Interfacing MES to Equipment via the PI System

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Werum Software & Systems
Werum at a Glance

- Best-in-class MES product for Pharma & Biotech
- Professional services
- Customer satisfaction & long term partnerships
- 470+ employees
- Founded 1969
- Constant growth: 25+% per year overall
- Strong financials
Where we were

Level 4- ERP

Level 3- MES

Challenge:
- Chance for transcription error or “missed value” by operator
- Inefficient, with lots of human interaction
- Importing lots of Raw Data into MES

Down:
- Process Parameters
- Recipe start/end

Up:
- Tag Structures
- Process Data
- Alarms/Events

EBR
A Better Approach

Benefits:
- Leverages existing OSI connections
- Reduced validation / maintenance efforts
- Easier management of statistical data

Level 3- MES
- **PAS X**

Down:
- Process Parameters
- Recipe start/end

Up:
- Tag Structures
- Process Data
- Alarms/Events

Level 2/1
- SCADA / DCS

EBR
Agenda

1. Who we are
2. Challenge and Approach
3. How It Works
4. Q&A
Werum has developed a PI System adaptor to support:

- **Configuration of the Interface**
  - Upload of all defined PI AF Tags to PAS|X, for use in recipe building and EBR execution
  - Upload **PI AF Aliases** for proper handling of process data for equivalent equipment sets

- **EBR Execution and CPP/CQA Evaluation**
  - Pull Min, Max, Average for a time range
  - Alarms and Events
  - For a specific time stamp:
    - **Nearest:** valid value nearest to time stamp
    - **Interpolated:** value interpolated between the values nearest to time stamp
    - **Last:** previous valid value before time stamp (AF default)
    - **Next:** next valid value after time stamp
    - **Snapshot:** the nearest value to "Now"
Aliasing

PASX2DCS OSI AF Upload Structure Schema

OSI AF

Tank Template

Temp
Press
Speed

Unit: Tank_1

Temp: OSI_TAG_01
Press: OSI_TAG_01
Speed: ANY_FORMULA

Tank_2

Tank_3

Template + Attributes

PAS-X Recipe Upload

Tank Template

Tank_1
Tank_2
Tank_3

Tank1.Temp
Tank2.Temp
Tank3.Temp

Tank1Press
Tank2.Press
Tank3.Press

Tank1.Speed
Tank2.Speed
Tank3.Speed

Units for Template
PAS|X works with the following PI System Products

- PI Server: provides basic process data for EBR
- PI Application Framework (AF): allows more sophisticated data structures for EBR population
- PI Batch: needed for aligning PAS|X and PI System Batch / Recipe data
- PI Interface to Werum PAS|X MES: Use for reading data from PAS|X to PI
  - Utilizes PAS|X extensive external data model
Some things to consider…

• This approach does not work for near real-time data exchange between Level 2/1 and Level 3 (i.e., synchronized actions)
  – For those interactions, direct connection to equipment is still necessary

• Future use of PI Event Frames can replace less elegant PI AF / PI Batch approach
Thank you!

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Summary: Using the PI System as a Platform for MES Integration

We have found our customers leveraging the historians capabilities to greatly reduce the cost and effort in integrating the MES to the shop floor equipment.

Marc Puich

Business Challenge

- Provide our customers a rapid and cost effective approach to capturing key process data electronically in the Electronic Batch Record

Solution

- Using a specialized adaptor, users can selectively pull CQAs and other critical data from the OSI PI rather than requiring 2 way interfaces to all process equipment

Results and Benefits

- Lower cost of ownership
- Faster implementation time
- Reduced deviations