Bringing Unity to Manufacturing Diversity through PI System Deployment and Governance

Kaela Jenkins

BLOUNT INTERNATIONAL

Agenda

- Introduction to Blount
- Business Challenge
- PI System Governance
- Deployment Process
- End User Experience
- Results and Impact

BLOUNT INTERNATIONAL

Introduction to Blount

- Founded in 1947 in Portland, OR
- Manufacturer of outdoor equipment parts and accessories
  - Forestry, Lawn, Garden
  - Farm, Ranch, Agriculture
  - Concrete cutting, finishing
- Saw chain & guide bars for chain saws

BLOUNT INTERNATIONAL BRANDS

OREGON Carlton KOX

WOODS SpeeCo

ICS Diamond Tools and Equipment MERIT

BLOUNT INTERNATIONAL

Global Network

BLOUNT INTERNATIONAL

Business Challenge

Diverse manufacturing data

- Many data systems
- Incompatible
- KPI calculations
- Manual data collection
- Accessibility
- Independent global sites

Diverse manufacturing equipment

- Types
- Lifespan
- Control systems
- HMIs
- Data transmission
- Site-to-site uniqueness

Solution: PI System

Unified, accessible manufacturing data system

Controlled deployment with standards and governance

BLOUNT INTERNATIONAL

Governance

Standards

- PLC Coding – 8 standard tags
  - Performance metrics, fault data
- OEE Calculations
  - System states, analytics
- Display Design
  - Coloration, layout, languages
- Translation Table
  - Global data interpretation
- AF Structure
- Project Checklist
- Equipment Add Form

PI System Support Page

Go to PI Vision

PI Vision Standards & Training

PI System Metric Definitions

PI System Translations Table

OEE Graphical Representation

PI Vision Overview Workbook

Existing Features and Capabilities

PI Vision Display Standards (DRAFT)

Adding Equipment or Features to the PI System

PI System Project Checklist

PI System Equipment Add Form
(Sample Form Filled Out)

Mfg Data System Integration Standards

Flowchart for Equipment Additions (DRAFT)

PI Point Cost Estimation

Open Project List

Asset Framework

Asset Structure Standards (DRAFT)

BLOUNT INTERNATIONAL

Governance

Global Team with Defined Roles

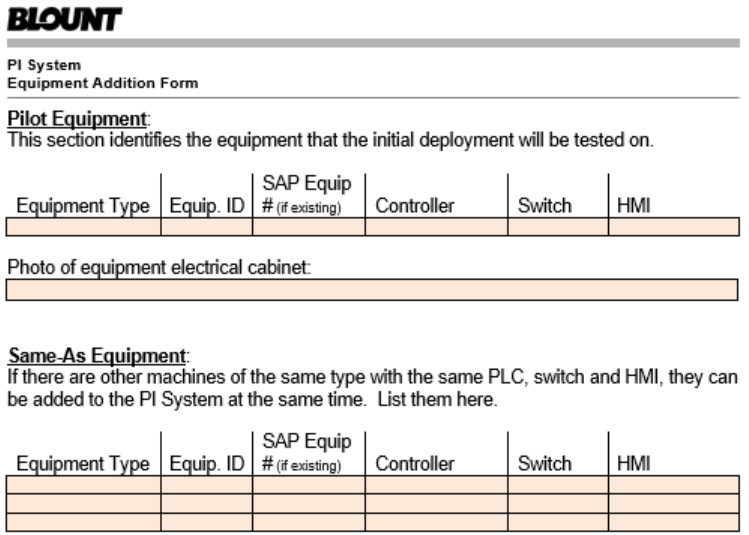
- Manufacturing Data Administrator (Me ☺)
  - Project management, standard enforcement, PI Vision + PI Datalink
- PI Programmers (Control Systems Engineers)
  - Equip. connection, PI Pts, AF, Analytics, PI Vision + PI Datalink
- Business Systems Engineer
  - SAP connectivity, Analytics
- Global IT
  - Networking, infrastructure, AF Security

- Project Teams
  - Mfg. Engineer, Operations, Local Controls, Local IT, Maintenance

Deployment

Equipment Add Form

- Define:
  - Project team
  - Equipment
  - Project scope
  - Goals of data
  - PI AF structure
  - PI Vision displays
  - PI Datalink reports
  - PI Notifications emails
  - Additional data



BLOUNT

PI System
Equipment Addition Form

Pilot Equipment:
This section identifies the equipment that the initial deployment will be tested on.

Equipment Type	Equip. ID	SAP Equip # (if existing)	Controller	Switch	HMI

Photo of equipment electrical cabinet:

Same-As Equipment:
If there are other machines of the same type with the same PLC, switch and HMI, they can be added to the PI System at the same time. List them here.

Equipment Type	Equip. ID	SAP Equip # (if existing)	Controller	Switch	HMI

BLOUNT INTERNATIONAL

Deployment

Project Checklist

- Deployment Process
- Step by step
- Defined responsibilities
- Updated at project meetings

PI System Connection Checklist

Location Network Setup

☐ Mfg Network in Place or POC?
For locations without a manufacturing network, can we run on the corporate network as a Proof-Of-Concept? Decision from IT (Global).

☐ Location OPC Server Setup
IT (Global) responsible.

☐ KepserverEX (or similar OPC software) Installed on OPC Server
IT (Global) responsible.

☐ PI Interface Installed on OPC Server
IT (Global) responsible.

☐ OPC Server Setup Name, Point Source, and Interface number defined and added to PI System Map
IT (Global) responsible for definition, PI System Admin responsible for updating PI System Map.

Project Definition & Approval

☐ Equipment capable of data transmission
Local Controls and Global Controls work together to determine.

☐ Project Hardware Needs Identified
Local Controls and Global Controls work together to determine.

☐ Project Programming/Development Needs Identified
Project Team define data needs, Local Controls and Global Controls work together to determine how to provide, if new standards needed Data Admin will get input from stakeholders. Global also responsible for ensuring Local Controls is aware of programming standards.

☐ Project PI Point Increase Identified

BLOUNT INTERNATIONAL

End User Experience

Optimization & Training

- Hand-off to production teams
- How can we improve?
  - Serve team's needs
  - Solve problems
  - Anything to add?
- Training in PI Vision, PI Datalink

Results

Streamlined Deployment

- Standards
- Defined process
- PI AF Templates

Deployed a machine in

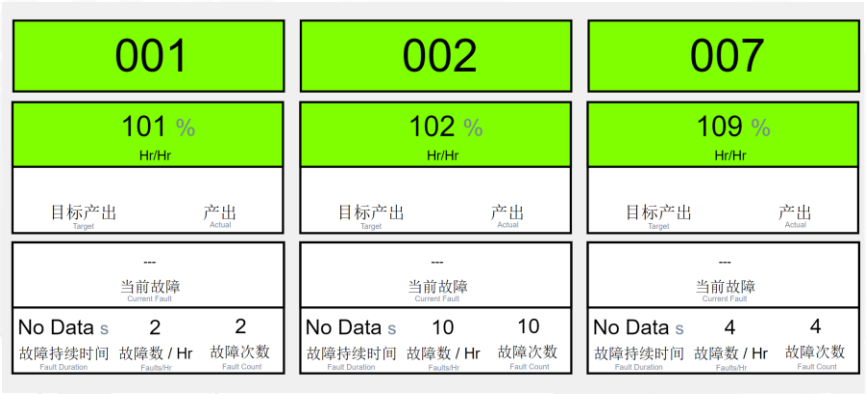
1 Hour

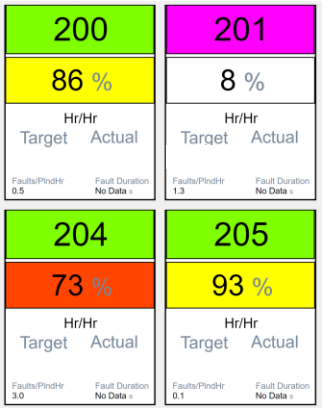
BLOUNT INTERNATIONAL

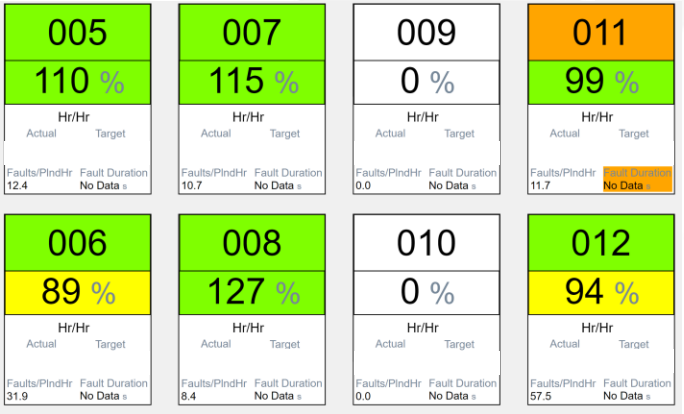
Results

PI Vision Displays

- Andon displays
- Same for all departments
- Visible to production teams
- Multi-state functionality







Results

PI Vision Displays

- Fault monitoring
- Top Fault Paretos
- Engineers
- Languages

Results

PI Datalink Reports

- Production output
- By machine
- By Shift
- Update with week start input

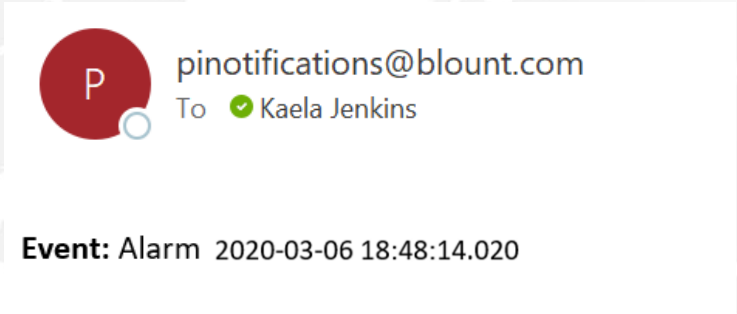
	Performance Report				Week Start:	10/22/19			
Day	Shift	005	006	007	008	009	010	011	012
Tuesday	3 - Midnight	930	847	595	415	906	810	280	491
	1 - Day	987	1052	900	552	894	760	326	262
10/22/2019	2 - Afternoon	928	1014	702	954	400	381	632	559
	Total	2845	2913	2197	1921	2200	1951	1238	1312
Wednesday	3 - Grave	921	1021	698	1000	464	456	419	374
	1 - Day	1223	958	998	982	1	1	336	179
10/23/2019	2 - Swing	1094	1032	621	1100	469	446	636	334
	Total	3238	3011	2317	3082	934	903	1391	887
Thursday	3 - Grave	490	876	1	500	1009	890	567	158
	1 - Day	362	918	332	291	465	257	819	736
10/24/2019	2 - Swing	785	860	881	357	425	409	358	328
	Total	1637	2654	1214	1148	1899	1556	1744	1222
Friday	3 - Grave	797	1062	528	397	552	814	317	279
	1 - Day	735	980	959	954	1	884	624	666
10/25/2019	2 - Swing	130	186	215	215	1	161	166	81
	Total	1662	2228	1702	1566	554	1859	1107	1026
Saturday	3 - Grave	0	0	0	0	0	0	0	0
	1 - Day	0	0	0	0	0	0	0	0
10/26/2019	2 - Swing	0	1	1	1	1	1	1	1
	Total	0	1	1	1	1	1	1	1
Sunday	3 - Grave	0	0	0	0	0	0	0	0
	1 - Day	0	0	0	0	0	0	0	0
10/27/2019	2 - Swing	197	191	189	168	235	218	1	161
	Total	197	191	189	168	235	218	1	161
Monday	3 - Grave	664	530	863	1014	873	856	347	0
	1 - Day	733	1024	937	1028	802	809	354	1
10/28/2019	2 - Swing	1025	1088	1198	1003	695	735	203	0
	Total	2422	2642	2998	3045	2370	2400	904	1
Weekly Total	3 - Grave	3802	4336	2685	3326	3804	3826	1930	1302
	1 - Day	4040	4932	4126	3807	2163	2711	2459	1844
	2 - Swing	4159	4372	3807	3798	2226	2351	1997	1464
	Total	**12001**	**13640**	**10618**	**10931**	**8193**	**8888**	**6386**	**4610**

BLOUNT INTERNATIONAL

Results

PI Notifications Emails

- EF's & Email alerts for alarms
- To leadership, maintenance, production teams
- Support for off-shifts
- Root-cause functionality



Business Impact

- Global Alignment
- Data Integrity
- Equipment Qualification
- Mechanical Improvements
- Production Workflow
- Maintenance Scheduling
- Multi-tasking

BLOUNT INTERNATIONAL

Our Story

BLOUNT INTERNATIONAL

CHALLENGES

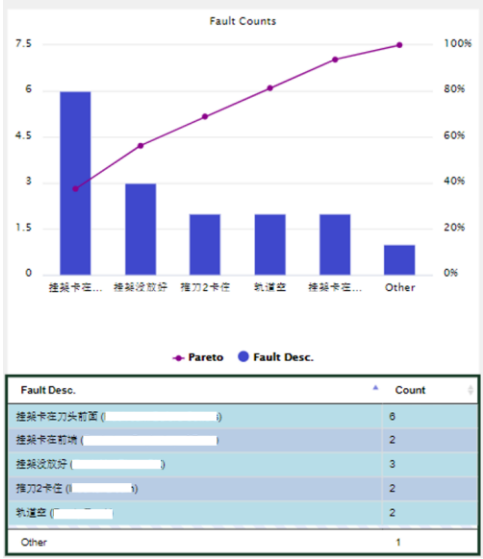
- Multiple sources of manufacturing data, manual data collection
- Diverse equipment

SOLUTION

- Unified data with the PI System
- Standards and governance to globally align

BENEFITS

- Empowering machine and process improvements
- Global data integrity



"Our production supervisor installed a dashboard in the production area to display the machine's data to everyone. The production supervisor uses the PI System display in their meeting to show the machine data to their team every day. We do not need to record the fault count manually for these machines and can use the PI System data to analyze the hourly data of the machines now."
- Tony Chen, Electrical Engineer

Speaker Contact Information

- Kaela Jenkins
- Manufacturing Data Administrator
- Blount International
- Kaela.Jenkins@Blount.com

Questions?

Please wait for the **microphone**

State your **name & company**

Save the Date...

AMSTERDAM
October 26-29, 2020

OSIsoft. PI World