



OSIsoft®
**REGIONAL
SEMINARS** 2012
The **Power** of **Data**



Run Time Maintenance / Monitoring Application

Presented by **Aldo Cue / Control System Engineer**

Agenda

- About Company
- OSIsoft Products
- PI System Architecture Carolina
- Run Time Maintenance
 - Background
 - Strategy
 - Summary
- Monitoring Application
 - Background
 - Strategy
 - Summary
- Benefits
- Conclusion

About Company

Industry: Pharmaceutical Industry

Organization: Vega Baja, Caguas, Guayama, Barceloneta and Carolina

Project Location: Puerto Rico, Carolina

Carolina Marked Served: Parenterals Product Area

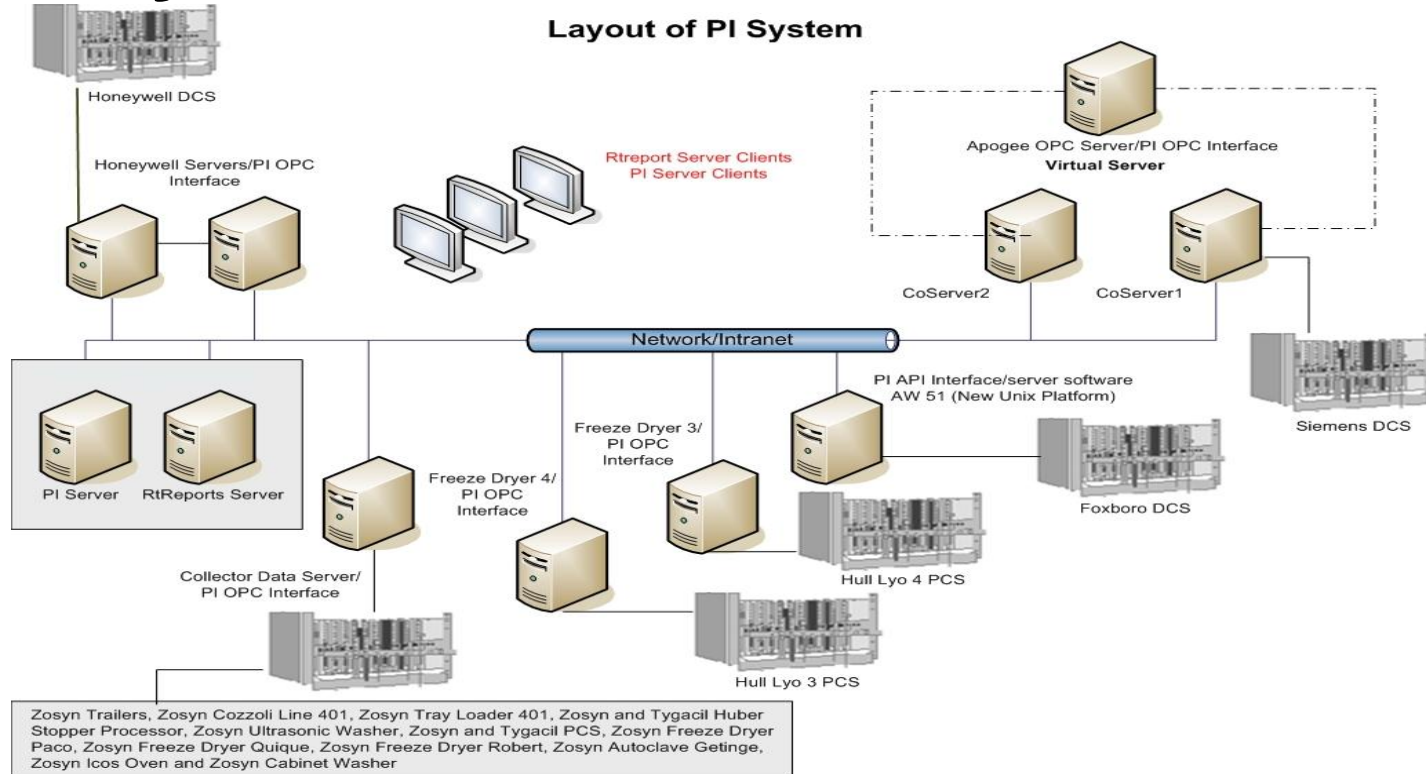
Critical Process Factors:

- Sterility
- Particles material
- Stability
- Environmental conditions

OSIsoft Products

1. PI Server
2. PI ProcessBook
3. RtReports
4. PI DataLink
5. PI OLEDB Provider
6. PI SDK

PI System Architecture



RTM Background

Objective: Efficient deployment of the maintenance plan to target equipment reliability and cost reduction.

This initiative consists of automatically collecting and transmitting the run time and equipment status information from the field into a Historian engine and to a Counter Base Module (CBM) in the Data Analysis and Reporting Tool (DART). The CBM then calculates the total running hours of each configured equipment. The (SAP-PM) system then triggers the execution of maintenance actions and activities based on the actual hours of operation or a combination of hours and schedule.

Strategy - Assessment

Identifying the target data sources (equipment list), points (process robustness) and integration approach

Connection/Interface Classification

Connection Class 1: Equipment already in PI System

Connection Class 2: Equipment not in PI System but have Ethernet capability

Connection Class 3: Equipment not in PI System but required minor/major changes for Ethernet topology

Connection Class 4: Equipment not in PI System that require control system upgrades

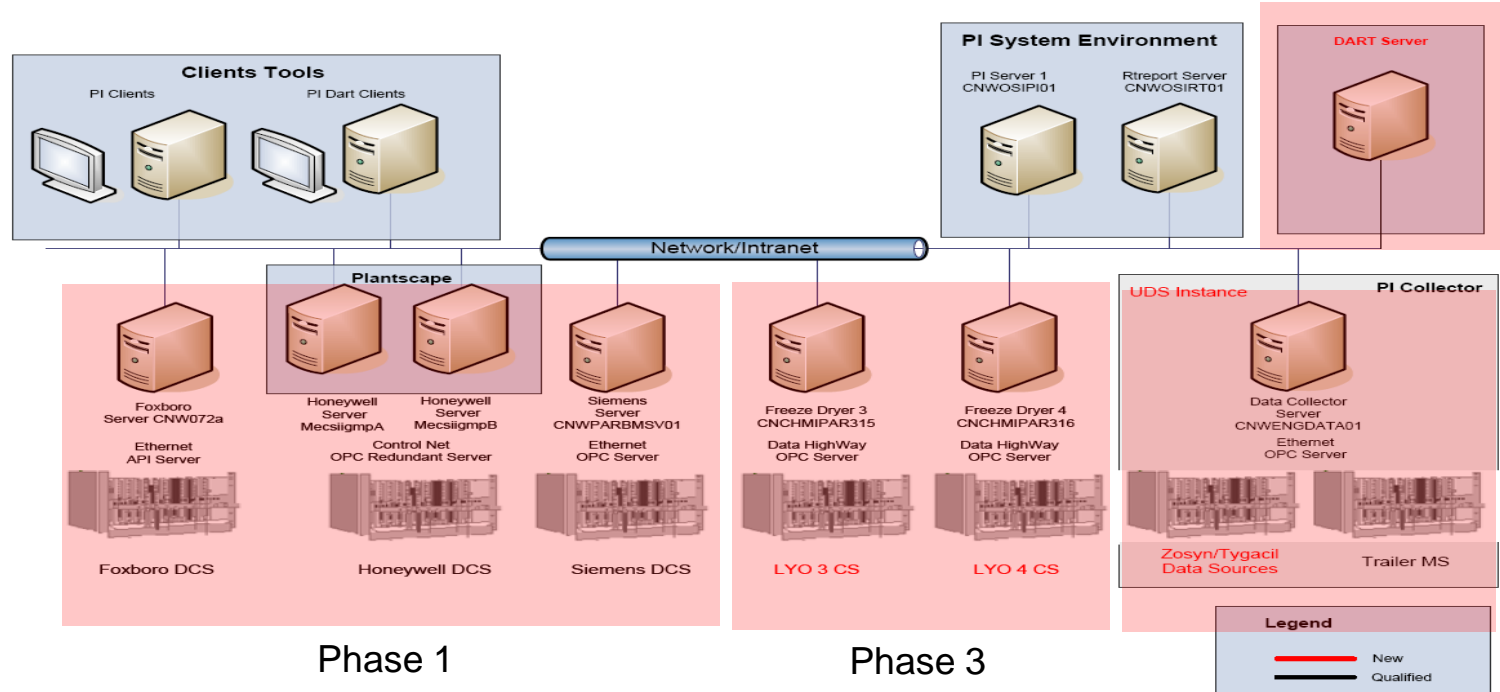
PLC Register Assessment

PLC Class 1: Equipments with an on/off status (Motor/Machine/Process)

PLC Class 2: Equipments without status indication

Strategy - Implementation

Pfizer Carolina DART Proposed Layout



Phase 1/2

Phase 1

Phase 3

Strategy - Implementation

Execution strategy

- PI System implementation
 - Interface installations/configurations
 - Addition of points/digital states
- Installation of PI OLEDB Provider
- Development of the DART system
 - DART was developed by IS corporate division and includes:
 - Algorithms executed every 24 hours to calculate equipment runtime
 - Point mapping between PI System points and SAP measurement points

Strategy - Implementation

Execution strategy

- SAP configuration

Universal Data Source (UDS) instance configuration. SAP XMII UDS instance allows connection between the PI System and DART system

SAP measurement point creation per equipment

Maintenance plan creation for target equipments / counter base maintenance method

Strategy – Implementation

DART application
mapping SAP point
with PI System
points

Counter current
values

Counter Based Maintenance
General Maintenance

Description: SAP Value:

Tag: SAP TimeStamp:

Suspect Reason:

Current Value:

Current TimeStamp:

Site: Filter Mode: ☒ All Points ☐ Suspect Values ☐ Manual Entry ☐ Manual Entry Due ☐ Selected

Point	Measurement Point Description	Current Value	UOM	Current Timestamp	SAP Value	SAP Timestamp	Suspect	Suspect Reason	Send To SAP	Collection Cycle Days	Ma
1088	RTM FILLER 401	29.282331894087	HR	21-Feb-2011 20:00:46	29.282331894087	20-Feb-2011 20:00:41	N		Y	0	N
1089	RTM HUBER TYGACIL	212.115029508409	HR	21-Feb-2011 20:00:46	212.115029508409	20-Feb-2011 20:00:41	N		Y	0	N
1090	RTM HUBER ZOSYN	130.10479380636	HR	21-Feb-2011 20:00:46	121.620995487484	20-Feb-2011 20:00:41	N		Y	0	N
1107	RTM AHU35 RETURN	2750.0613295849	HR	21-Feb-2011 20:00:46	2726.06021845461	20-Feb-2011 20:00:42	N		Y	0	N
1108	RTM AHU35 SUPPLY	2750.05855180714	HR	21-Feb-2011 20:00:47	2726.05716289908	20-Feb-2011 20:00:42	N		Y	0	N
1109	RTM AHU35 DEHUMIDIFIER	2718.48403896392	HR	21-Feb-2011 20:00:47	2694.48265005587	20-Feb-2011 20:00:42	N		Y	0	N
1110	RTM ARU3501 EF 3518	2751.22805774108	HR	21-Feb-2011 20:00:47	2727.226688833	20-Feb-2011 20:00:42	N		Y	0	N
1112	RTM Trayloader 401	435.981944792621	HR	21-Feb-2011 20:00:47	435.981944792621	20-Feb-2011 20:00:42	N		Y	0	N
1121	RTM VFD01 AHU 1	3294.15944707168	HR	21-Feb-2011 20:00:47	3270.15805816367	20-Feb-2011 20:00:42	N		Y	0	N
1122	RTM FAN1 AHU1	3291.11305882182	HR	21-Feb-2011 20:00:48	3267.11166991381	20-Feb-2011 20:00:43	N		Y	0	N
1123	RTM FAN2 AHU1	2955.92944680078	HR	21-Feb-2011 20:00:48	2931.92805789277	20-Feb-2011 20:00:43	N		Y	0	N
1124	RTM FAN3 AHU1	2955.92444680079	HR	21-Feb-2011 20:00:48	2931.92305789278	20-Feb-2011 20:00:43	N		Y	0	N
1125	RTM FAN5 AHU1	2955.92083568966	HR	21-Feb-2011 20:00:48	2931.91944678165	20-Feb-2011 20:00:43	N		Y	0	N
1126	RTM FAN6 AHU1	2955.91750235633	HR	21-Feb-2011 20:00:48	2931.91611344832	20-Feb-2011 20:00:43	N		Y	0	N

Strategy –
Implementation

SAP application
Measuring point
information

Counter Current
values

The screenshot shows the SAP 'Change Measuring Point: General Data' dialog box. The 'Measuring point' is 1089, 'MeasPosition' is DART-HUBER TYGACIL, and 'Description' is RTM HUBER TYGACIL. The 'Equipment' is 317852 and 'Description' is STOPPER WASHER. The 'General data' tab is active, showing 'Characteristic' as MACHINE_RUN_TIME, 'CharactUnit' as HR, and 'Machine Run Time'. The 'Counter data' tab shows 'CntOverReadg' as 999999 HR and 'AnnualEstimate' as 4000. A right-hand pane shows 'P01(4)/400 Last Measurement Document for Key...' with 'MeasDocument' 83670, 'Measuring point' 1089, and 'MeasPosition' DART-HUBER TYGACIL. The 'Document data' section shows 'MeasurementTime' as 02/20/2011 / 20:00:41, 'Counter reading' as 212, 'Difference' as 0, and 'TotalCtrReading' as 3000209.

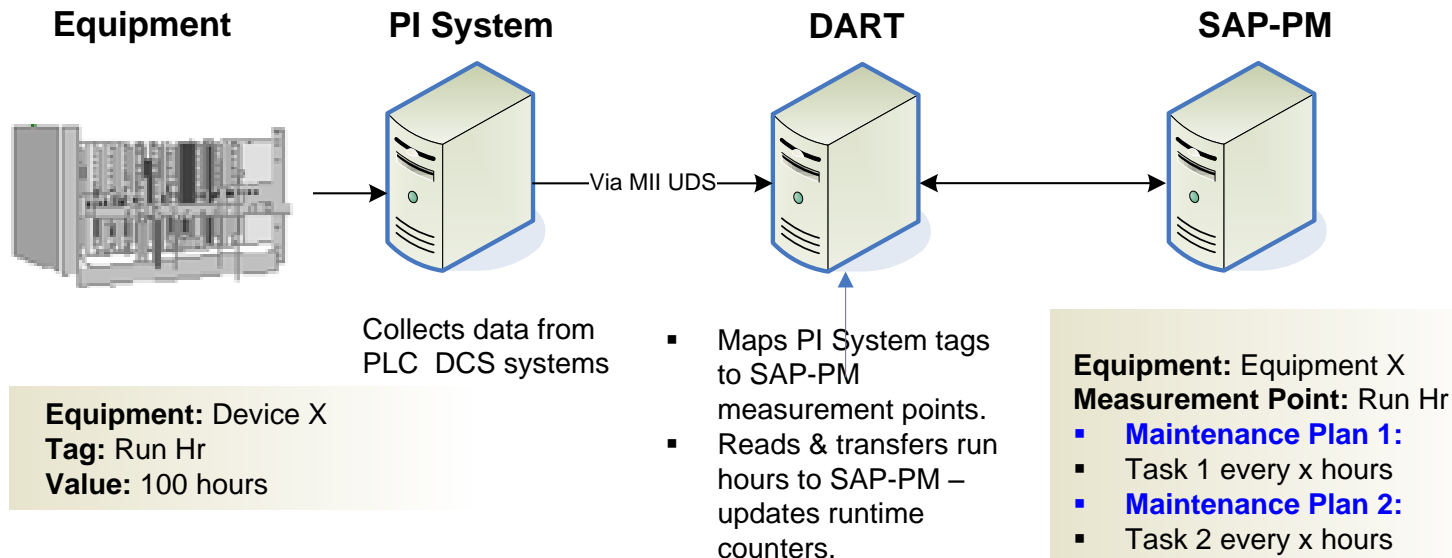
Measuring point	
Measuring point	1089
MeasPosition	DART-HUBER TYGACIL
Description	RTM HUBER TYGACIL
Equipment	317852
Description	STOPPER WASHER

General data	
Characteristic	MACHINE_RUN_TIME
CharactUnit	HR
Decimal places	
Code group	
Assembly	
AuthorizGroup	
MeasReadTransf.	Supported

Counter data	
CntrOverReadg	999999
AnnualEstimate	4000
Text	

Document data	
MeasurementTime	02/20/2011 / 20:00:41
Counter reading	212
Difference	0
TotalCtrReading	3000209

Strategy - Summary

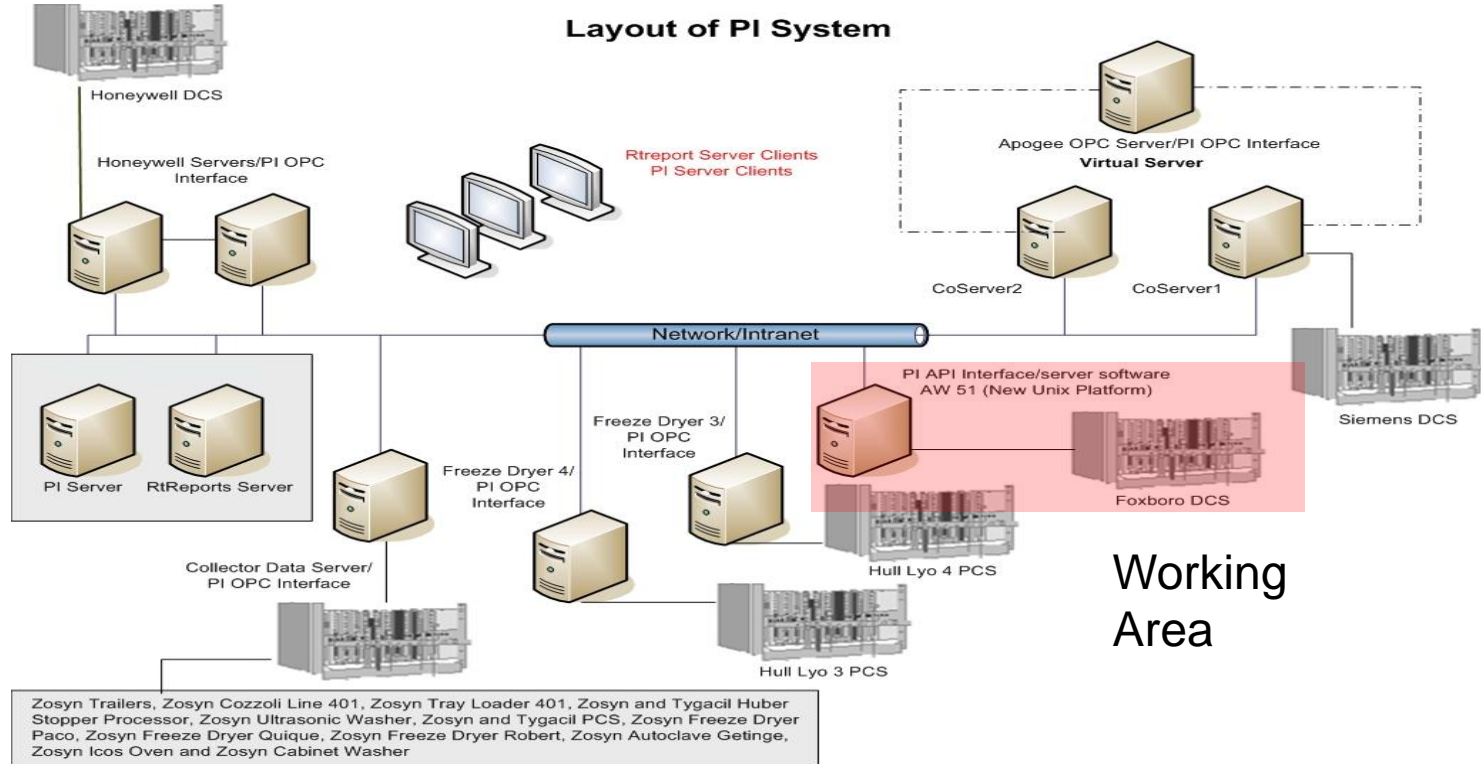


Optical Particles Transmitter Background

Objective: Monitor optical particles transmitter data from critical rooms at the aseptic complex area.

This initiative consists of maintaining a more efficient continuous monitoring of non-viable particles. The graphical representations of the Optical Particle Transmitter (OPT) will be displayed on the existing monitors (Thin Client) used by the Manufacturing Execution System (MES) located at strategic locations in the aseptic area. The operation and integration of this screen will be managed using OSIsoft PI ProcessBook software installed in a Citrix server environment. Data that provides the OPT conditions through the display is obtained from existing PI server.

PI System Architecture

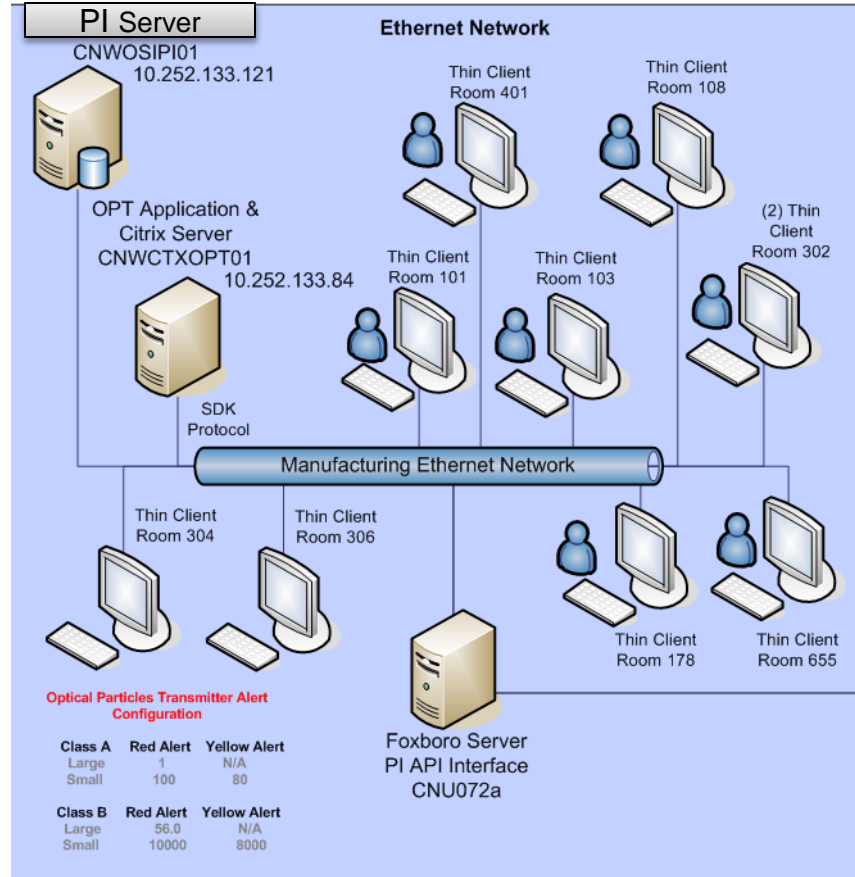
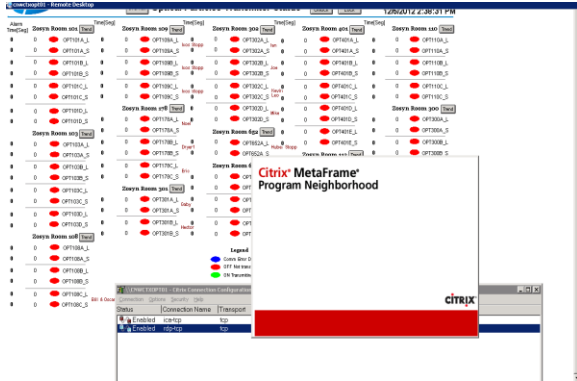


Implementation

Execution strategy

- System architecture design and implementation
- Development of the PI ProcessBook application
- Installation of PI ProcessBook in a Citrix environment
- Installation of Citrix client (ICA files)
- Deployment of Citrix instances

Strategy – Implementation System architecture



Foxboro System

45 Optical Particle Transmitter
Large/Small

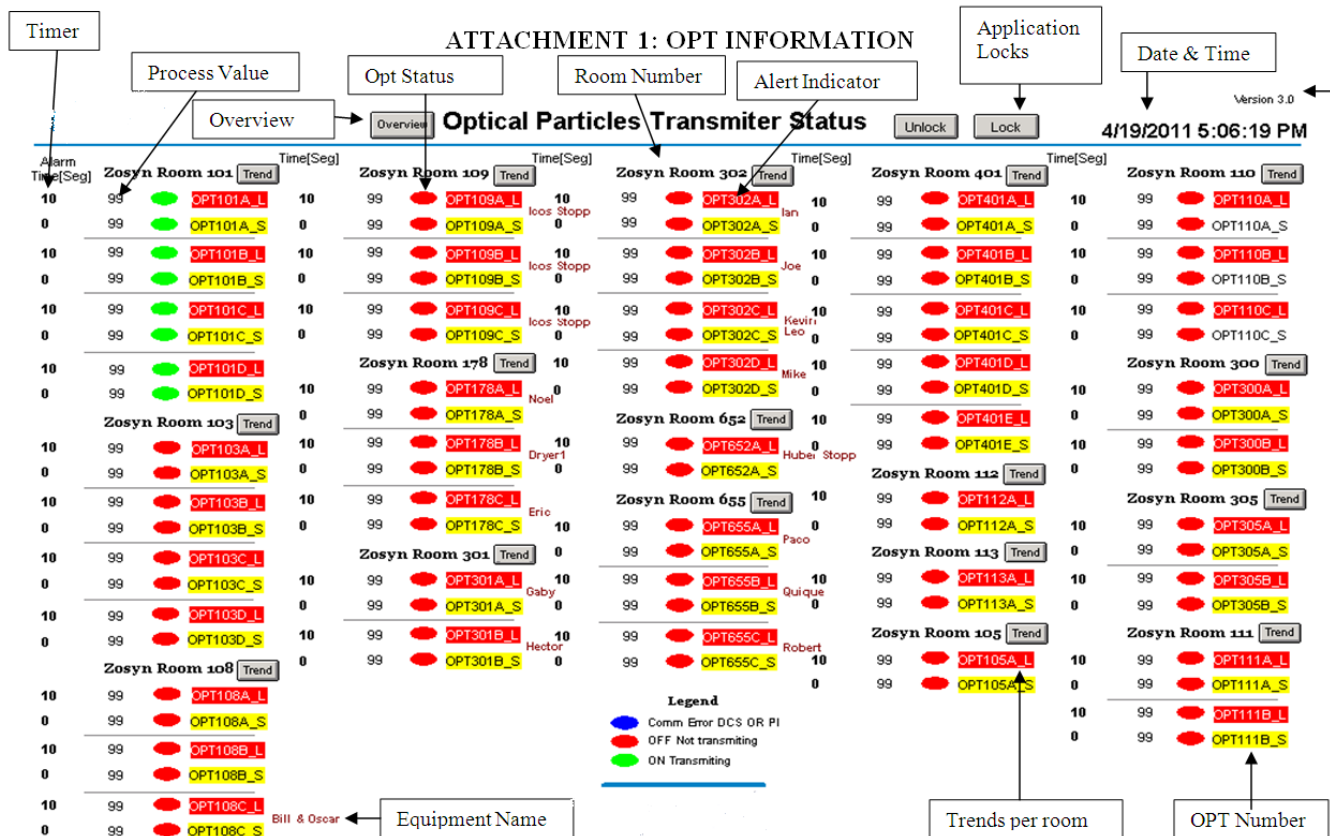
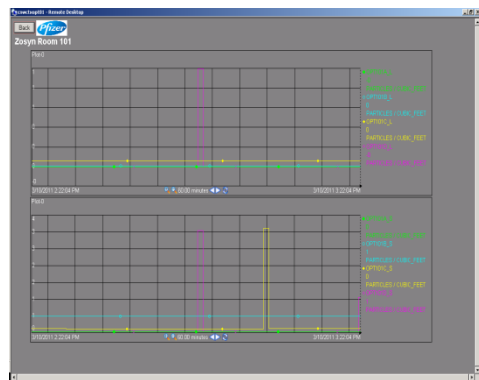


Analog Signal 4-20mA

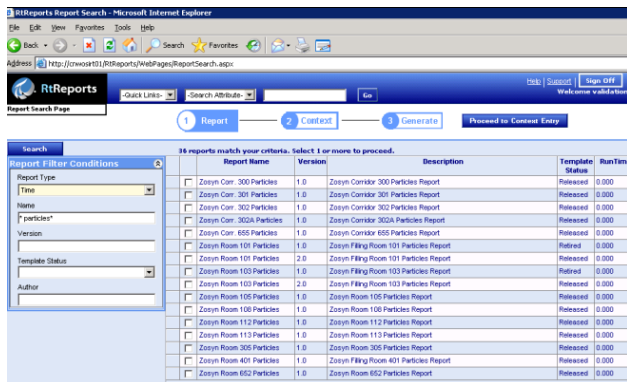


**Foxboro Distribution
Control System**

Strategy – Implementation System architecture



Strategy – Implementation RtReports application 21 CFR Part 11 Compliance



System Report

RtReports Report Viewer - Microsoft Internet Explorer

Address: http://cswosrt01/RtReports/WebPages/ReportTemplate.aspx?ReportName=Zosyn+Room+101+Particles&ReportVer=2.0&ReportServer=CNWOSIP101&Server=CNWOSIP101&StartDtTime=10/23/2012 12:00:00 AM

RtReports Configure Printers Print Applet Java Verifications Showing Page 1 of 1 Prev Page 1 Next

Room Particle Monitoring Report

Zosyn Room 101 Grade: A

Report Not Printed

Start Date: 10/23/2012 12:00:00 AM
End Date: 10/23/2012 01:00:00 AM

Date/Time	OPT101A_L	OPT101A_S	OPT101B_L	OPT101B_S	OPT101C_L	OPT101C_S	OPT101D_L	OPT101D_S
10/23/2012 12:00:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:01:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:02:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:03:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:04:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:05:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:06:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:07:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:08:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:09:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:10:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:11:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:12:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:13:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:14:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:15:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:16:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:17:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:18:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:19:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:20:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:21:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:22:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:23:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:24:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:25:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:26:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:27:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:28:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:29:00 AM	---	---	---	---	---	---	---	---
10/23/2012 12:30:00 AM	---	---	---	---	---	---	---	---

Benefits

- Real time data and events management infrastructure
 - Integration
 - Availability
 - Notifications
- Process robustness capability
 - Improvement of troubleshooting through data behavior analysis
 - Data redundancy
 - Release by exception
 - Improve manufacturing investigation support
- Effective deployment of preventive maintenance order

Conclusion

1. PI System gathers and stores data efficiently and securely
2. Links process control systems or data sources with business management systems
3. Process robustness capability
4. Effective deployment of preventive maintenance order
5. Reliable System - No data loss events experienced since installation/qualification on 2008/Data integrity
6. The use of the PI System as a Real-time Data Infrastructure provides a substantial solution for industry business needs



THANK YOU

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