Who Moved My PI?

Presented by **Gopal GopalKrishnan, P.E.**
Solution Architect

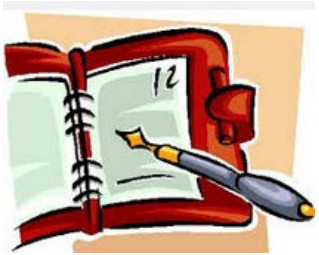
Jie Chou
Systems Engineer

Who Moved My PI?

Many of you know a classic PI System - tag based - with ProcessBook and DataLink; VBA and ActiveX Controls allowed customization and it was all good. But change is inevitable - "Who moved my Cheese?" - and along came AF, EF, Coresight and other asset centric PI capabilities. Even more, the changing IT landscape such as cloud, big data, mobility etc. means further disruptions and you are left to grapple with - where do I start, and how do I proceed? But you know that you must respond quickly to evolving user expectations.

Join us in this session as we review the use of the PI System stack to get rapid insights from data – whether you are trouble-shooting a process or working on OEE reporting or energy tracking or product costing or condition-based maintenance, among others. Self-service data analytics using models targeted to specific use cases is key to rapid time-to-value; this talk includes demos using Microsoft PowerBI and its extensibility features. And, stay tuned for more on Coresight extensibility .

Topics



- Big data - Where do I start?
  - Use relevant components for rapid time-to-value
- Examples - Visual exploration – self-service BI
  - Process troubleshooting –
    - Paper & Pulp – Reel winder (discrete operations)
    - Food & Beverage – Filter press cycle time
  - Energy management - Motors
  - Chemicals usage, Product costing, CBM (condition-based maintenance), OEE…
- Asset Health – Where do I start?
- PI System Sandbox and Call to Action

Big data – where do I start?

Big data is like teenage sex…

Everyone talks about it

Nobody really knows how to do it

Everyone thinks everyone else is doing it

So everyone claims they are doing it...

Paper & Pulp
Reel Winder (discrete operations)

Winder Operations

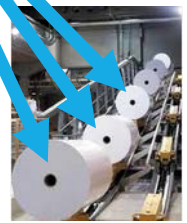
~ 45 minutes per Reel

Between Sets
~ 2 minutes

Build a Set (winder spinning)
~ 6 minutes

Between Reels
~ 10 minutes

~ 3 Rolls in a Set



~ 30-40 reels per day

~ 3 to 5 sets per reel

~ 100 sets per day

Winder production data

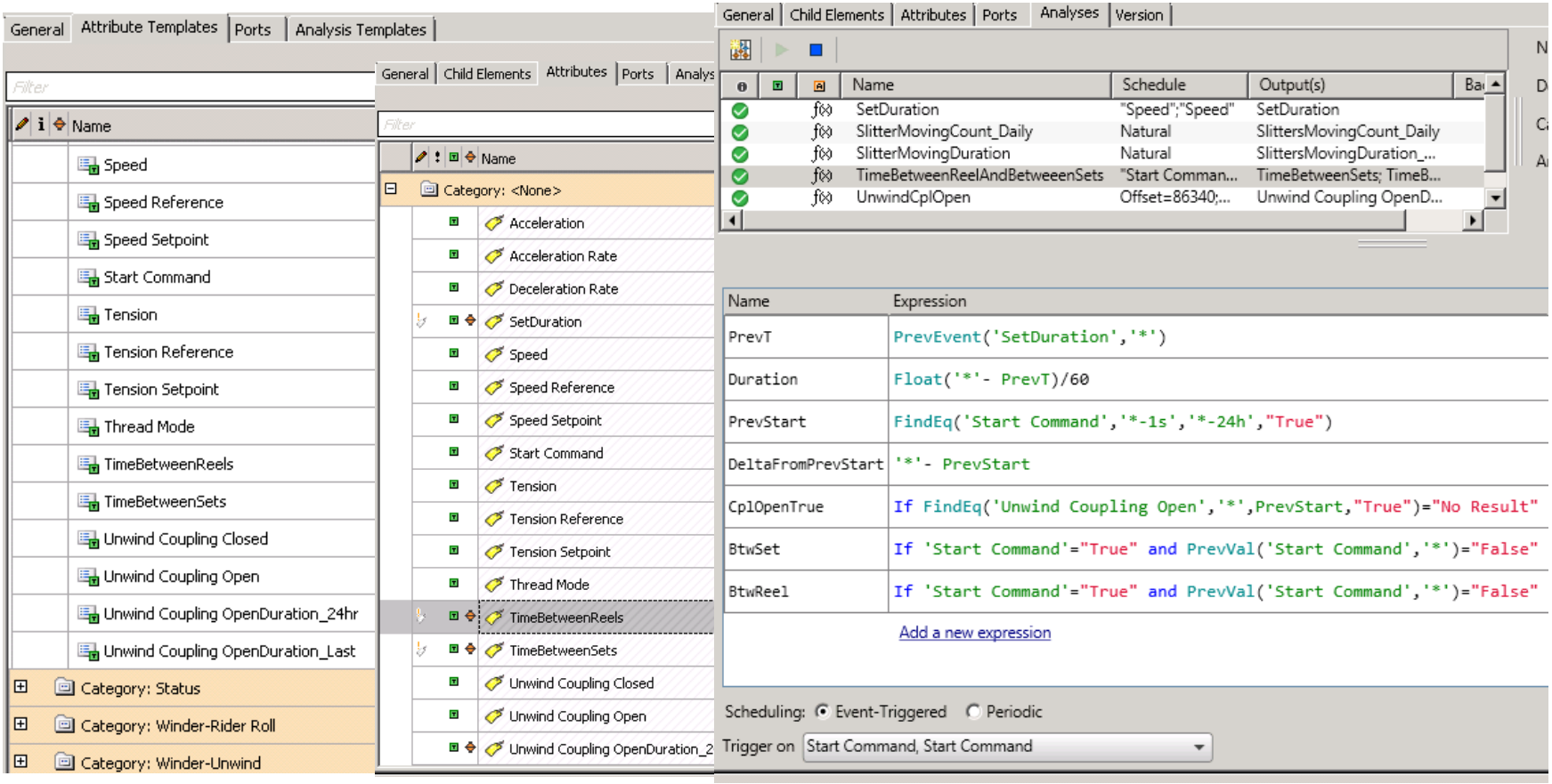
- How can I get better visibility into my Winder operations?

- What's the average time for a set?
- How much time do I lose between sets? (slitter moves…)
- How much time do I lose between reels? (unload, coupling open…)

- How often is the slitter moving, for how long?

- Show me by shift, by day, by month …

Winder – Template and Calculations



SV_Reel_Slitter.xlsx - Excel

TABLE TOOLS

FILE | HOME | INSERT | PAGE LAYOUT | FORMULAS | DATA | REVIEW | VIEW | DEVELOPER | POWER QUERY | PI BUILDER | POWERPIVOT | DESIGN

Gopal Gopalkrishnan

Paste | Calibri | 11 | Wrap Text | General | Conditional | Format as | Cell | Insert | Delete | Format | AutoSum | Fill | Sort & Filter | Find & Select

Clipboard

A5

	A
1	Element
2	\Paper Area\Winders\SV
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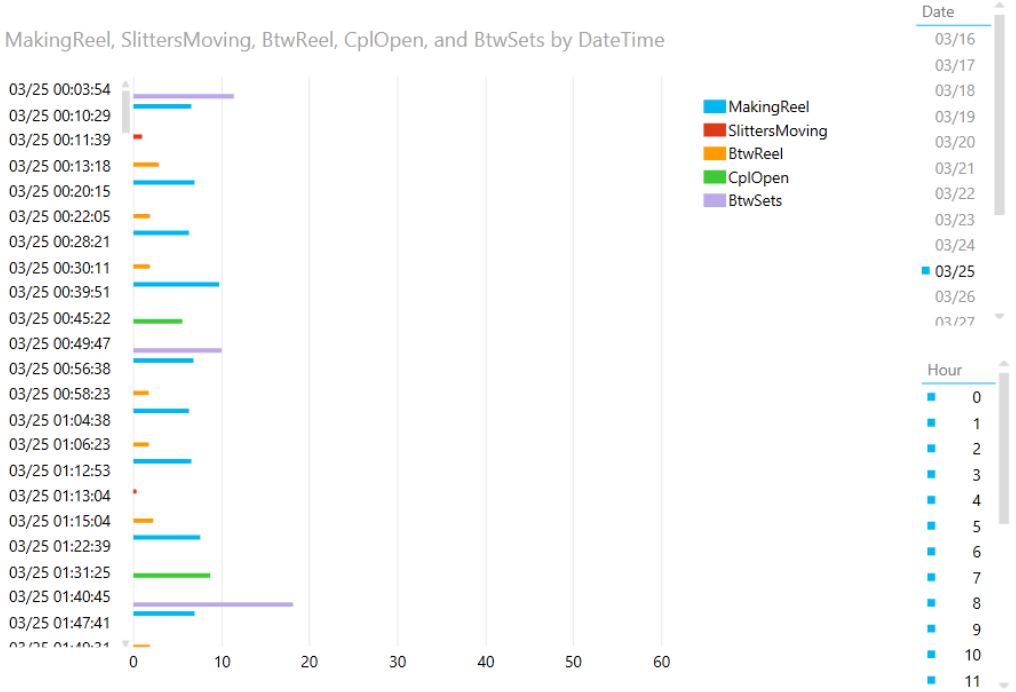
18	\Paper Area\Winders\SV
19	\Paper Area\Winders\SV

Making Reel, SlittersMoving

DateTime	MakingReel	SlittersMoving	BtwReel	CplOpen	Bt
03/25 00:03:54					
03/25 00:10:29	6.59				
03/25 00:11:39			1.00		
03/25 00:13:18				2.82	
03/25 00:20:15	6.94				
03/25 00:22:05				1.84	
03/25 00:28:21	6.26				
03/25 00:30:11				1.84	
03/25 00:39:51	9.68				
03/25 00:45:22					5.51
03/25 00:49:47					
03/25 00:56:38	6.85				
03/25 00:58:23				1.75	
03/25 01:04:38	6.26				
03/25 01:06:23				1.75	
03/25 01:12:53	6.50				
03/25 01:13:04			0.33		
03/25 01:15:04				2.17	
03/25 01:22:39	7.59				
03/25 01:31:25					8.68
03/25 01:40:45					
03/25 01:47:41	6.92				
03/25 01:49:31				1.83	
03/25 01:55:57	6.43				
03/25 01:57:46				1.82	

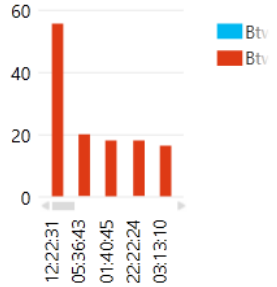
MakingReel, SlittersMoving, BtwReels, CplOpen,BtwSets



Between Sets and Reels (minutes)

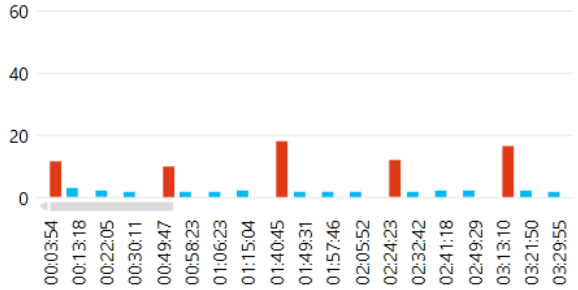
Winder by day - MakingReel, BtwReels, BtwSets

BtwReel, and BtwSets by T

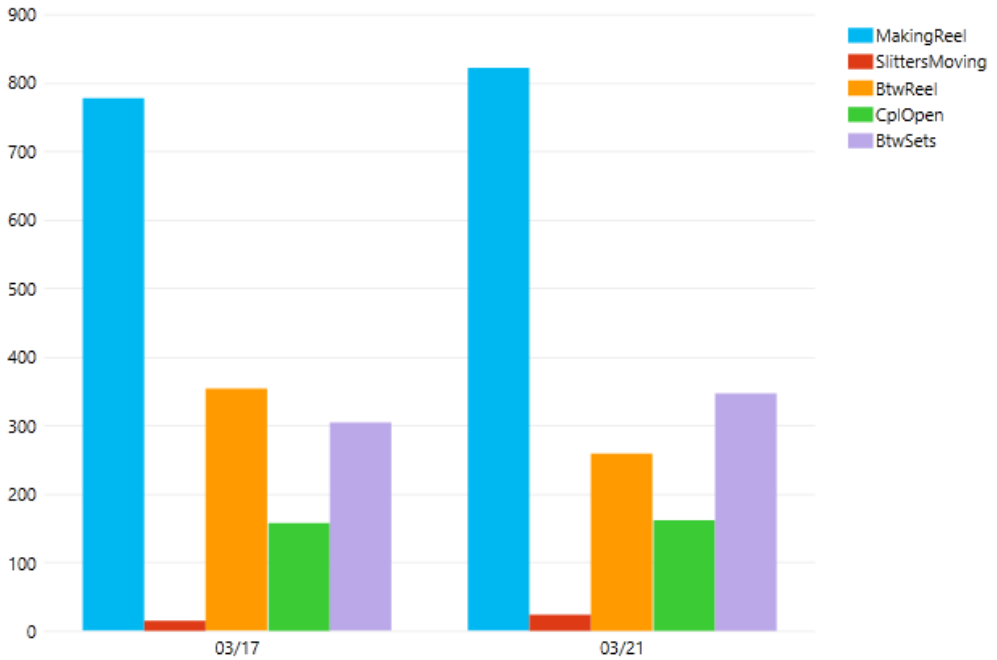


TimeOnly	Date	BtwSets
12:22:31	03/25	55.56
05:36:43	03/25	19.94
01:40:45	03/25	18.10
22:22:24	03/25	17.87
03:13:10	03/25	16.51

BtwReel, and BtwSets by TimeOnly



MakingReel, SlittersMoving, BtwReel, CplOpen, and BtwSets by Date



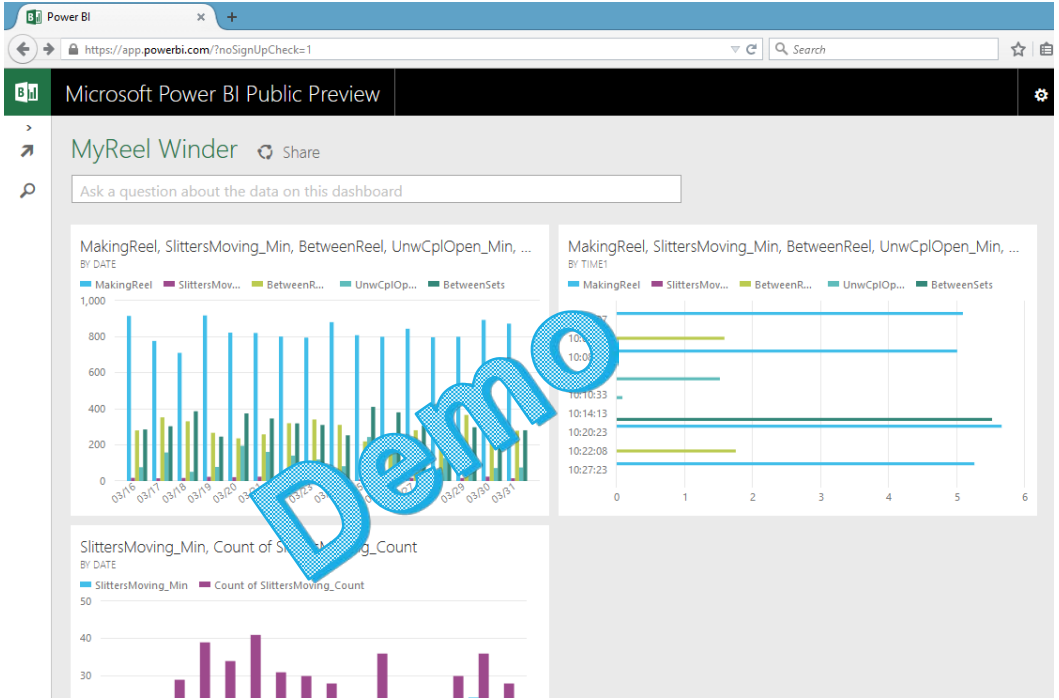
Date

03/16
03/17
03/18
03/19
03/20
03/21
03/22
03/23
03/24
03/25
03/26
03/27
03/28
03/29
03/30
03/31

DayType

WkDay
WkEnd

Winder – PowerBI demo



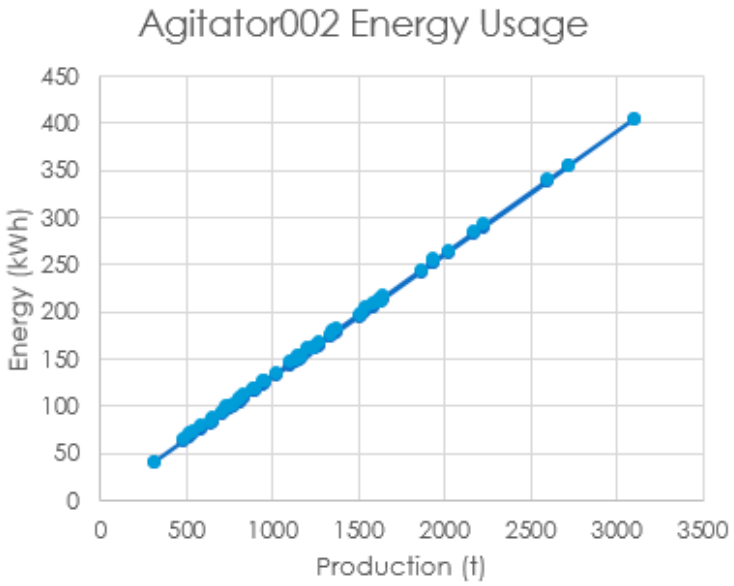
https://powerbi.com
https://powerbi.microsoft.com/en-us/desktop (free download)

Energy Management Motors

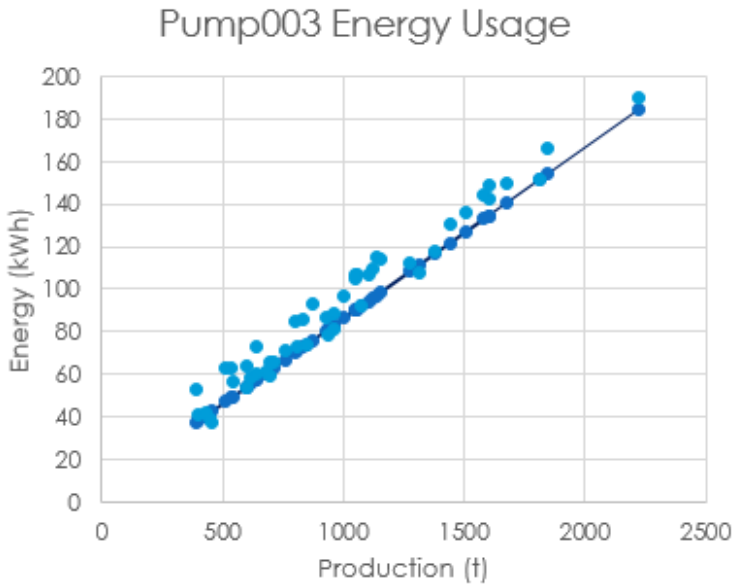
Energy Management

- How much energy am I using across my motors?
- Which motors consume the most energy?
- How much are motors deviating from expected performance?
- What are the potential energy savings for each motor?
- Why is a motor overconsuming energy?

Energy Management



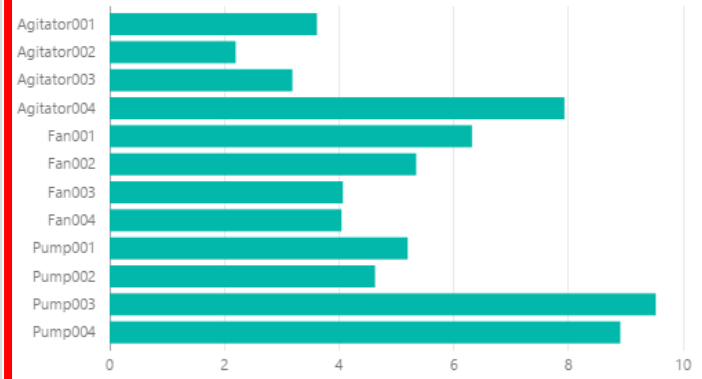
On-target



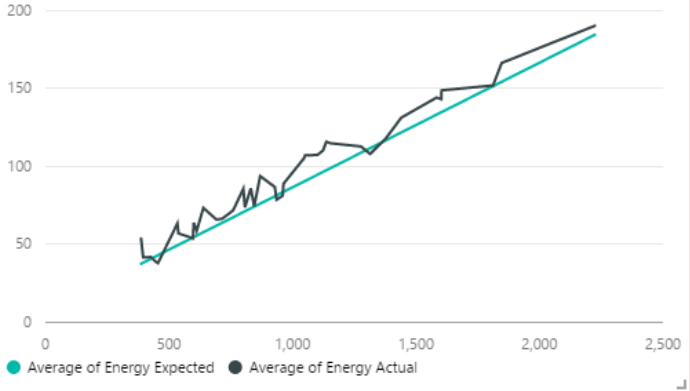
Under-performing

Ask a question about the data on this dashboard
How to ask

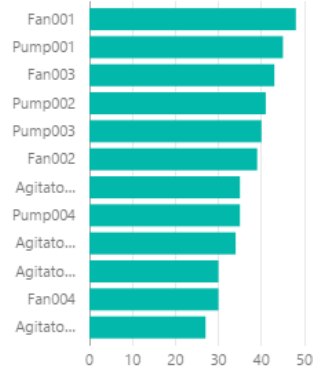
Average Energy Percent Deviation
BY ASSET



Expected vs Actual Energy Consumption (kwh / tons)
BY PRODUCTION TOTAL



of Runs
BY ASSET



Energy Actual

65.01K

Energy Actual
BY LOCATION

Energy Percent Deviation
CLICK TO GO TO PI CORESIGHT

Average of Energy Perecent Devia...
BY ASSET

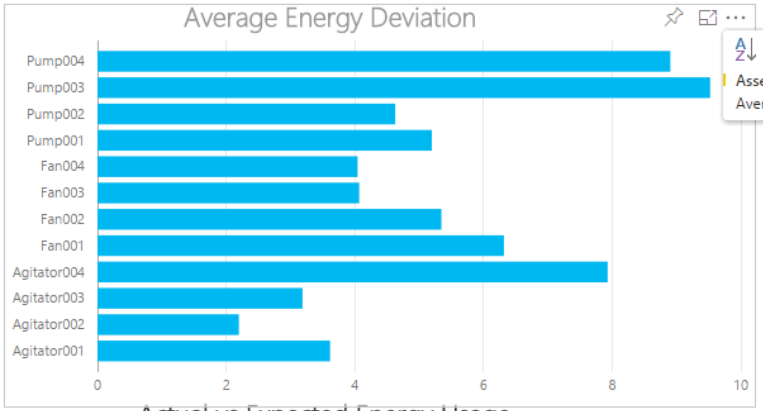
Energy Management

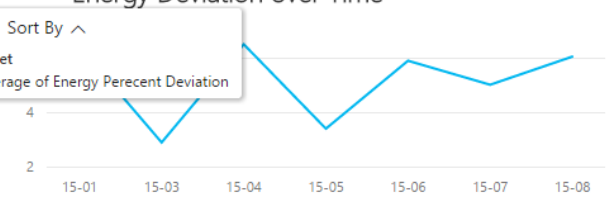
Asset Type
- Agitator
- Fan
- Pump

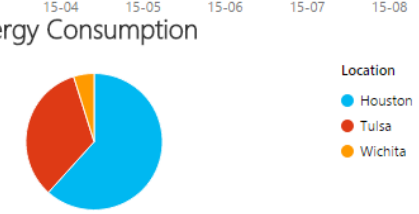
Asset
- Agitator001
- Agitator002
- Agitator003
- Agitator004
- Fan001
- Fan002
- Fan003
- Fan004
- Pump001
- Pump002
- Pump003
- Pump004

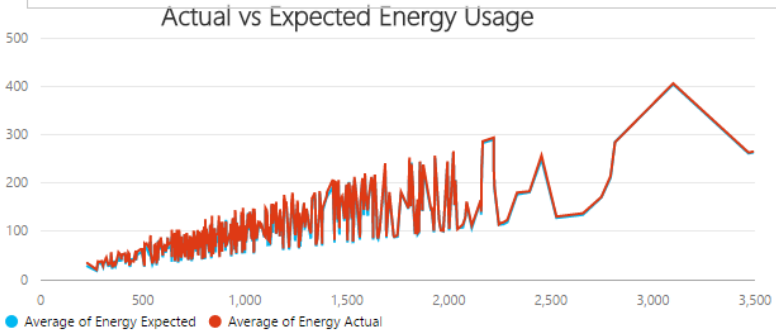
Location
- Houston
- Tulsa
- Wichita

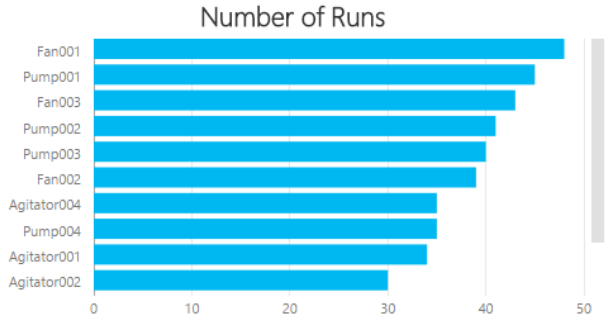
Size
- Large
- Medium
- Small

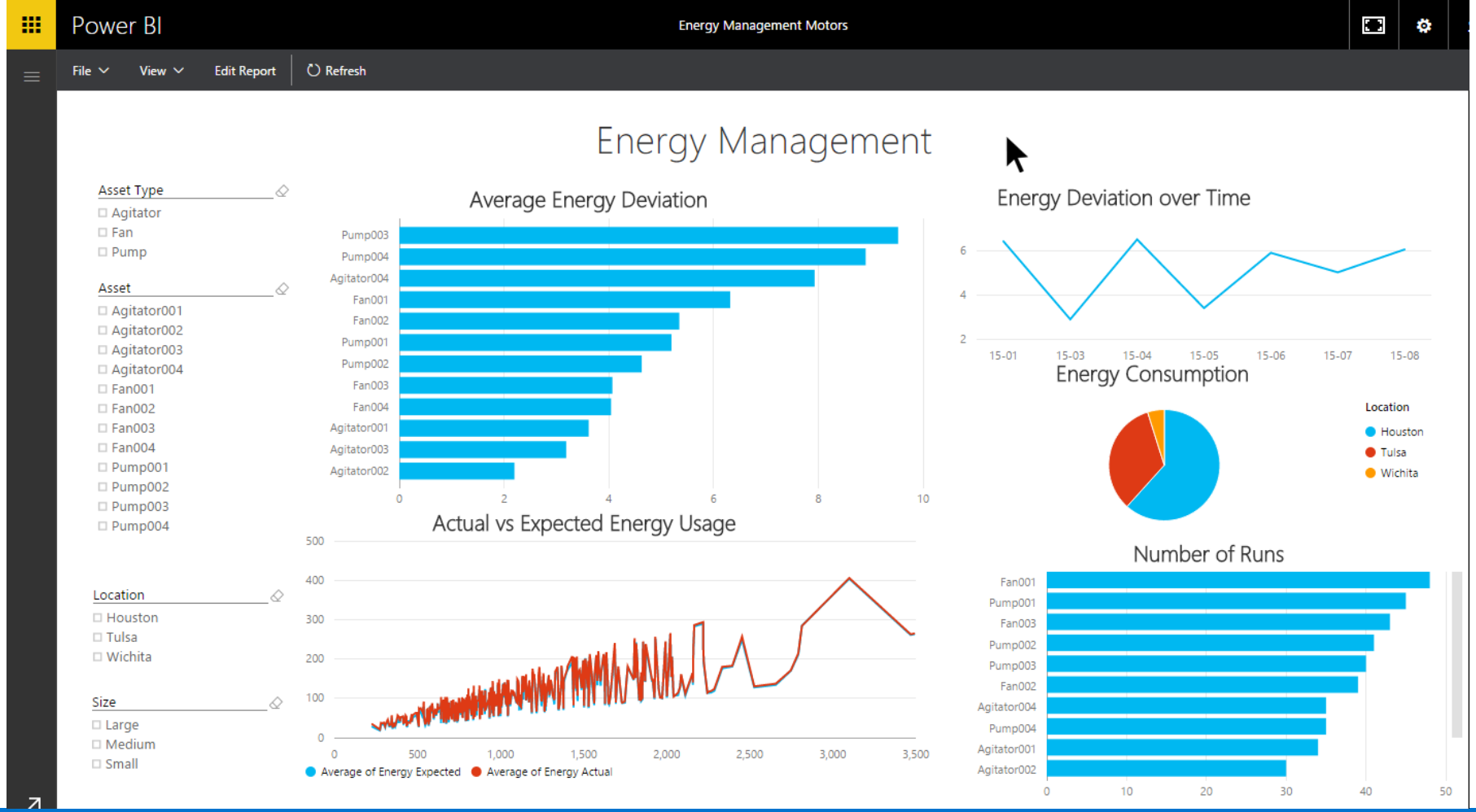


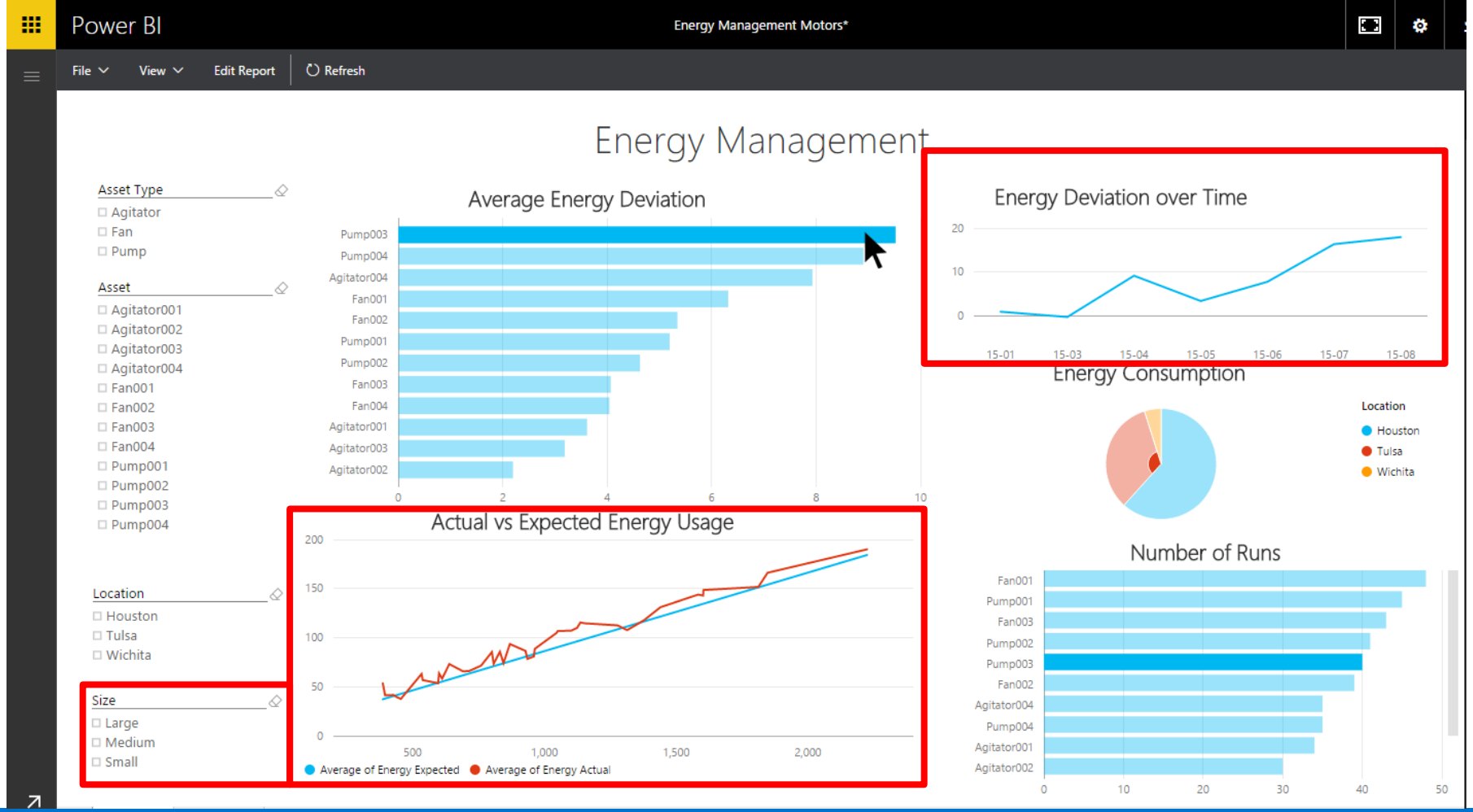


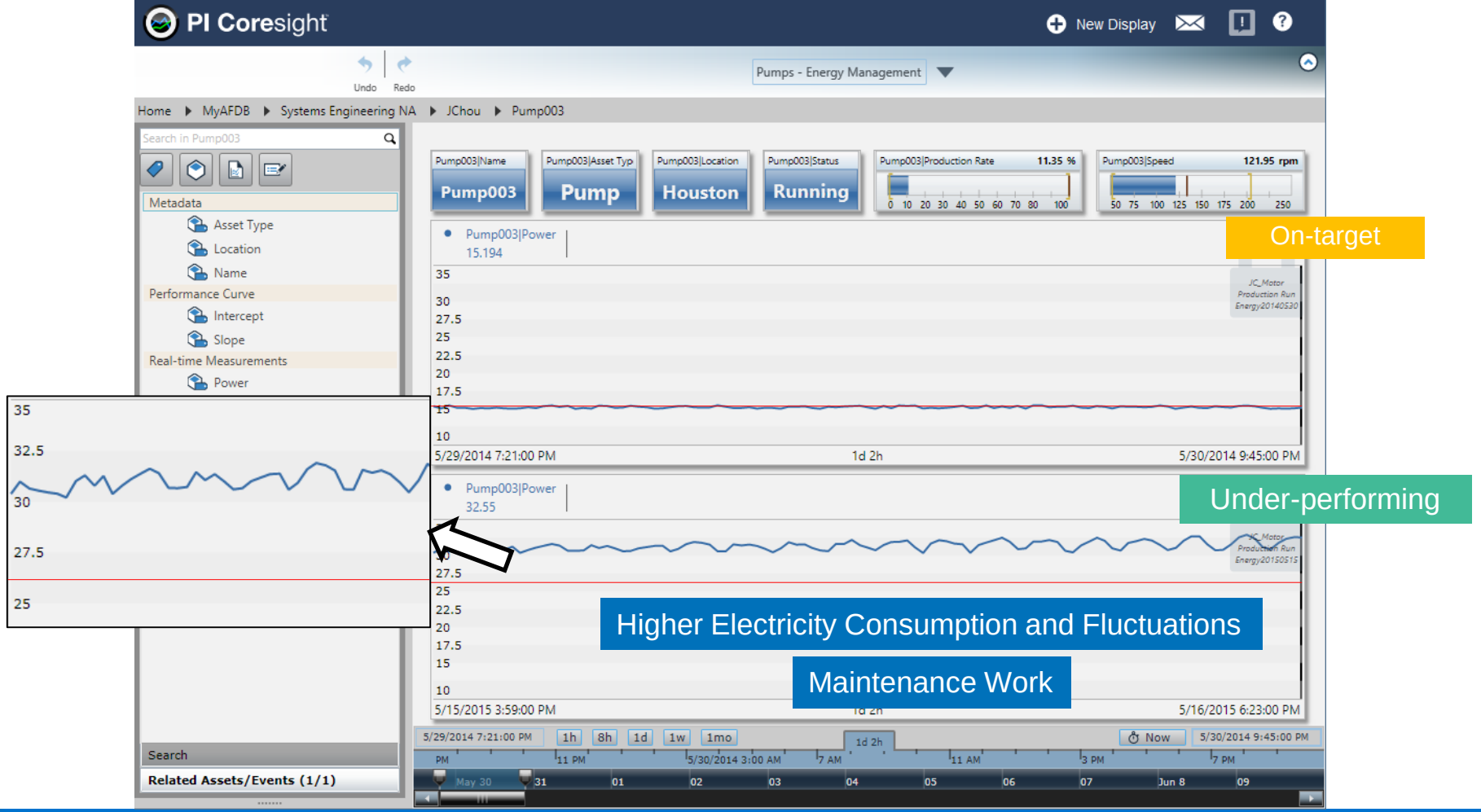












Filter press – cycle time (Food & Beverage)

Rapid Insights with Data Analytics Case Stud

Presented by **Mark Massey, Tate & Lyle**

Gopal GopalKrishnan, P.E., OSIs

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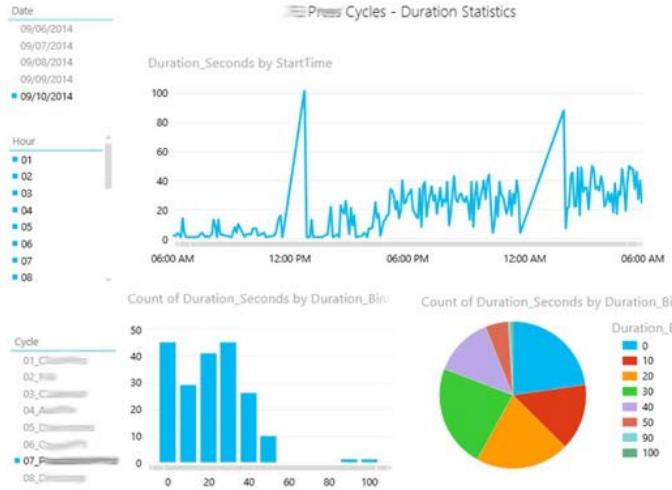

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http://www.osisoft.com/resources/presentations/presentation_abstracts/2014_-_Food_and_Beverage_Workshop_-_St__Paul/RS14MN050_Rapid_Insights_with_Data_Analytics.aspx

Asset health – where do I start?

To Do List - Basic

- Create a watch list – early warning system
  - Equipment usage – run hours, tons processed, start/stop cycles…
  - Equipment condition alerts – filter clogged, heat-exchanger f… motor vibration high…
- Notify the asset owr… ith links to details
- Create a report – ac… sset and production events

http://www.osisoft.com/Templates/item-abstract.aspx?id=12868

To Do List - Basic

- Create a watch list – early warning system
  - Equipment usage – run hours, tons processed, start/stop cycles…
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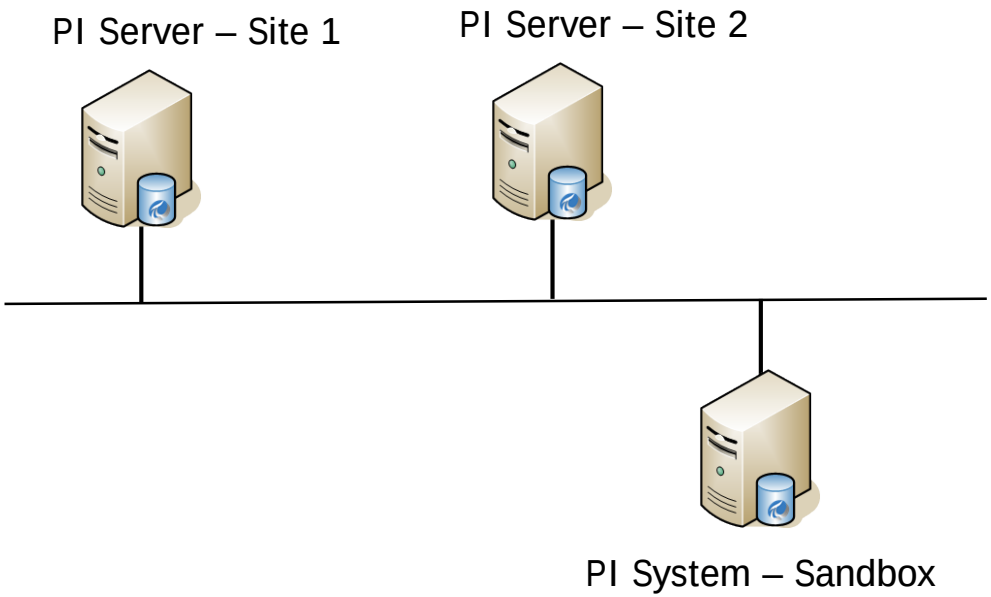
- Notify the asset ov n links to details
- Create a report – a et and production events

PI System Sandbox

https://pisquare.osisoft.com/community/developers-club



Win 2008 R2 or Win 2012
- 80GB disk and 8GB RAM

Microsoft Power BI Desktop

PI Server 2015 (PI DevClub license is OK)
SQL 2014 (SQL Express is OK)
AF 2015 (Server and Client)
EFGen
PI SMT
PI Builder

PI OLEDB Enterprise
PI Integrator for Business Analytics

PI DataLink 2015
PI ProcessBook 2015
PI Coresight 2015

Call to Action

- Get a PI Dev Club subscription (ask for a free trial)

  https://pisquare.osisoft.com/community/developers-club

- Deploy a PI System sandbox

- Start with simple AF/EF models and calculations to answer specific questions

- PowerBI https://powerbi.com

Contact Information

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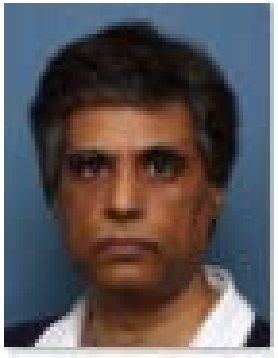

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Questions

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

State your **name & company**

Please don't forget to…

Complete the Survey for this session

The Power of Data
DECISION READY IN REAL-TIME

Evaluation Form (Seminar Location - Date)

Name:_____ Company: _____

Email:_____

Quality and content of the presentations	Poor	Good	Excellent	N/A
Welcome	○	○	○	○
The Journey To Real-Time Operational Intelligence	○	○	○	○
The Power of Connection	○	○	○	○
Tank Level Management System	○	○	○	○
Using the PI System to Aid in Troubleshooting Operational Aspects of Oil and Gas Well Drilling and Completion	○	○	○	○
Unleash your Infrastructure	○	○	○	○
Information on the Spot	○	○	○	○
Wrap-up/Seminar Conclusion	○	○	○	○

Quality and organization of the seminar				
Choice of date	○	○	○	○
Time allowed for lunch/breaks	○	○	○	○
Choice of presentations	○	○	○	○
Pace and time allowed for the presentations	○	○	○	○

감사합니다

谢谢

Danke

Gracias

Merci

Thank You

ありがとう

Спасибо

Obrigado