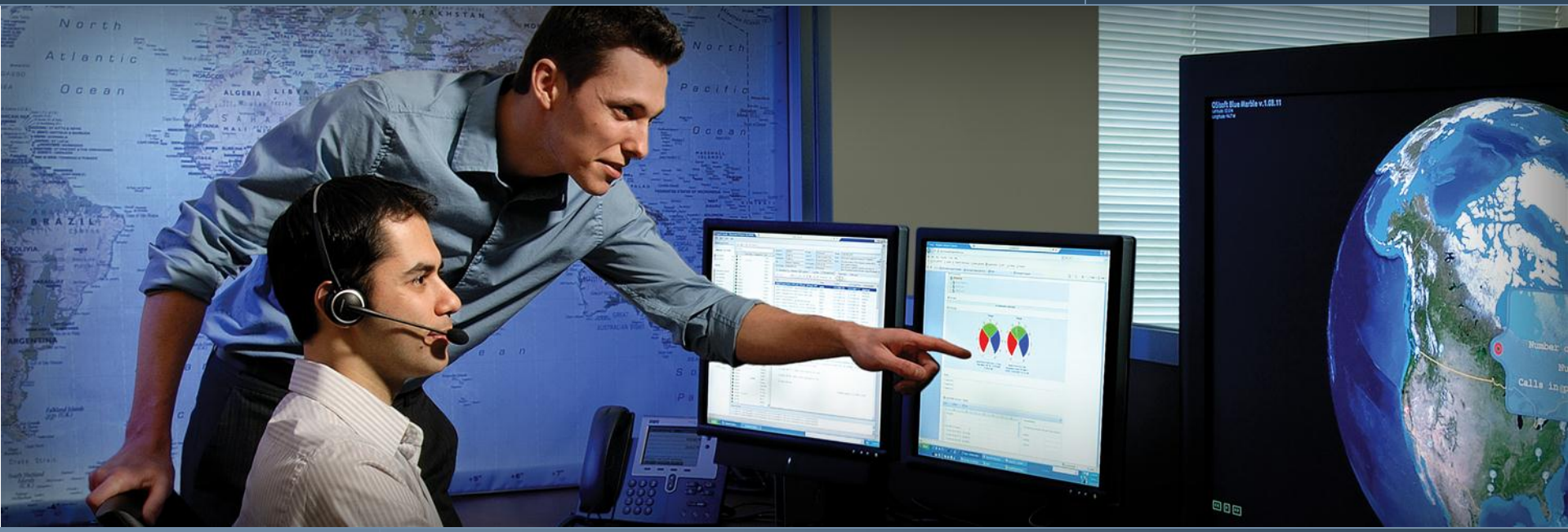
OSIsoft® Regional Seminar Series
Johannesburg, South Africa



Power of PI at Work

Presented by Henlo de Waal

Mondi Paper Merebank, Durban, South Africa

24 February 2011

About “Mondi”

- Industry: Pulp & Paper
- Our Business
  - Forestry, Pulp, Paper
    - 332,000 hectares of forest in KwaZulu-Natal and Mpumalanga provinces
    - UFP (Uncoated Fine Paper) produced in Durban
    - Hard and softwood pulp and virgin containerboard produced at the Richards Bay pulp and containerboard mill in KwaZulu-Natal
    - 59% of segment revenue to export markets in 2009
  - Production
    - We make our uncoated fine paper at our Merebank mill in Durban and in 2009 we produced approximately 0.4 million tonnes.
    - Produced 0.2 million tonnes of containerboard and 0.7 million tonnes of pulp at our Richards Bay operation.
    - All of our South African forests are certified according to Forestry Stewardship Council (FSC) criteria.
- Organization / Sites
  - Europe, Africa, North America, Latin America, Asia, Middle East

Business Challenge/Problem Addressed

Business Intelligence Problem:

- **Real time fixed cost analysis.**
- **Use real time PI data to improve operational performance, efficiency and quality.**
- **Development of SDK applications to reduce cost of ownership.**

Challenge / Problem

Mondi Merebank (Durban)

- 1400 ton of paper daily (Fine/News)
- Boilers, Refiners, Recycling, Water, Energy, Paper, Environment
- 29800 measurements in mill (DCS, Manual Inputs, Calculated….)

Challenge/Problem

- How the changes in process could affect the costing.
- Reports were done by each individual, for each unit. Lacked conformity and accuracy.
- Fault finding was a time consuming and strenuous process.
- Auditing data was inaccurate and difficult to obtain.
- Shift performance could not be accurately reported.
- Increase in energy expenditure due to Eskom increases and energy intensive refining process.

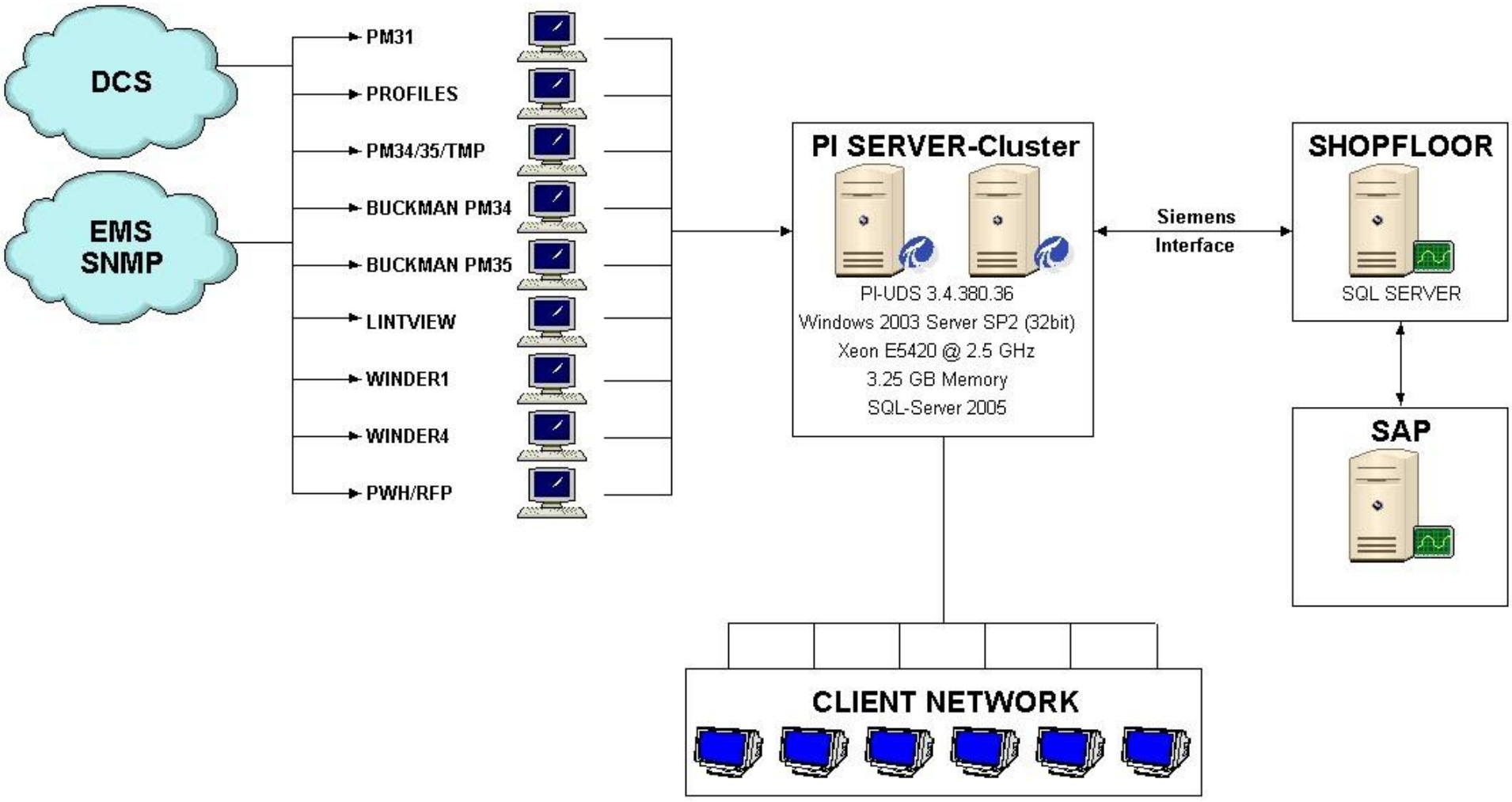
Solution

- Identify each input to accurately build mass-balance reports.
- Created reports that supplied the right information to the right people.
- Used SDK and ActiveX to create real-time costing model
- ProcessBook displays were created to show data from multiple sources.
- Created reports for auditing (ISO).
- XY plots were created to display which shift performed the best for the day/week/month, this resulted in a “We can do better” mentality.
- Created ProcessBook display with ActiveX controls to show the impact energy cost has on process.

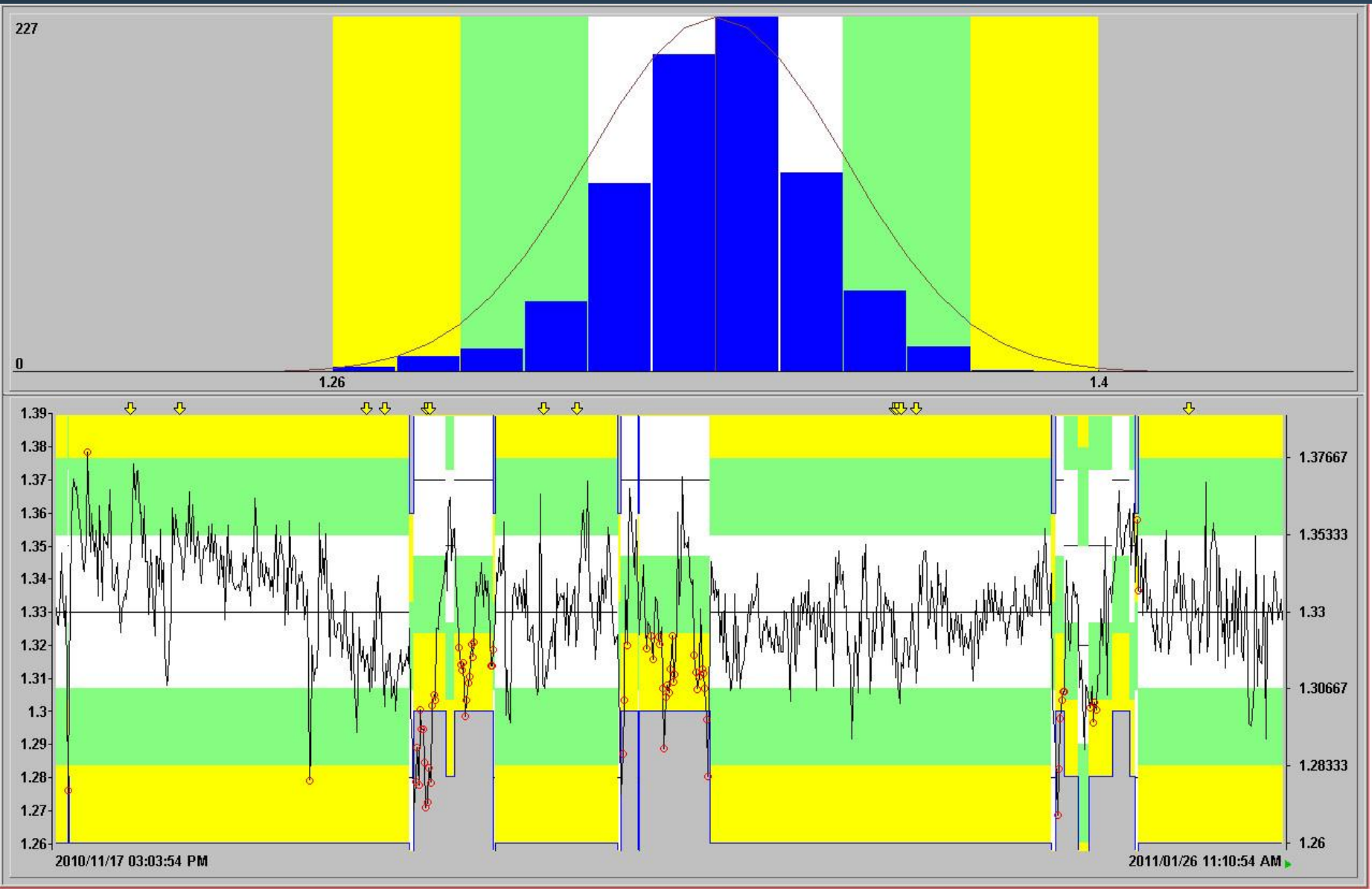
OSIsoft Software and Services Used

- DataLink
- PI-UDS
- PI SDK, VBA, ActiveX
- SQC
- ProcessBook
- Tech Support

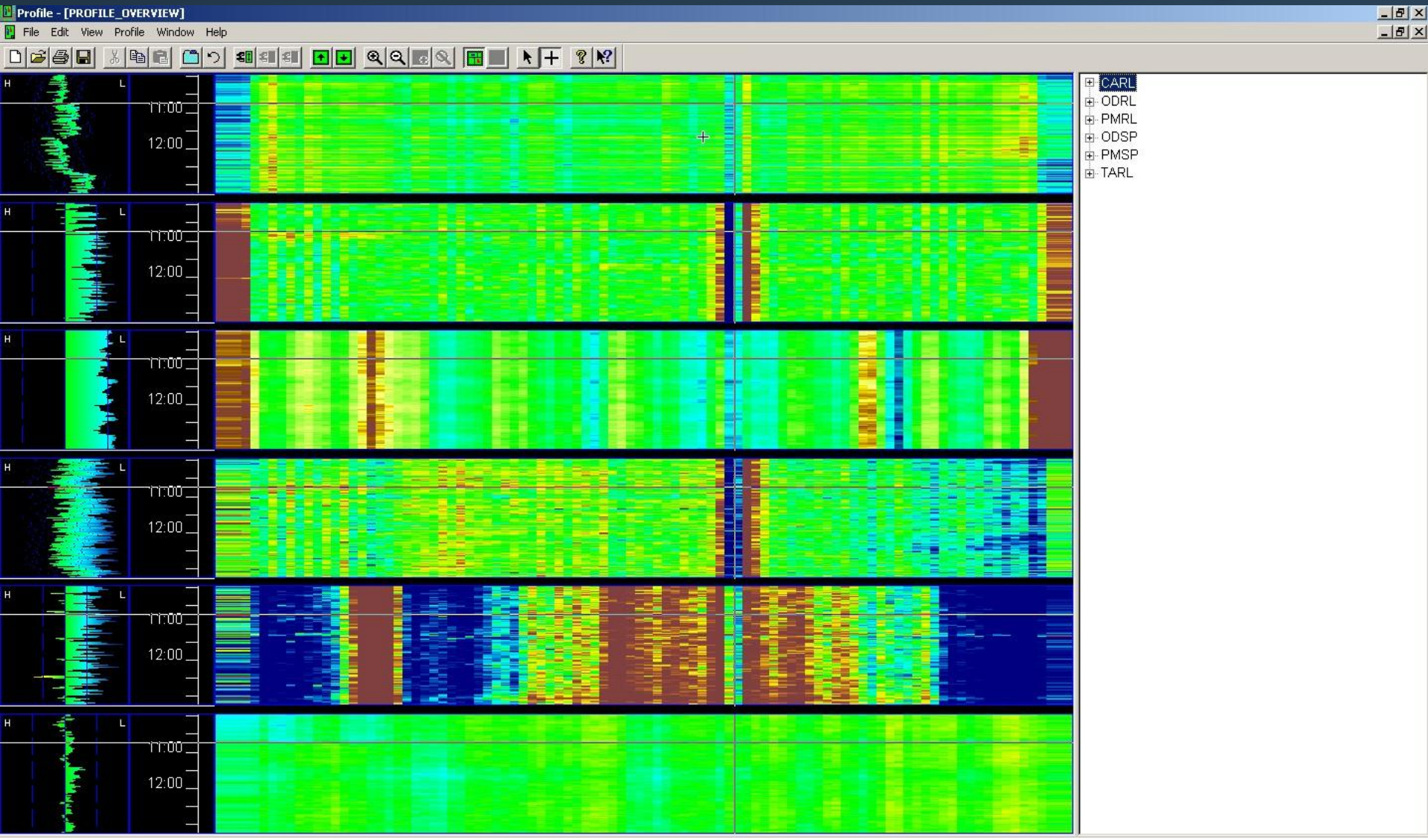
Architecture



Results: SQC Charts



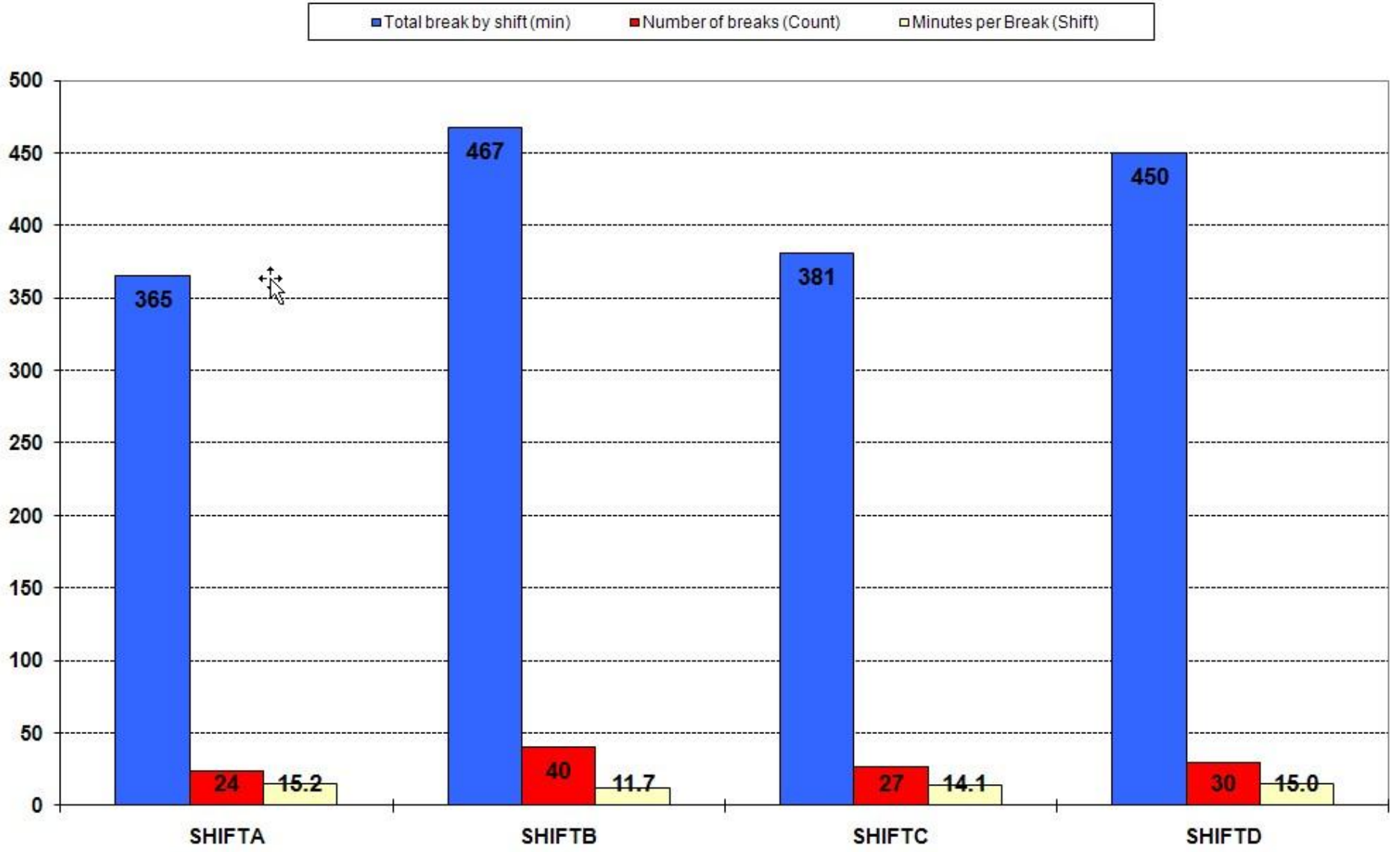
Results: PI Profiles



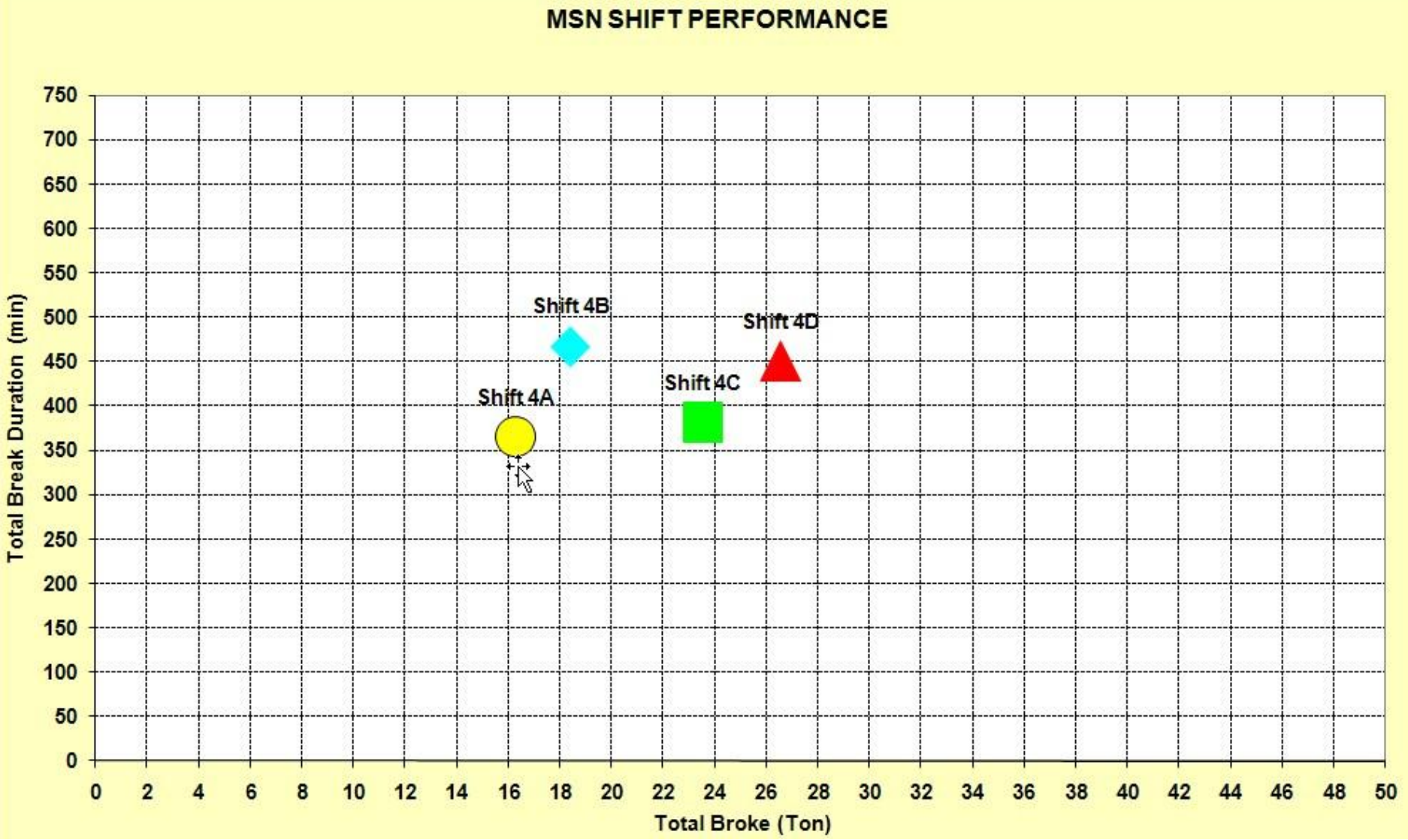
Results: Costing

	USAGE		BOM's	COSTING		
	REAL-TIME USAGE	SIMULATED USAGE	SAP BOM	UNIT COST	REAL-TIME COST	SIMULATED COST
TOTAL COST						1
				Excluding Broke →		
FURNISH		← Excluding Broke		Excluding Broke →		
PCC 19		0				0
SW 10		0				0
HW 91		0				0
WET BROKE						
DRY BROKE						
BMS BROKE		0				0
SURFACE SIZE						
SURFACE STARCH		0				0
INTERNAL STARCH		0				0
AS 1000		0				0
AQUAZYME 120L		0				0
BASO 400DS		0				0

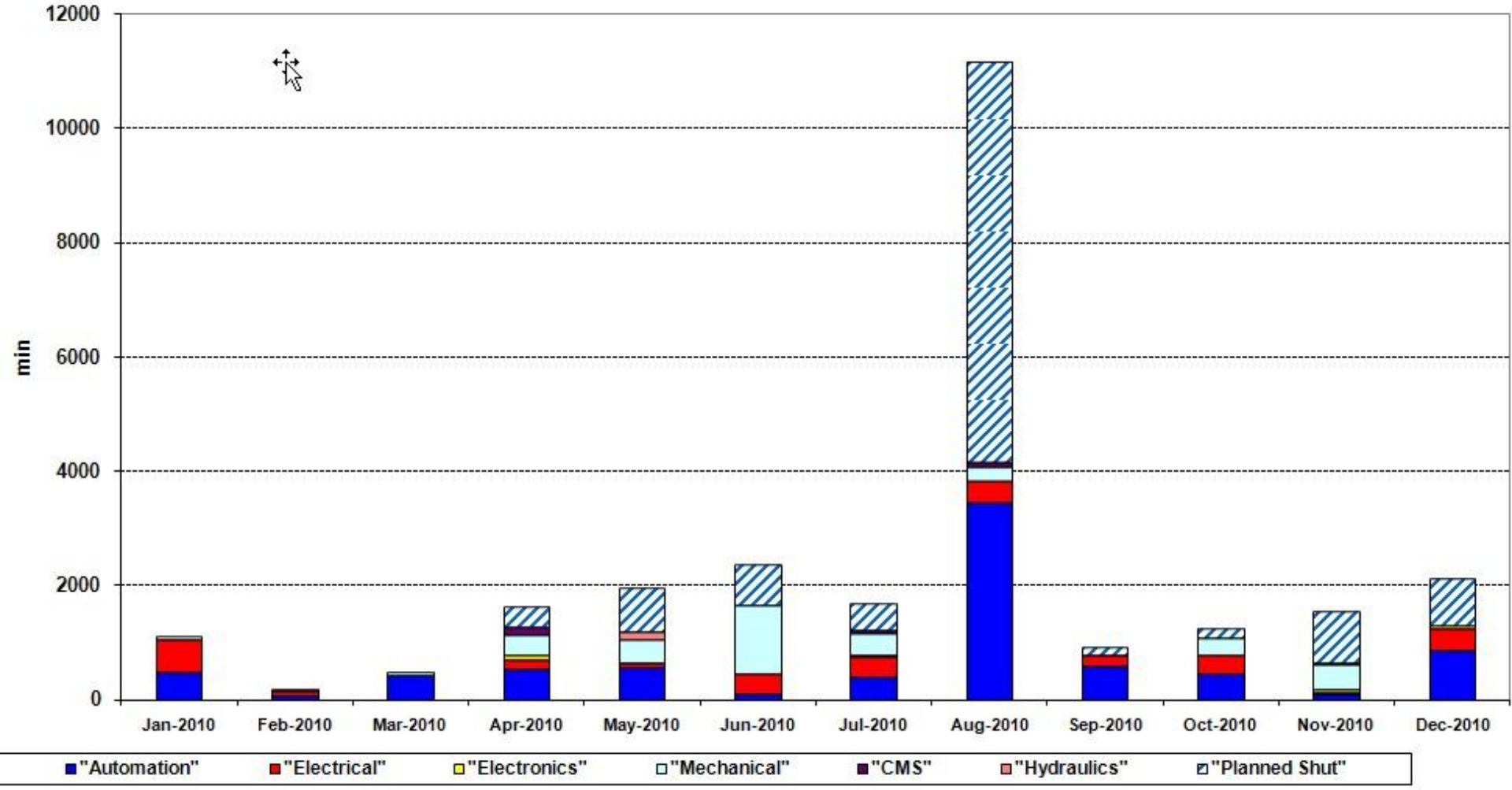
Results: Shift Performance (1)



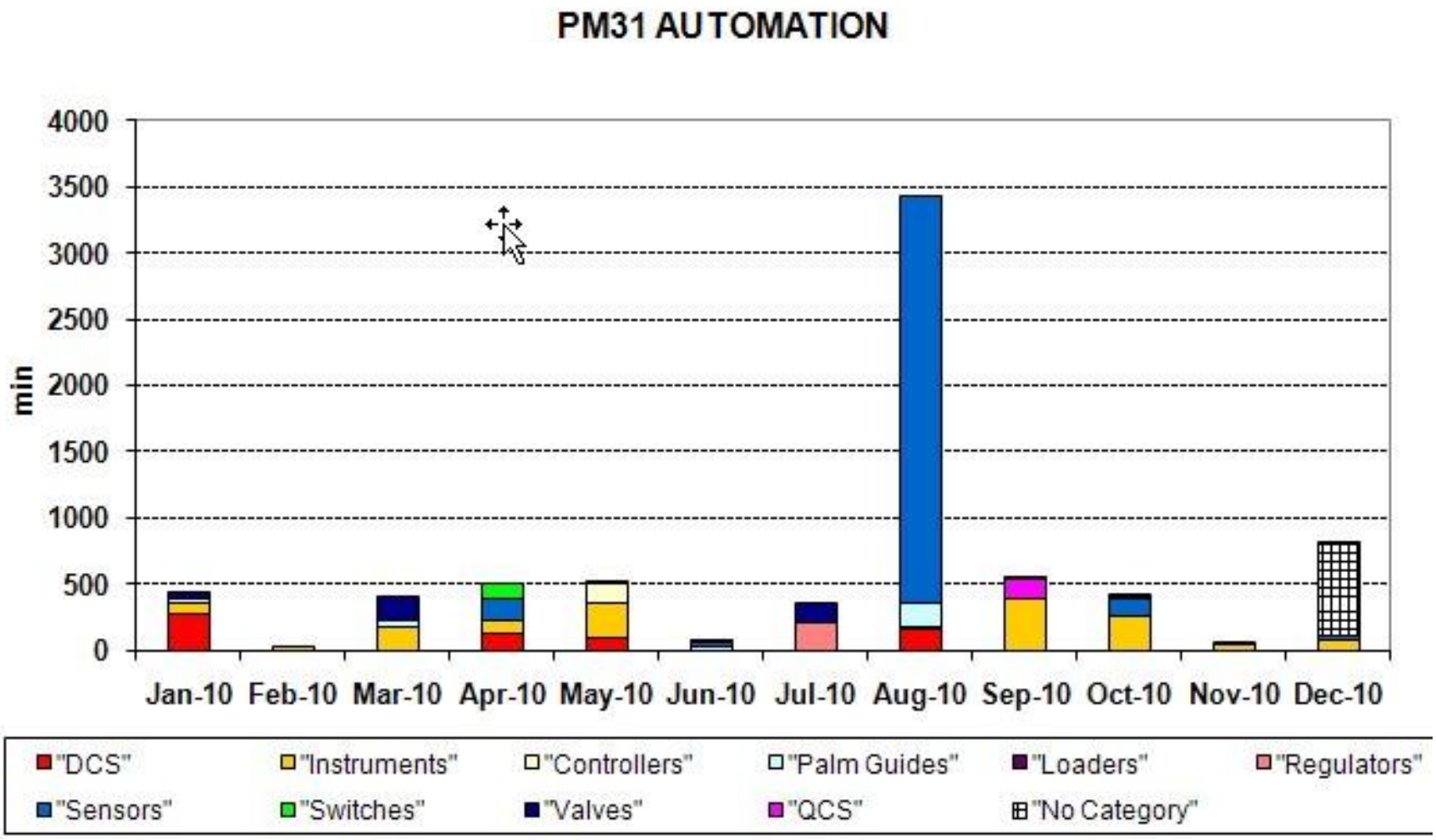
Results: Shift Performance (2)



Results: Downtime Management (1)



Results: Downtime Management (1)



Results: Timely and Accessible Accurate Reports

REPORT FOLDERS

- DOWNTIME
- ENVIRONMENT
- LAB
- MSN
- OTHER
- PAPER MACHINES
  - CLOTHING
  - PM31
    - 1_STOCK PREP
    - 2_WET END
    - 3_DRY END
    - 4_PRODUCTION
    - 5_SHIFT
    - 6_DAILY
    - 7_WEEKLY
    - 8_MONTHLY
    - 9_YEARLY
  - PM33
  - PM34
  - PM35
- POWER HOUSE
- RFP
- TMP
- WYD

=>

FILES

CHEMICAL_PULP_USAGE.xls
CHEMICAL_PULP_USAGE_MOISTURE.xls
COLOUR_SENSOR_CLEANING.xls
NEWSPRINT_DAILY_QUALITY.xls
PCC_USAGE.xls
PM_REPORT.xls
TANK_LEVEL_OVERFLOWS.xls

Results: Energy Management

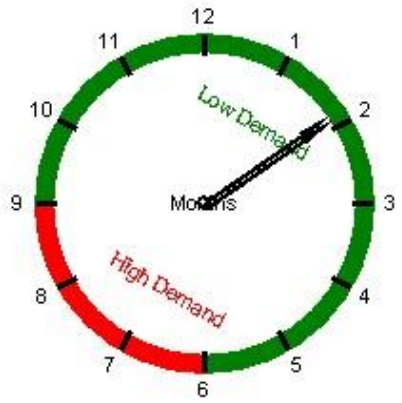
TMP Off Peak ○ Standard ● Peak ○

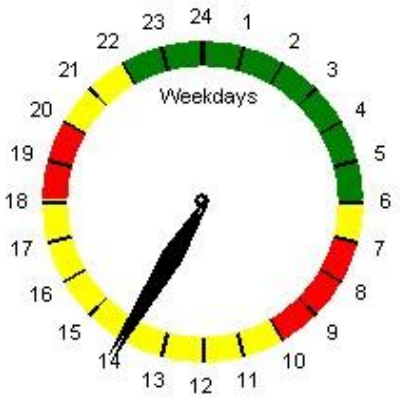
L1P	L2P	L3P	L4P	
L1S	L2S	L3S	L4S	
R1	R2	R3	SW	

Tower1 Level	17 %
Tower2 Level	19 %
Tower3 Level	2 %
Total TMP Level	40 %

TMP Production Rate	
TMP Total Elec Usage	
Specific Usage	
Total Elec Cost	
Spec Elec Cost	
Daily Elec Cost	

MSN Current MVA	66.57 MVA
MSN 30m Avg MVA	↓ 69.36 MVA
MSN MTD MVA	↓ 76.62 MVA





		Shed	Restore
Power Available	1.76 MVA		
MSN Power	66.57 MVA		
Max MVA Reached	75.00 MVA		
Remaining Time	23.60 min		
Last Half Hour Demand	↓ 69.36 MVA		

Benefits

- Bill of materials(BOM's) can now be updated accurately, no need for back flushing.
- Email reports automatically to the right people.
- Real Time costing now visualized.
- Historical trending improved our product consistency. Current product vs previous best.
- Reduce data silos and implemented a one-version of the truth.
- Improved Shift performance.
- Reduced Energy expenditure resulted in massive savings.

Thank you

777 Davis St., Suite 250 San Leandro, CA 94577