Site Specification Management Using the RtPM Platform

Tamara Carbaugh
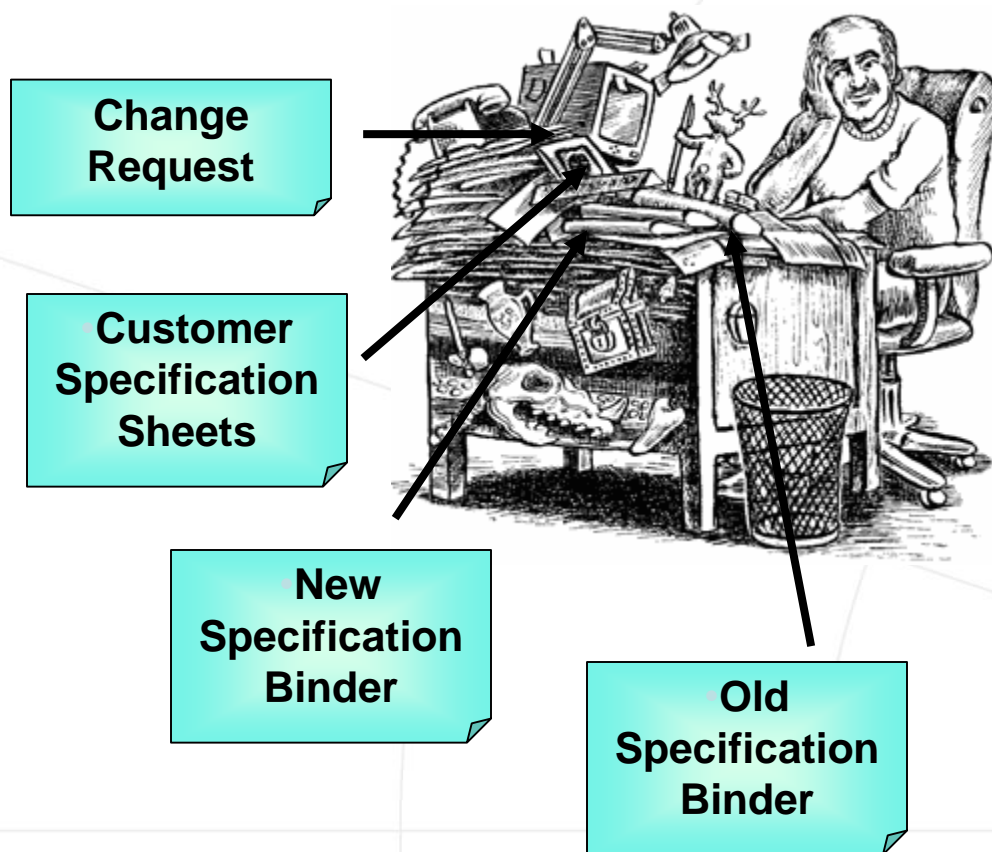
Outline

- Industry Challenges

- Features

- Benefits

- Demonstration

- Summary

The Need for Specification Management

Change Request

Customer Specification Sheets

New Specification Binder

Old Specification Binder

- What has been approved?

- Do I have the most recent copy of the specs?

- Can I see the data differently?

The Value of Specification Management

- Up to date ☑
- Approved ☑
- On line ☑
- Version management ☑
- Displayed the way I need ☑

VALUE NOW, VALUE OVER TIME

The Need for Contextual Data

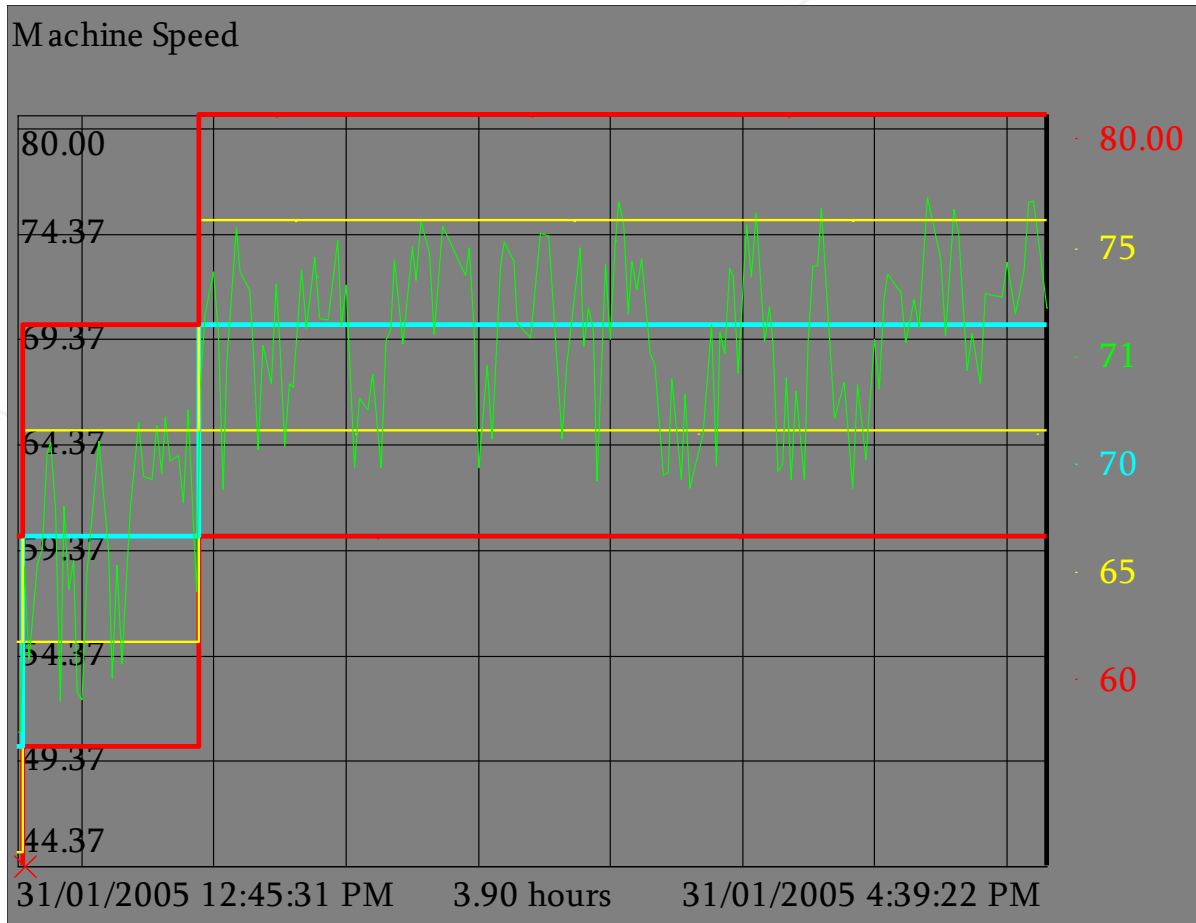Machine Speed chart displaying values from 37 to 79, time span 31/01/2005 11:36:55 AM, 5.08 hours, 31/01/2005 4:41:33 PM, current value 72.
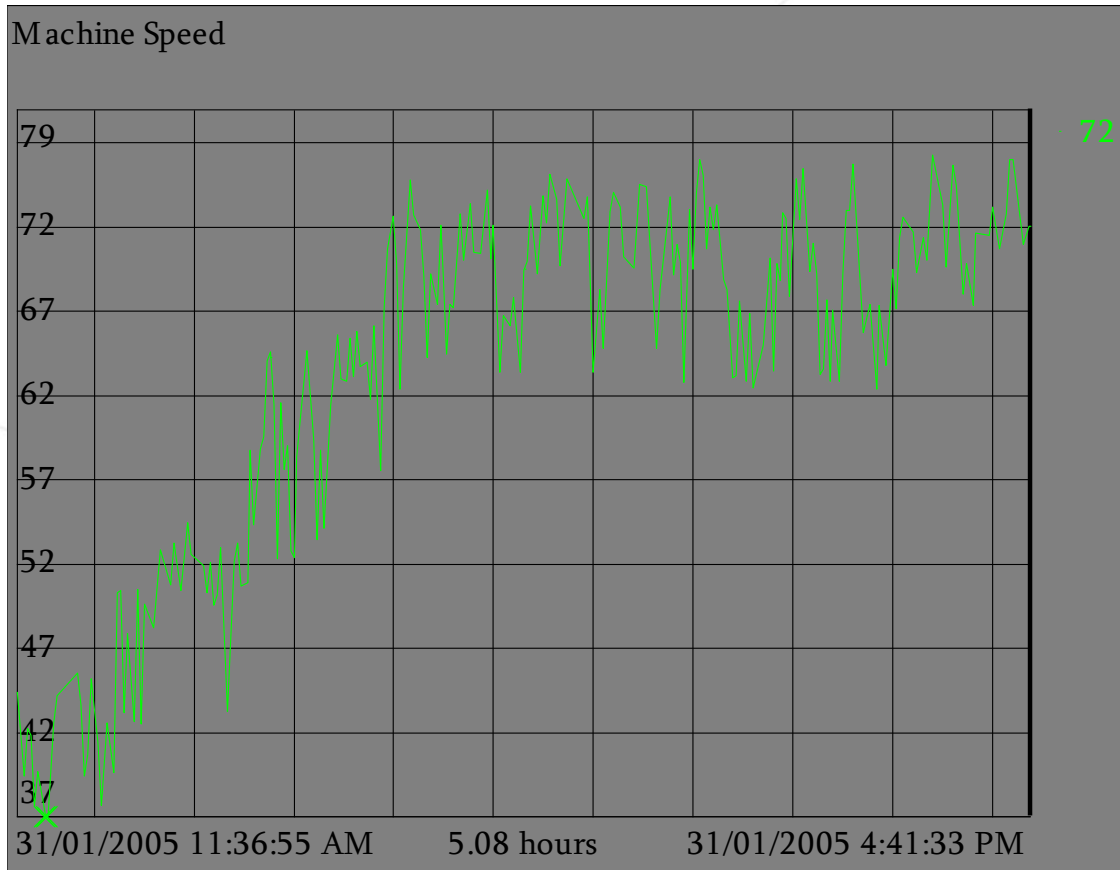
- Is the product being made according to customer specifications?

- Is that increase good, bad or potentially dangerous?

The Value of Contextual Data

Machine Speed

- Customer specs are being met ☑

- Quality standards are being met ☑

- Waste and rework are being minimized ☑

ProcessPoint

- Comprehensive product specification database
- System of record for specification information
  - Product properties
  - Quality limits
  - Product parts
  - Manufacturing procedures
  - Product history
  - Approval and electronic signoffs
- Provides contextual specification data to
  - Users
  - RtPM Clients
  - Other systems

ProcessPoint Fit with RtPM

- The PI System stores the complete history of <u>what has happened</u> in the process

- ProcessPoint stores the specifications that define how the process <u>should run</u>

- Like the PI System does for real-time data, ProcessPoint stores the history of spec data forever and allows it to be used in meaningful ways

VALUE NOW, VALUE OVER TIME

Integration with Manufacturing Data

- One set of specifications
  - Quality, manufacturing, engineering, sales, other departments all looking at same data

- Real-time feedback to manufacturing
  - Increase product quality

- Automate creation of reports
  - Expedite product shipments

Scalability

- ProcessPoint is designed for scalability
    - Security model, search capabilities
- Successful installations include:
    - Single manufacturing line at a site (10 users)
    - Enterprise-wide system with more than 50,000 raw material and product specifications with over 300 users spread across 10 countries

Sample Customer Application

- Application:
  - Pulp and Paper customer using PI, ACE, ProcessPoint and the PP COM Connector
  - Real-time adjustments to recipe blends and other production specifications

- Value:
  - Ability to adjust feedstock to achieve an optimized least cost formulation
  - Immediate visibility to the cost impact of recipe changes

Sample Customer Application

- Application:
  - customer using PI, BatchView, Data Entry Grid, AlarmView, SQC, ProcessPoint, PP COM Connector, ProcessBook
  - Quality and manufacturing specifications from ProcessPoint are integrated with real-time manufacturing data

- Value:
  - Visibility of adherence to manufacturing targets, in an environment with frequent grade changes
  - Improved quality and grade consistency
  - Ability to analyze and improve the process through product based alarming and SQC analysis

Benefits

- Improved change management

- Quicker time to manufacturing

- Reduced waste

- Reduced product variability

- Higher quality and increased customer satisfaction

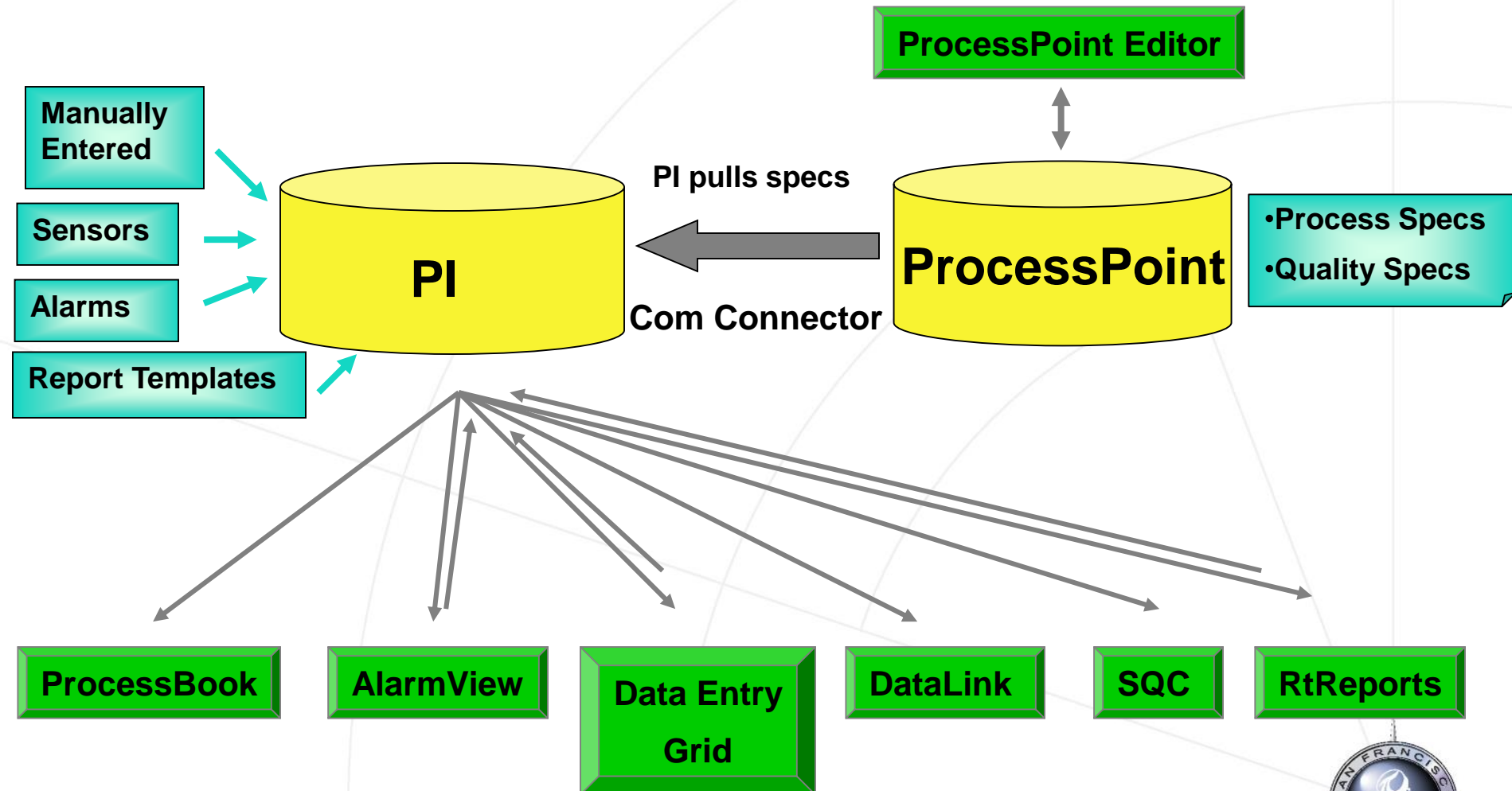- Ability to analyze and improve manufacturing

Demonstration Scenario

- Pulp and paper example
- Quality specifications
  - i.e. Opacity, Ash, Basis Weight
- Process specifications
  - i.e. Machine Speed, Steam Flow, Material Feed Rates
- Specification data used to provide context to real-time manufacturing data

Demo Components

Product Specifications: ProcessPoint

Demo Description

- 10 Quality parameters with:
  - Minimum, Target, Maximum
- 10 Process parameters with:
  - URL, UAL, TGT, LAL, LRL
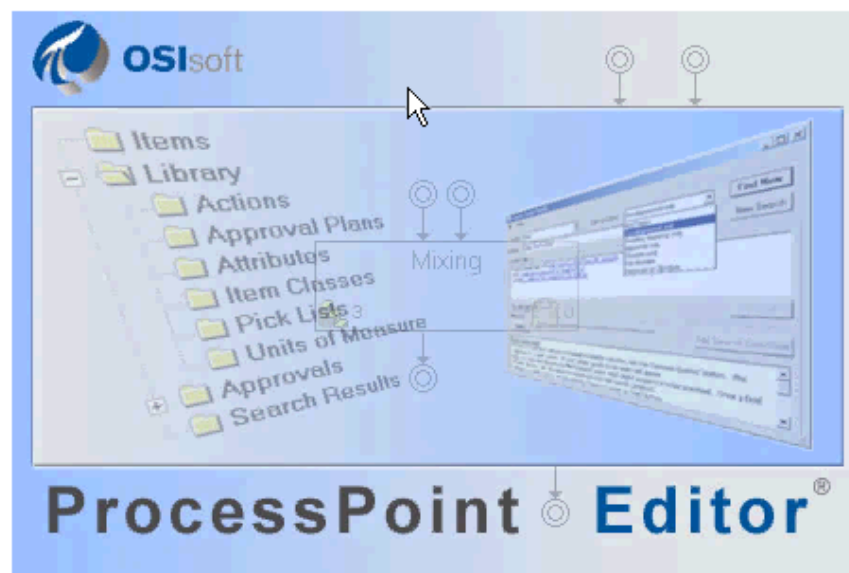- Version management
- Electronic audit trail

Value

- Capture the data important to your process
- ProcessPoint stores the complete product
- Powerful change management capabilities
- Spec data distributed to users, RtPM clients & other systems

VALUE NOW, VALUE OVER TIME

File   View   Search   Tools   Window   Help

New ▾ | FP9 ▾ | Search Items ▾ | Signoff

- Items
- **Library**
- Approvals
- Search Results

OSIsoft

Items
Library
Actions
Approval Plans
Attributes
Item Classes
Pick Lists
Units of Measure
Approvals
Search Results

Mixing

ProcessPoint Editor®

Start | ProcessPoint ...   9:07 PM

Process Monitoring: ProcessBook

Demo Description

- Real-time process data from PI

- Specification context data pulled from ProcessPoint with COM Connector

- Snapshot and historical data shown

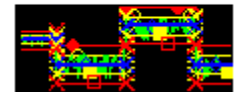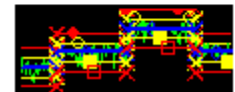- Limits update automatically when product code changes on equipment

Value

- Instant feedback to operator when manufacturing is outside of limits
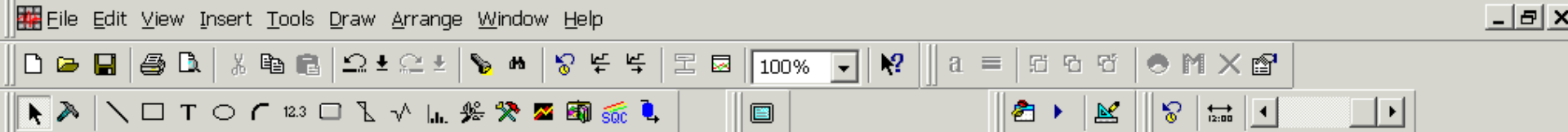
Additives (%)

TiO2	2.5	4.71	6.5
Starch	12	6	20

File   Edit   View   Insert   Tools   Draw   Arrange   Window   Help

100%

OSIsoft Pulp and Paper Company
Fine Paper Machine Number 1

Current Grade: FP20888
Current Reel ID: 85021

Furnish Ratio

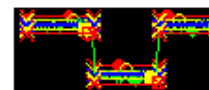|					
Virgin	20	29	40		VFF SQC
Recycle	50	62	70		RFF SQC
Broke	2	4	10		BFR SQC

Machine Setup
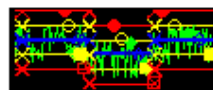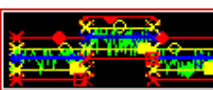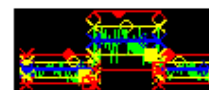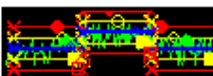
Reel Speed	1750	1772.6	1950		Reel SQC
Steam Flow	3300	3477.6	3700		StFl SQC
Coat Weight	42	47.0	50		COAT SQ
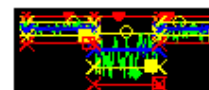
Refining Power (kW/ton pulp)

Recycle	10	32	50		RRP SQC
Virgin	55	61	95		VRP SQC

Additives (%)

TiO2	2.5	4.82	6.5		TiO2 SQC
Starch	3.5	6	11.5		Starch

Ready   NUM

Start   ProcessPoint UC...   Presentations   PI - ProcessBo...   4:40 PM
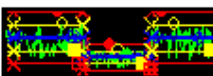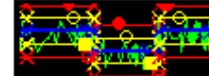
Respond to Process: AlarmView

Demo Description

- Product based SQC Alarms

- Alarm limits come from ProcessPoint

- Operators can enter reason codes or comments when violations occur

Value

- Product based alarming

- History of alarm events with reason codes allow for post-production analysis and improvement

File   Edit   View   Tools   Help

History Search

Alarm Hierarchy

Alarm Groups

- localhost
  - Mill X
  - OSI Paper Mill
  - R0101

Current Alarms - \\localhost\OSIMill

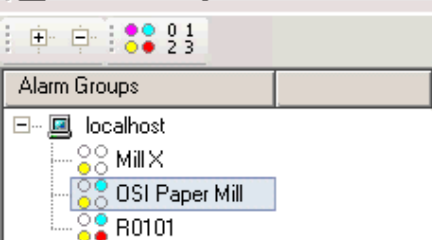| Alarm	Condition	Prio...		Start Time	Sequence Start	Source Value
SQC.Virgin Fiber Furnish %	OutsideControl	2		3/31/2006 3:43:56 PM	3/31/2006 3:43:56 PM	23.56413 %
SQC.Starch %	OutsideOneSi...	1		3/31/2006 3:43:56 PM	3/31/2006 3:43:46 PM	8.683874 %
SQC.Recycle Refiner Power	OutsideControl	3		3/31/2006 2:48:46 PM	3/31/2006 2:48:46 PM	26.58766 %

PLMDOMAIN\rhall   Ready

3/31/2006 3:44:02 PM

Start   PI - Proces...   Microsoft E...   PI-BatchVi...   PI Alarm...   3:44 PM

Enter Manual Values: Data Entry Grid

Demo Description

- Quality tests are performed on the product and results are manually entered

- Specification data from ProcessPoint

- Manually entered data inserted into PI

Value

- Manual data is stored in PI Archive

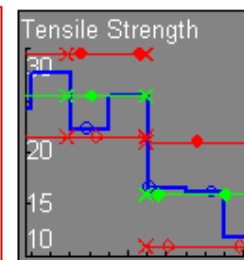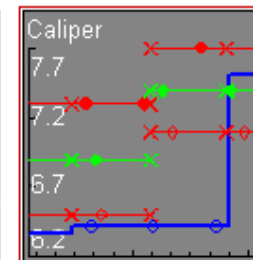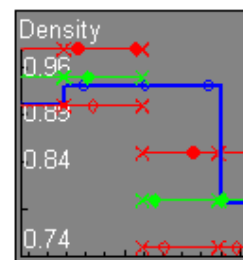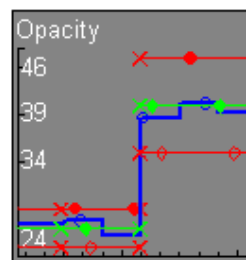- Users get immediate feedback when manual data is out of spec

VALUE NOW, VALUE OVER TIME

File   Edit   View   Insert   Tools   Draw   Arrange   Window   Help

100%

OSIsoft Pulp and Paper Company
Lab Data Entry Sheet

Grade	FP77350	FP77350	FP69251	FP69251	FP69251
ReelCode	85021	85021	85021	85020	85021
State	Running	Complete	Complete	Complete	Complete
Start Time	3/30/2006 11:09:23 PM	3/30/2006 10:49:47 PM	3/30/2006 10:29:20 PM	3/30/2006 10:09:19 PM	3/30/2006 9:48:54 PM
End Time		3/30/2006 11:09:23 PM	3/30/2006 10:49:47 PM	3/30/2006 10:29:20 PM	3/30/2006 10:09:19 PM
Basis Weight	70.17593	65.29605	84.89371	89.68946	88.95786
Dirt Count	2.591089	1.146507	4.331105	4.750884	5.562984
Ash	11.0294	13.94761	24.8	23.6	23.48776
Opacity	39.1597	40.1087	26.16324	27.5	25.95368
Density	0.7958016		0.92	0.9	0.91
Caliper	7.518352		6.42	6.37	7.2
Tensile Strength	11.88733	16.62842	25.54384	27.68932	22.84832

Dirt Count

Basis Weight

Ash

Opacity

Density

Caliper

Tensile Strength

Ready   NUM

Start   PI - ProcessBo...   11:18 PM
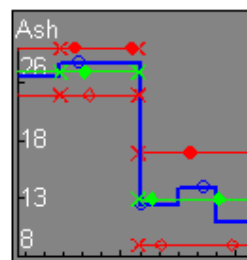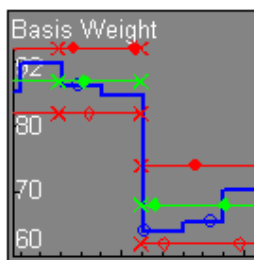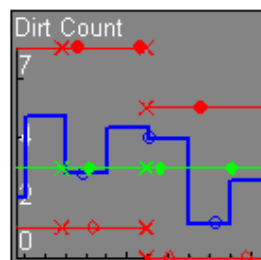
Analysis and Improvement: DataLink

Demo Description

- Side by side comparison of key quality and process values

- Quality and process specification limits from ProcessPoint

- Manufacturing data from PI

Value

- Detect out of spec patterns

- Link process conditions to finished product quality

VALUE NOW, VALUE OVER TIME

File   Edit   View   Insert   Format   Tools   Data   Window   PI   PI-SMT   Help

Type a question for help

Arial   10

Quality vs. Process Analysis

Get Data | Clear | localhost

| Unit: | PM1 | | Product: | | | | Process: | Broke Fiber Furnish % |
| Between: | * | | and: | *-8 Hours | | | Quality: | Moisture |

Reel Data				Process Variable			Quality Variable		
ID	PRODUCT	START TIME	END TIME	High	Low	roke Fiber Furnish	High	Low	Moisture
85020	FP77350	3/29/2006 22:03	*	10	2	5.0	24	20	22.1
85021	FP69251	3/29/2006 21:43	3/29/2006 22:03	23	15	18.1	18	12	13.3
85020	FP77350	3/29/2006 21:23	3/29/2006 21:43	10	2	5.5	24	20	22.1
85021	FP69251	3/29/2006 21:03	3/29/2006 21:23	23	15	18.5	18	12	13.5
85020	FP77350	3/29/2006 20:43	3/29/2006 21:03	10	2	5.4	24	20	22.6
85021	FP20888	3/29/2006 20:23	3/29/2006 20:43	13	5	8.6	2	1	1.4
85020	FP77350	3/29/2006 20:03	3/29/2006 20:23	10	2	5.4	24	20	22.9
85021	FP77350	3/29/2006 19:43	3/29/2006 20:03	10	2	5.2	24	20	23.2
85020	FP77350	3/29/2006 19:23	3/29/2006 19:43	10	2	5.2	24	20	20.3
85021	FP77350	3/29/2006 19:02	3/29/2006 19:23	10	2	5.6	24	20	21.8
85022	FP69251	3/29/2006 18:42	3/29/2006 19:02	23	15	18.4	18	12	13.4
85021	FP77350	3/29/2006 18:22	3/29/2006 18:42	10	2	5.4	24	20	23.1
85021	FP20888	3/29/2006 18:02	3/29/2006 18:22	13	5	8.4	2	1	1.2
85020	FP20888	3/29/2006 17:42	3/29/2006 18:02	13	5	8.7	2	1	1.2
85020	FP77350	3/29/2006 17:22	3/29/2006 17:42	10	2	5.7	24	20	20.8
85020	FP77350	3/29/2006 17:02	3/29/2006 17:22	10	2	5.7	24	20	20.8
85021	FP77350	3/29/2006 16:42	3/29/2006 17:02	10	2	5.5	24	20	22.3
85022	FP69251	3/29/2006 16:22	3/29/2006 16:42	23	15	18.6	18	12	15.3

BatchReport / Selections / Recipe and Report

Ready

NUM

Start | ProcessPoint UC... | Microsoft Exce... | PI - ProcessBoo... | 10:30 PM

Process Improvement: Real-time SQC

Demo Description

- Real-time SQC charts configured with:
  - URL spec tag set as upper spec limit
  - UAL spec tag set as upper control limit
  - TGT spec tag set as center line
  - LAL spec tag set as lower control limit
  - LRL spec tag set as lower specification limit

Value

- Statistical calculations performed automatically

- Determine:
  - Do limits reflect operating capabilities?
  - Can specification limits be tightened?

VALUE NOW, VALUE OVER TIME

File Edit View Insert Tools Draw Arrange Window Help

100%
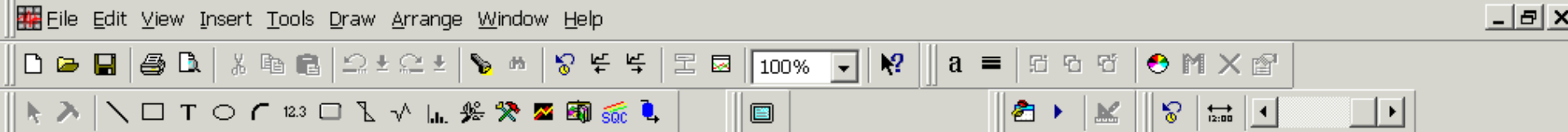
OSIsoft Pulp and Paper Company
Fine Paper Machine Number 1

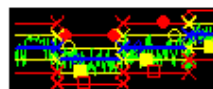Current Grade: FP69251
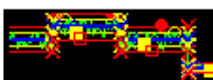Current Reel ID: 85021
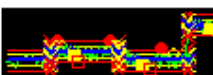
Furnish Ratio

Virgin	25	32	45		VFF SQC
Recycle	33	36	41		RFF SQC
Broke	15	20	23		BFR SQC

Machine Setup

Reel Speed	1800	2000.1	2200		Reel SQC
Steam Flow	2500	2546.5	2900		StFl SQC
Coat Weight	80	86.8	100		COAT SQ
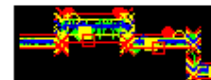
Refining Power (kW/ton pulp)
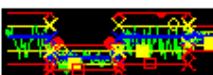
| Recycle | 20 | 27 | 40 | | RRP SQC |
| Virgin | 25 | 34 | 45 | | VRP SQC |

Additives (%)
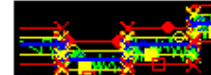
| TiO2 | 5 | 7.96 | 9 | | TiO2 SQC |
| Starch | 12 | 17 | 20 | | Starch |

Ready

NUM

Start | PI - ProcessBo... | Microsoft Excel - ... | PI-BatchView O... | 3:56 PM

Certificate of Analysis: RtReports

Demo Description

- Report templates stored in PI

- PI provides real-time quality data

- ProcessPoint provides specification data

Value

- Automate generation of Certificate of Analysis

- Expedite shipment of finished product

VALUE NOW, VALUE OVER TIME

File   Edit   View   Favorites   Tools   Help

RtReports

Report Search Page

-Quick Links-   -Search Attribute-   [   ]   Go

Help | Support | Sign Off
Welcome rhall

| 1 | Report | | 2 | Context | | 3 | Generate | | Proceed to Case Entry |

Search

		Report Name	Version	Description	Template Status	RunTime

Report Filter Conditions

Report Type
[Case   ▼]

Name
[   ]

Version
[   ]

Template Status
[▼]

Author
[   ]

1

Done

Local intranet

Start | PI - ProcessBoo... | RtReports Re...   11:34 PM

Demo Summary

- ProcessPoint adds specification context to RtPM clients
  - ProcessBook
  - PI SQC
  - AlarmView
  - Data Entry Grid
  - PI DataLink
  - RtReports

Summary

Drive Operational Efficiency	• Standardized data model and structured environment for controlled change management • All users access the same set of product specifications for process and quality parameters
Accelerate Decision Making	• Provide visibility of specification data to real-time displays and data analysis tools • Enable automated compliance reports
Enable Performance-Driven Manufacturing	• Less time managing specs and more time improving the process • Improve product quality and consistency • Reduce waste and rework

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