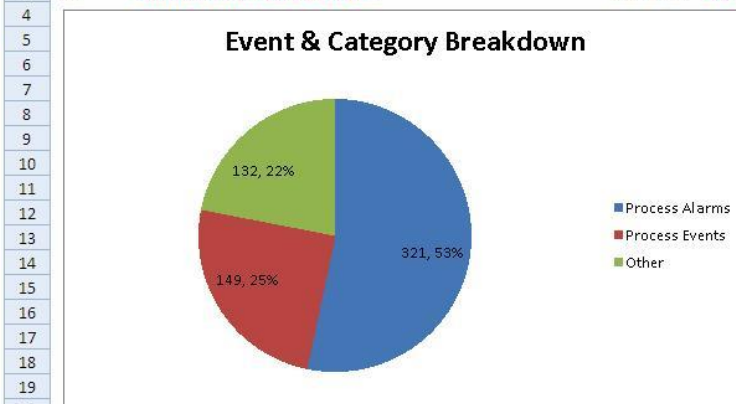
Unit: **BioPharma\Factory 1\MEDIA\_PREP\TA001**

Tag: **BioPharma:TA001.AE.All**

Start Time: **2009-09-01T19:11:36**

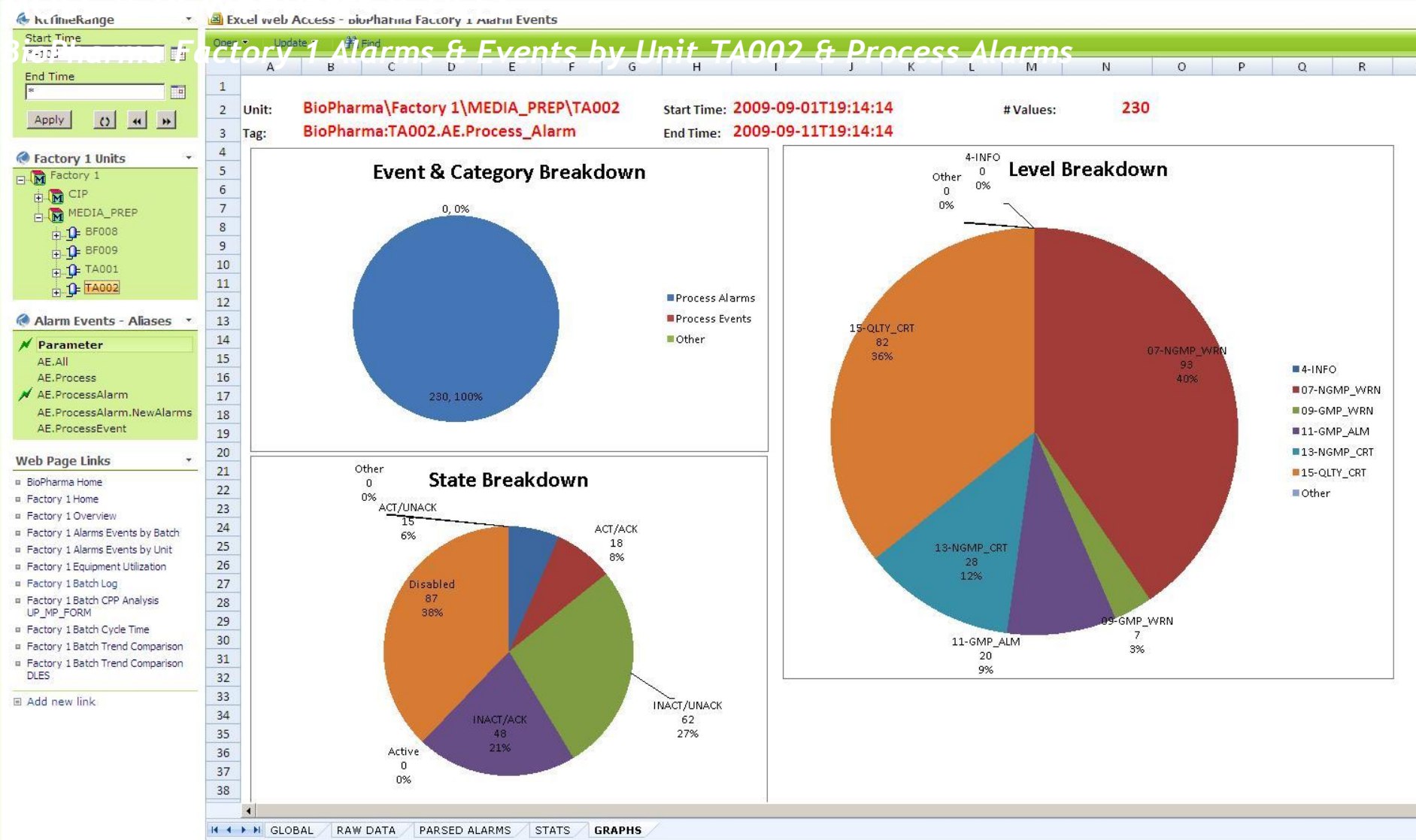
End Time: **2009-09-11T19:11:36**

# Values: **602**



GLOBAL RAW DATA PARSED ALARMS STATS **GRAPHS**

## Alarms & Events Rollup KPIs by Unit TA001



# Alarms & Events Rollup KPIs by Unit TA002 & Process Alarms



# MOSS & PI WebParts & DLES

The screenshot displays the 'BioPharma Factory 1 / Alarms Events by Batch' window. On the left, there are three main sections: 'Factory 1 Units' showing a tree view of units like CIP, MEDIA\_PREP, BF008, BF009, TA001, and TA002; 'Alarm Events - Aliases' listing parameters such as AE.All, AE.Process, AE.ProcessAlarm, AE.ProcessAlarm.NewAlarms, and AE.ProcessEvent; and 'Web Page Links' providing navigation options like BioPharma Home, Factory 1 Home, Factory 1 Overview, and various batch-related links.

The central area features a large table with columns: A (Index), B (Timestamp), C (Event Type), D (Category), E (Area), F (Unit), G (Module), H (Module Desc), I (Attribute), J (State), K (Level), L (Desc1), and M (Desc2). The table lists numerous alarms, many of which are highlighted in red (e.g., ALARM, DIS-CLTY\_CRT) or green (e.g., ACT/UNACK).

A blue callout box with white text is overlaid on the table, stating: "You can have another similar display for Alarms by BATCH".

Start Time  
8/25/2009

End Time  
\*

Apply

## Web Page Links

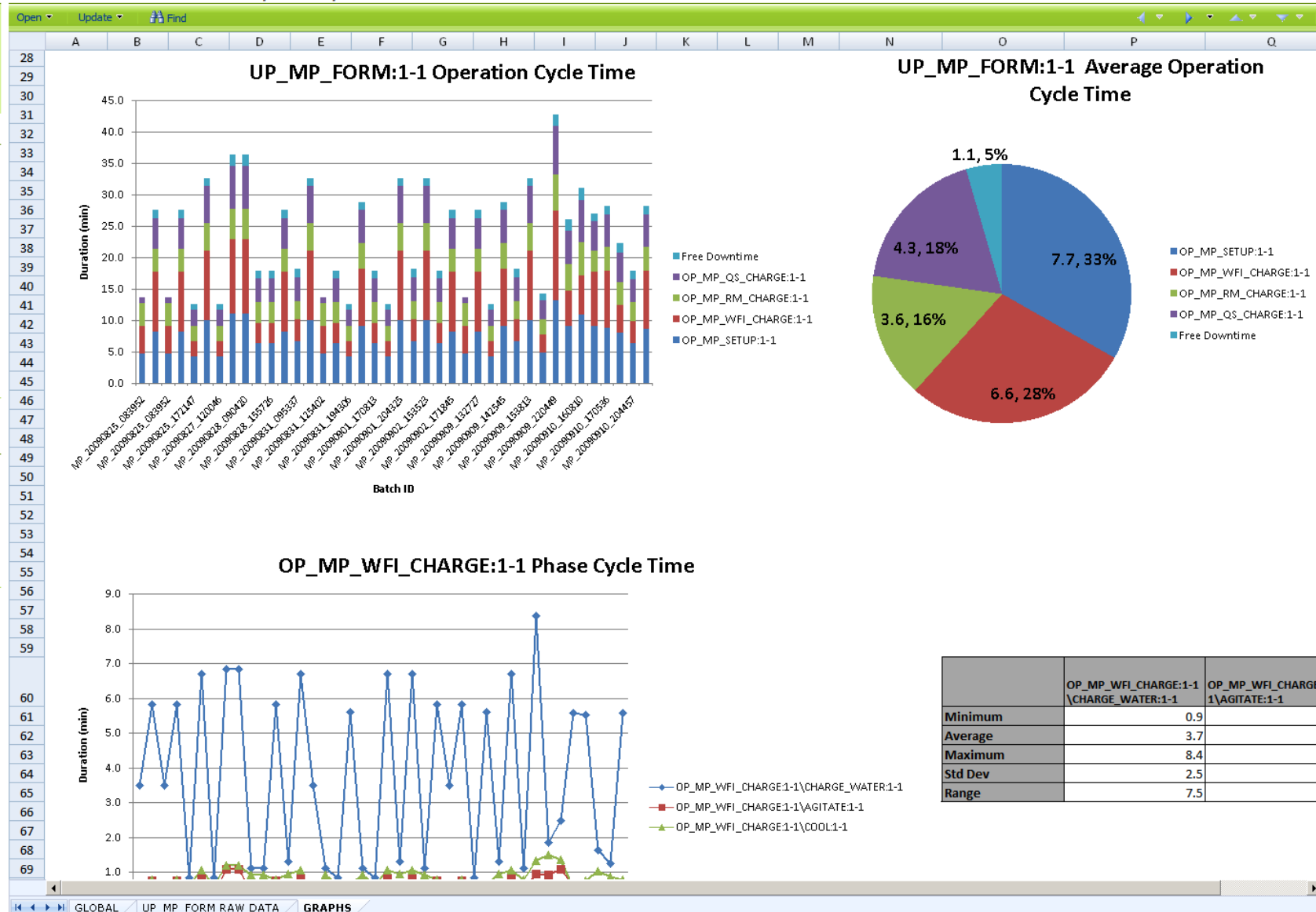
- BioPharma Home
- Factory 1 Home
- Factory 1 Overview
- Factory 1 Alarms Events by Batch
- Factory 1 Alarms Events by Unit
- Factory 1 Equipment Utilization
- Factory 1 Equipment Utilization History
- Factory 1 Batch Log
- Factory 1 Batch CPP Analysis
- UP\_MP\_FORM
- Factory 1 Batch Cycle Time
- Factory 1 Batch Trend Comparison
- Factory 1 Batch Trend Comparison DLES

Add new link

## PI PB Display Links

- BioPharma Plant Equipment Utilization
- Factory 1 MEDIA\_PREP Single Batch
- Factory 1 MEDIA\_PREP Multiple Batch
- Factory 1 CIP Single Batch
- Factory 1 CIP Multiple Batch

Add new link

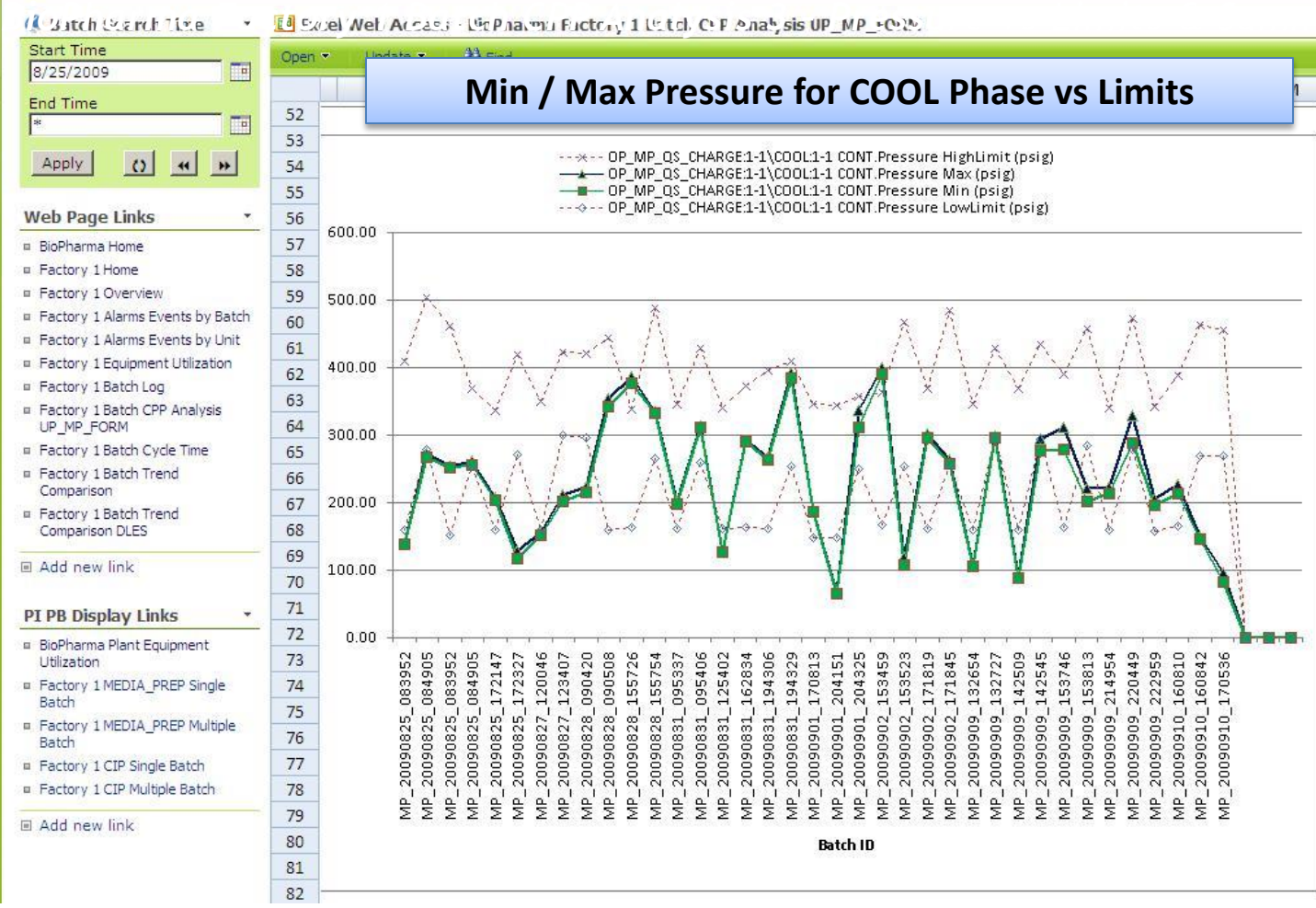


## Batch Cycle Time (Across a Range of Batches)

Value now. Value over time.

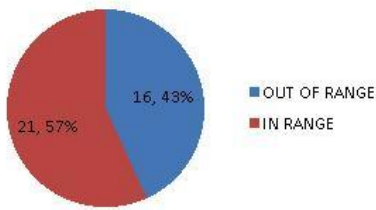


# MOSS & PI WebParts & DLES

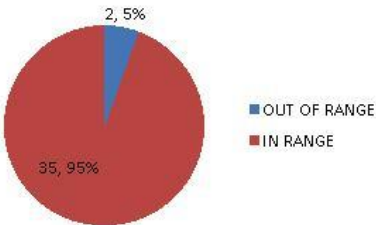


## Limit Evaluation Rollup Stats for All Batches

OP\_MP\_QS\_CHARGE:1-1\\COOL:1-1  
CONT.Pressure Low Limit  
Evaluation



OP\_MP\_QS\_CHARGE:1-1\\COOL:1-1  
CONT.Pressure High Limit  
Evaluation



## Batch Critical Process Parameter Analysis (Across a Range of Batches)

# MOSS & PI WebParts & DLES

## Warning Factory 1 Batch CPP Analysis 4 - XY Bubble Chart

Batch Search Time  
8/25/2009  
End Time  
\*  
Apply

### Web Page Links

- BioPharma Home
- Factory 1 Home
- Factory 1 Overview
- Factory 1 Alarms Events by Batch
- Factory 1 Alarms Events by Unit
- Factory 1 Equipment Utilization
- Factory 1 Batch Log
- Factory 1 Batch CPP Analysis UP\_MP\_FORM
- Factory 1 Batch Cycle Time
- Factory 1 Batch Trend Comparison
- Factory 1 Batch Trend Comparison DLES

### Add new link

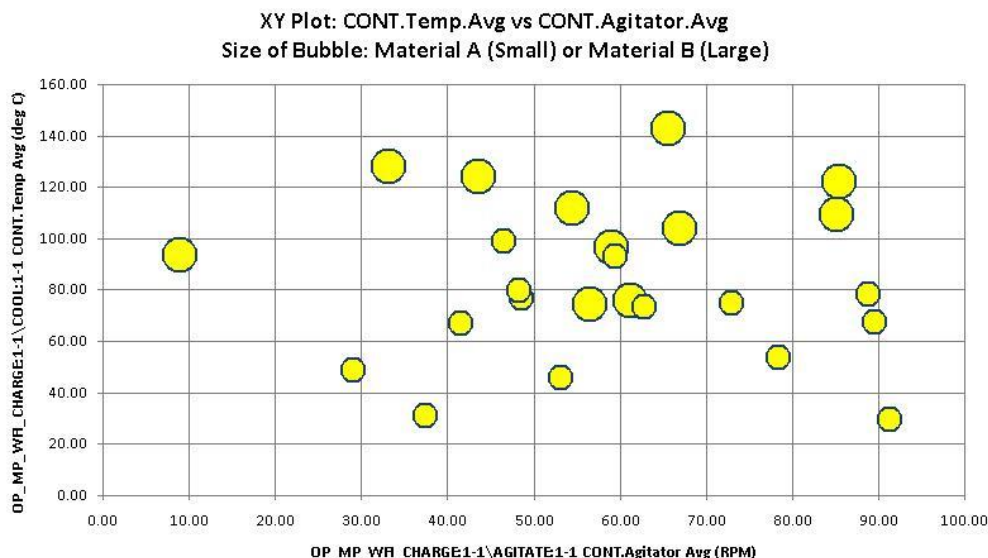
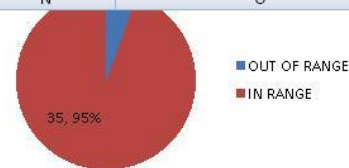
### PI PB Display Links

- BioPharma Plant Equipment Utilization
- Factory 1 MEDIA\_PREP Single Batch
- Factory 1 MEDIA\_PREP Multiple Batch
- Factory 1 CIP Single Batch
- Factory 1 CIP Multiple Batch

### Add new link

Excel Web Access - BioPharma Factory 1 Batch CPP Analysis UP\_MP\_FORM

Batch ID	MP_20090825_083	MP_20090825_084	MP_20090825_089	MP_20090825_084	MP_20090825_172	MP_20090825_120	MP_20090827_123	MP_20090828_090	MP_20090828_090	MP_20090828_155	MP_20090831_095	MP_20090831_125	MP_20090831_162	MP_20090831_194	MP_20090901_170	MP_20090901_204	MP_20090902_153	MP_20090902_171	MP_20090902_132	MP_20090909_132	MP_20090909_142	MP_20090909_153	MP_20090909_153	MP_20090909_214	MP_20090909_220	MP_20090909_222	MP_20090910_160	MP_20090910_160	MP_20090910_170
----------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------



	X-AXIS	Y-AXIS
	OP_MP_WFI_CHARGE:1-1\AGITATE:1-1 CONT.Aggitator Avg (RPM)	OP_MP_WFI_CHARGE:1-1\COOL:1-1 CONT.Temp Avg (deg C)
Minimum		8.8
Average		59.6
Maximum		91.1
Std Dev		17.7
Range		82.3

OP_MP_RM_CHARGE:1-1\MP_RM_CHARGE:1-1 ACT	
SMALL BUBBLES	MATERIAL A
LARGE BUBBLES	MATERIAL B

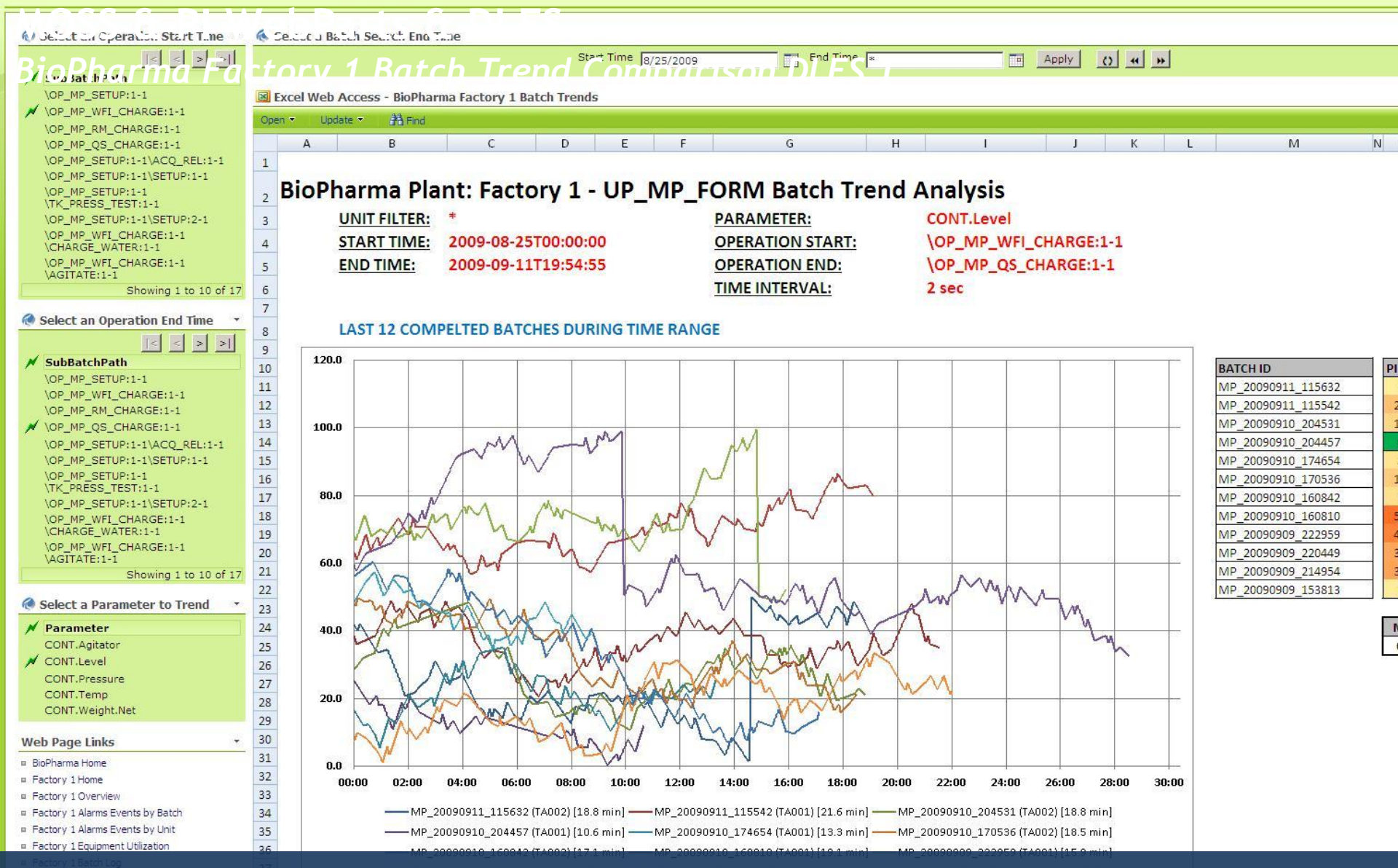
**X Axis** = Agitator Avg from WFI\_CHARGE\AGITATE Phase

**Y Axis** = Temp Avg from WFI\_CHARGE\COOL Phase

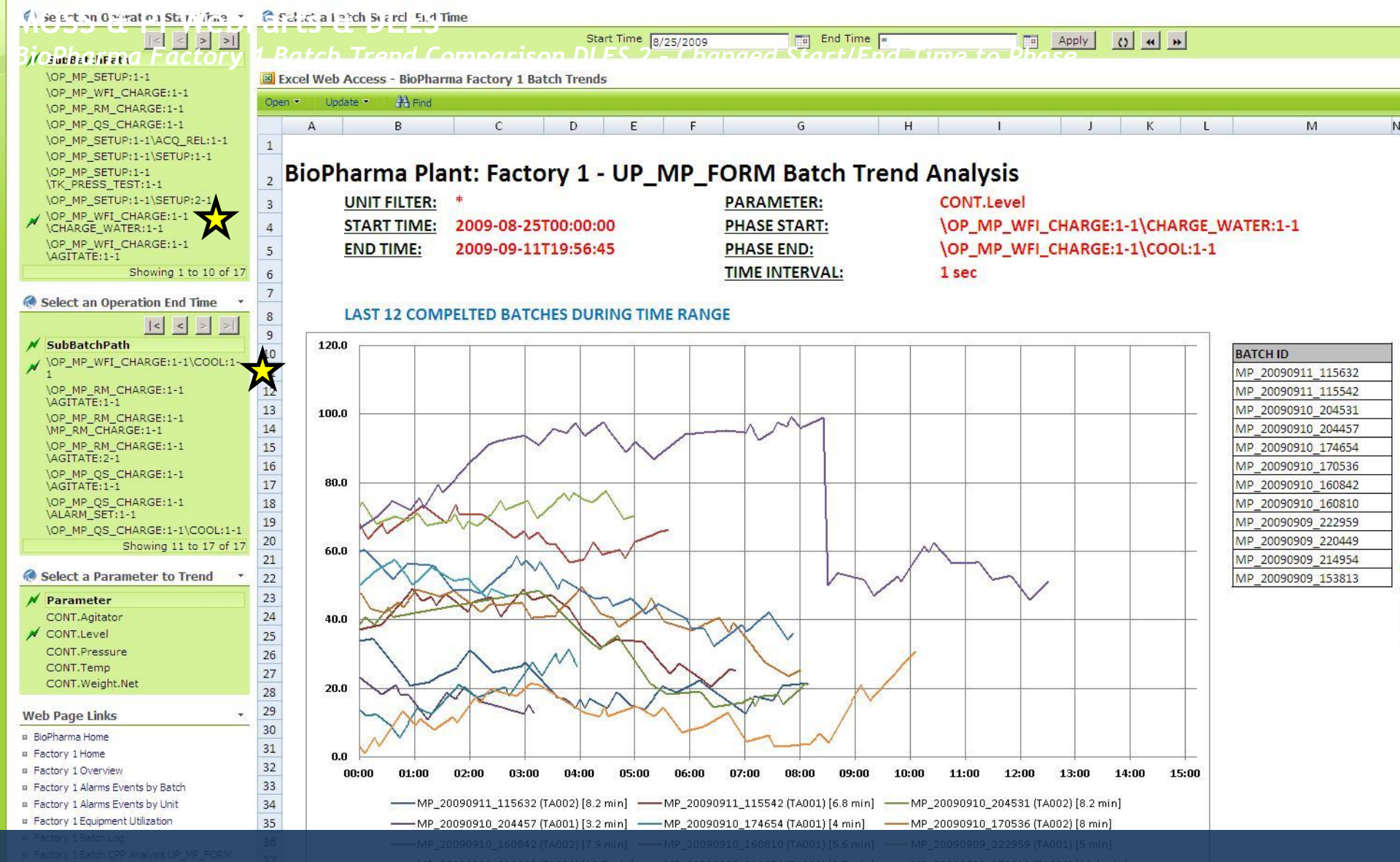
**Bubble Size** = Charge Material from MP\_RM\_CHARGE Phase (Small = *Material A*, Large = *Material B*)

## Batch CPP Analysis XY Bubble Chart (Across a Range of Batches)





## Batch Trend Comparisons (Across Operations)



## Batch Trend Comparisons (Across Phases)

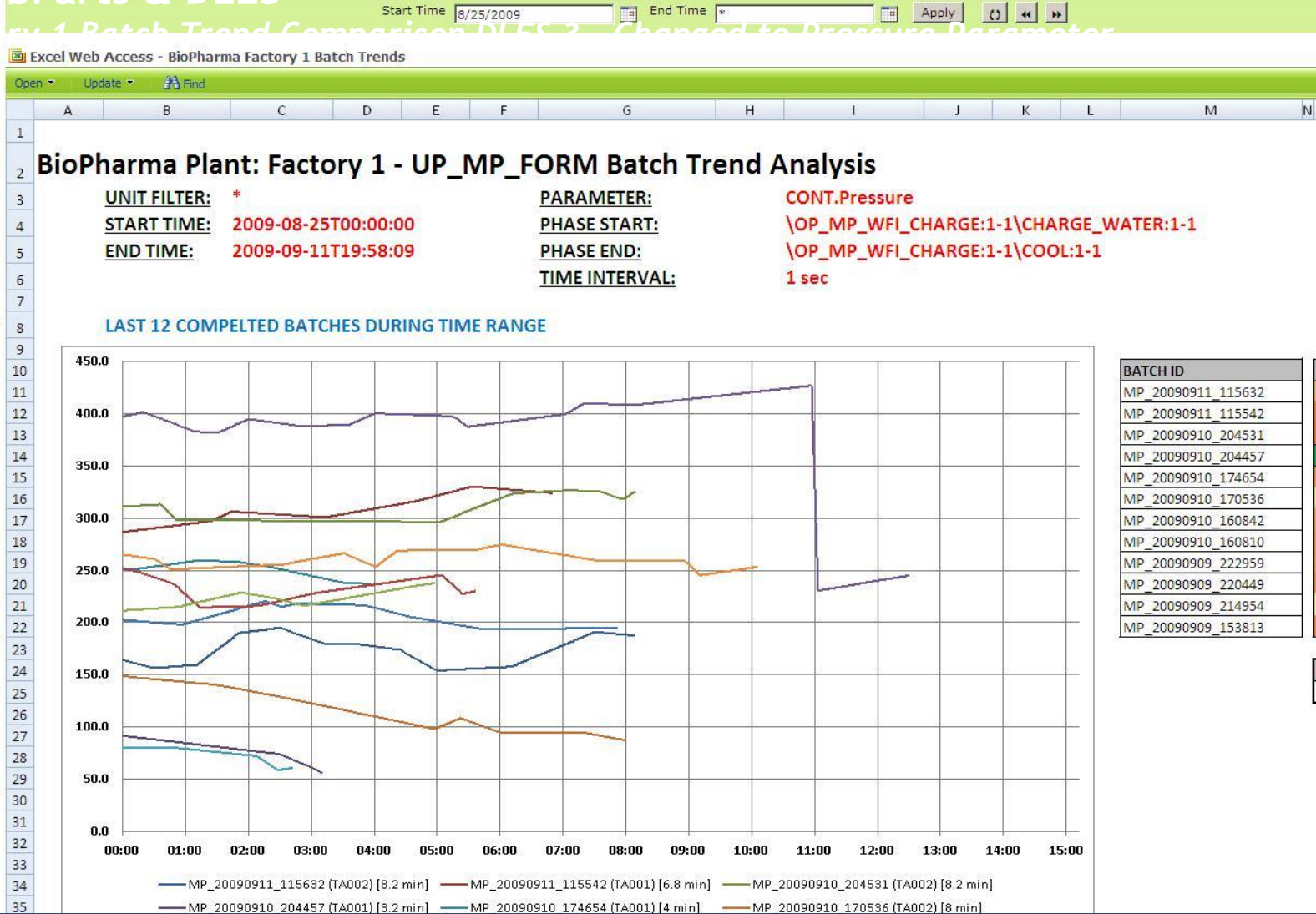


SubBatchPath  
 \OP\_MP\_WFI\_CHARGE:1-1  
 \OP\_MP\_RM\_CHARGE:1-1  
 \OP\_MP\_QS\_CHARGE:1-1  
 \OP\_MP\_SETUP:1-1\ACQ\_REL:1-1  
 \OP\_MP\_SETUP:1-1\SETUP:1-1  
 \OP\_MP\_SETUP:1-1  
 \TK\_PRESS\_TEST:1-1  
 \OP\_MP\_SETUP:1-1\SETUP:2-1  
 \OP\_MP\_WFI\_CHARGE:1-1  
 \CHARGE\_WATER:1-1  
 \OP\_MP\_WFI\_CHARGE:1-1  
 \AGITATE:1-1

Select an Operation End Time  
 SubBatchPath  
 \OP\_MP\_WFI\_CHARGE:1-1\COOL:1-1  
 \OP\_MP\_RM\_CHARGE:1-1  
 \AGITATE:1-1  
 \OP\_MP\_RM\_CHARGE:1-1  
 \MP\_RM\_CHARGE:1-1  
 \OP\_MP\_RM\_CHARGE:1-1  
 \AGITATE:2-1  
 \OP\_MP\_QS\_CHARGE:1-1  
 \AGITATE:1-1  
 \OP\_MP\_QS\_CHARGE:1-1  
 \ALARM\_SET:1-1  
 \OP\_MP\_QS\_CHARGE:1-1\COOL:1-1

Select a Parameter to Trend  
 Parameter  
 CONT.Agitator  
 CONT.Level  
 CONT.Pressure  
 CONT.Temp  
 CONT.Weight.Net

Web Page Links  
 BioPharma Home  
 Factory 1 Home  
 Factory 1 Overview  
 Factory 1 Alarms Events by Batch  
 Factory 1 Alarms Events by Unit  
 Factory 1 Equipment Utilization  
 Factory 1 Batch Log  
 Factory 1 Batch CPP Analysis UP\_MP\_FORM



# Batch Trend Comparisons (Changed Parameter to Pressure)

MOSS, PI WebParts & DLES  
BioPharma Factory 1

Select an Operation End Time

SubBatchPath

Showing 1 to 10 of 17

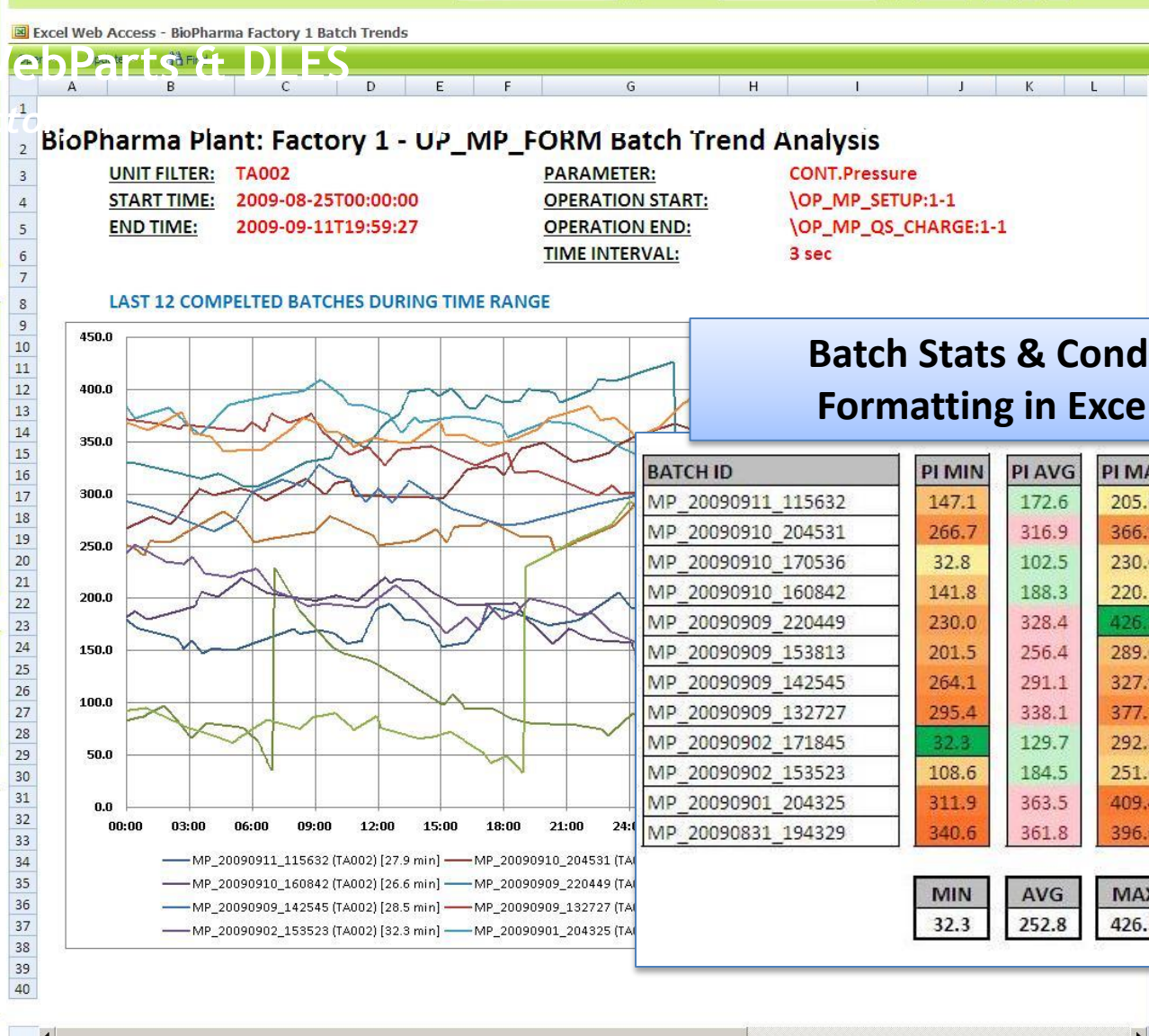
Select a Parameter to Trend

Parameter

CONT.Agitator  
CONT.Level  
CONT.Pressure  
CONT.Temp  
CONT.Weight.Net

Web Page Links

- BioPharma Home
- Factory 1 Home
- Factory 1 Overview
- Factory 1 Alarms Events by Batch
- Factory 1 Alarms Events by Unit
- Factory 1 Equipment Utilization
- Factory 1 Batch Log
- Factory 1 Batch CPP Analysis UP\_MP\_FORM
- Factory 1 Batch Cycle Time
- Factory 1 Batch Trend Comparison
- Factory 1 Batch Trend Comparison DLES
- Add new link



Parameters

The following parameters are used in this workbook:

TIME\_INTERVAL 3

UNIT TA002

### Batch Stats & Conditional Formatting in Excel 2007

BATCH ID	PI MIN	PI AVG	PI MAX	PI RANGE	PI STDEV
MP_20090911_115632	147.1	172.6	205.6	58.5	13.6
MP_20090910_204531	266.7	316.9	366.9	100.2	26.5
MP_20090910_170536	32.8	102.5	230.0	197.2	36.4
MP_20090910_160842	141.8	188.3	220.1	78.4	21.6
MP_20090909_220449	230.0	328.4	426.3	196.3	56.2
MP_20090909_153813	201.5	256.4	289.0	87.5	18.2
MP_20090909_142545	264.1	291.1	327.9	63.8	14.7
MP_20090909_132727	295.4	338.1	377.1	81.7	25.4
MP_20090902_171845	32.3	129.7	292.8	260.5	88.1
MP_20090902_153523	108.6	184.5	251.6	143.0	35.2
MP_20090901_204325	311.9	363.5	409.4	97.4	23.4
MP_20090831_194329	340.6	361.8	396.0	55.4	13.2

MIN	AVG	MAX	MAX	MAX
32.3	252.8	426.3	260.5	88.1

## Batch Trend Comparisons (Filter on TA002 Unit Batches)



# Conclusions



# Conclusions and Key Takeaways



**MOSS & PIWebParts Provides Instant Access to Real-Time and Historical Information**

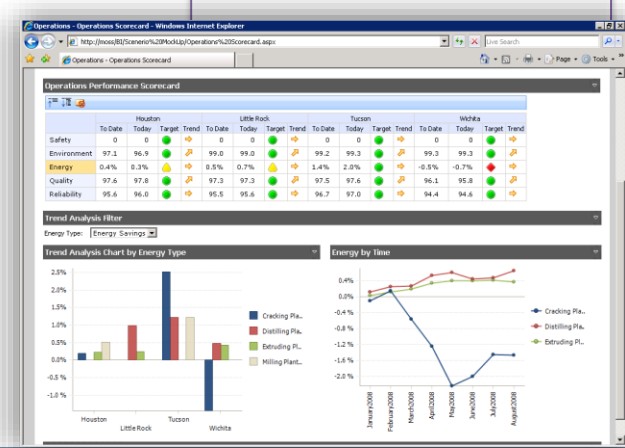
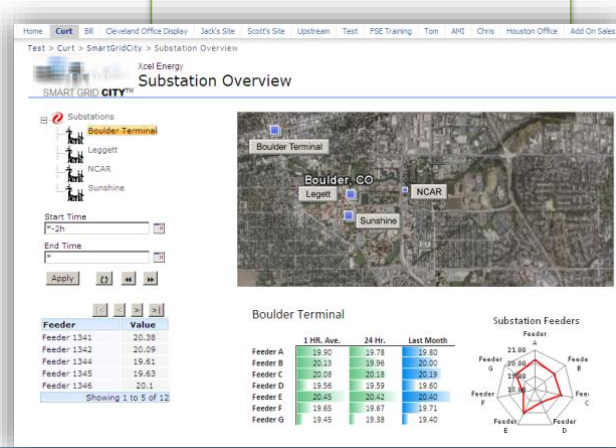
- Increases Enterprise Visibility of Assets & Plant Floor Data
- Facilitates Communication & Collaboration
- RIGHT data, RIGHT CONTEXT, in REAL-TIME
- Familiar and Dynamic User Interface Increases User Adoption
- Configuration Based Solution

**PI Datalink for Excel Services Unlocks Additional Value**

- Equipment & Batch Based Reports exposed through web browser
- Integrates easily with PIWebParts
- Leverage Excel 2007 Conditional Formatting & Graphics to identify process trends
- Configuration Based Solution
- Excel Services Requires MOSS Enterprise

**Additional OSIsoft & Microsoft Integration Significantly Raises the Bar**

- Integration with BI Platform: Analysis Services & PerformancePoint Services
- PI Notifications and Office Communications Server
- SharePoint Enterprise Search
- InfoPath Forms Server
- SharePoint Business Data Catalog





# Thank you

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