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EMEA USERS CONFERENCE

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Using PI System in Power Generation Operation and Maintenance to Optimise Commercial, Environmental and Safety performance

Presented by **Aodhán McAleer,**
Operations Manager
Moneypoint Power Station



Energy for
generations



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ESB at a Glance

Power Stations &
Electricity Trading

**Generation &
Wholesale Markets**



ESB Networks



Distribution System
& HV Transmission

International Energy &
Engineering Company



ESB International

**electric
ireland**

Electric Ireland

Supply Company
Electricity & Gas



Moneypoint & ESB



- Generating electricity since 1927, coal at Moneypoint since 1985
- 3 x 305MW Plant
- High merit ESB PG Thermal Plant
- Emission Abatement Plant Retrofitted, SCR, FGD



“Information is not Knowledge”

- We have a modern control system for **Control**
- We have **Operators**
- We have **Alarms**
- We have **Events**



Why do we need a PI System?

Challenges to Producing Electricity in 2016



Commercial Performance & Income Stream

State Monopoly to Market Participant
Base Loading to Two Shifting
Difficult Operating Profiles



Safety

Less Staff, Age Profile, 30yr+ Plant
Bulk Material Transfer



Maintenance & Cost

Commercially Driven
Maintenance
More for Less

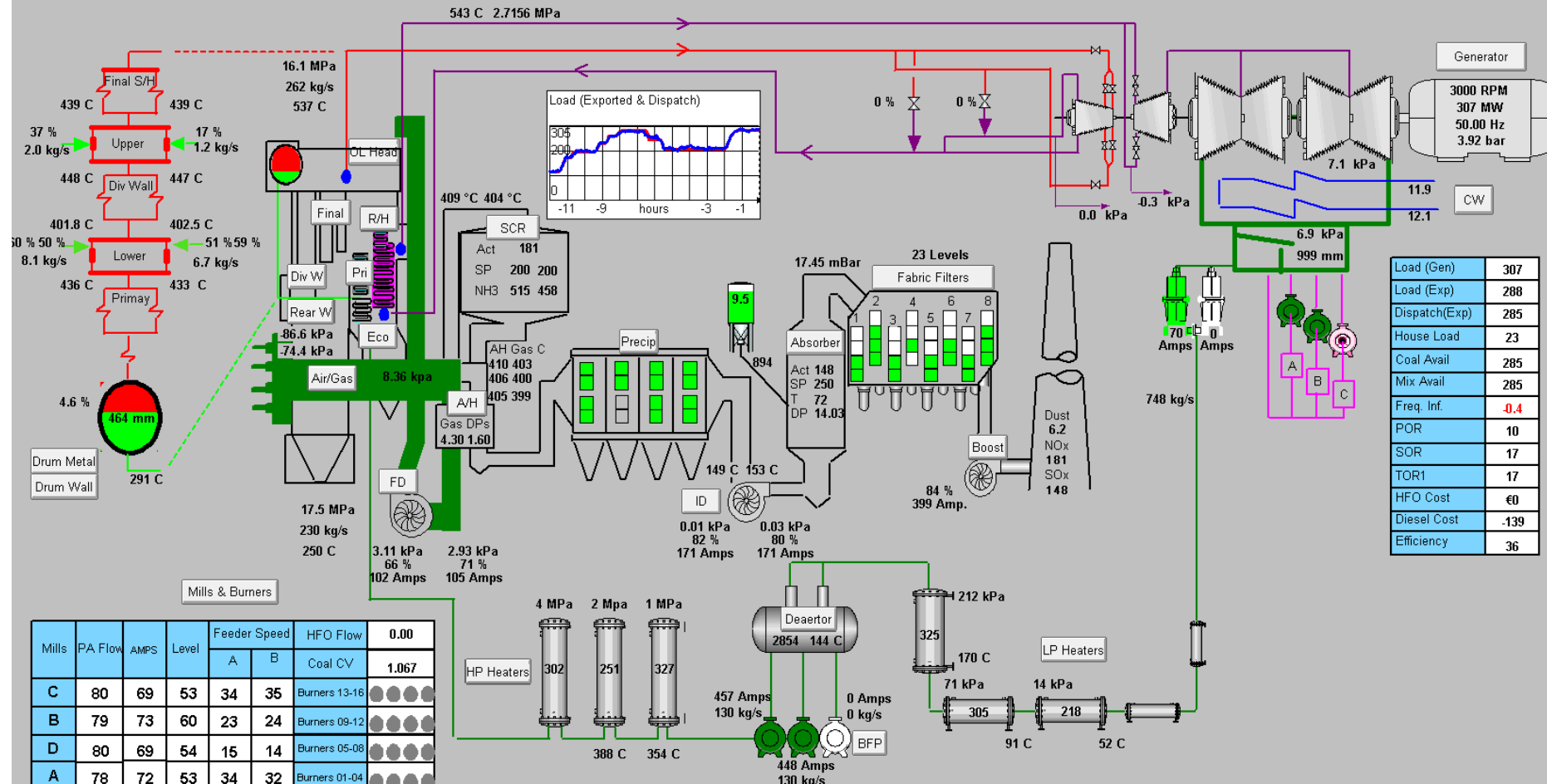
Environment

Emissions Compliance
Abatement Plant



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UNIT 2 OVERVIEW v31



Safety Using PI System

Upper Tier Seveso Site

Process Safety

Water/Steam			
Final S/H P	15.9	15.8	15.9
Final S/H T	541	544	533
Reheat P	2.52	3.16	4.06
Reheat T	534	535	528
Max R/H TU.T	567	584	562
FW Flow	149	185	195
Attemp. Flow	13.4	14.4	7.7
Steam Flow	170	207	213
Drum Conn.	2.52	0.22	0.81

Mill / Burners			
	U1	U2	U3
Mill C Classifier DE > 90 C	3	0	0
Mill C Classifier NDE > 90 C	2	0	0
Mill B Classifier DE > 90 C		0	0
Mill B Classifier NDE > 90 C	0	0	0
Mill D Classifier DE > 90 C	0	0	0
Mill D Classifier NDE > 90 C	0	0	0
Mill A Classifier DE > 90 C	0	1	0
Mill A Classifier NDE > 90 C	0	2	0
BSO Failed to Close 01	0	0	0
BSO Failed to Close 02	0	0	0

Operational Abnormalities

Poor Operation Practices

Alarm Overload

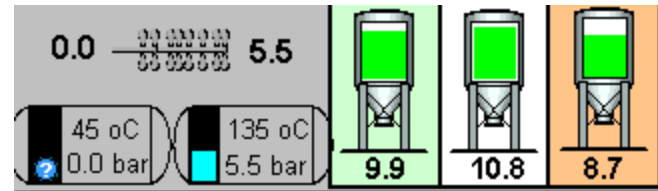
Environmental Compliance Using PI System

Operating within Emissions Limits

Unabated Operation Hours

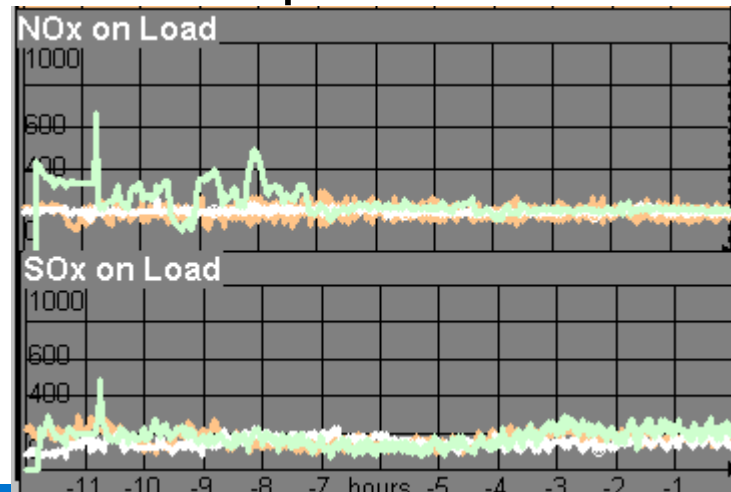
Changing Daily and Monthly Targets

IED Limits	NOx < 260	SOx < 360
NOx Current	185	174
NOx Avg Daily	202	194
NOx Avg Monthly	153	191
SOx Current	182	144
SOx Avg Daily	206	189
SOx Avg Monthly	154	135



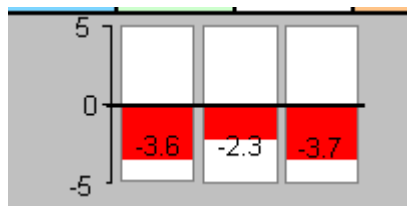
Critical Plant Overview

Front Line Compliance



Commercial Performance Using PI System

Un-instructed Imbalance Prevention



Controllable Costs Reduction

HFO Flow	0.00	0.71	0.41
Diesel Flow	0.00	-0.17	0.01
Coal CV	1.010	1.030	1.040
Burners13-16	●●●●●	●●●●●	●●●●●
Burners09-12	●●●●●	●●●●●	●●●●●
Burners05-08	●●●●●	●●●●●	●●●●●
Burners01-04	●●●●●	●●●●●	●●●●●

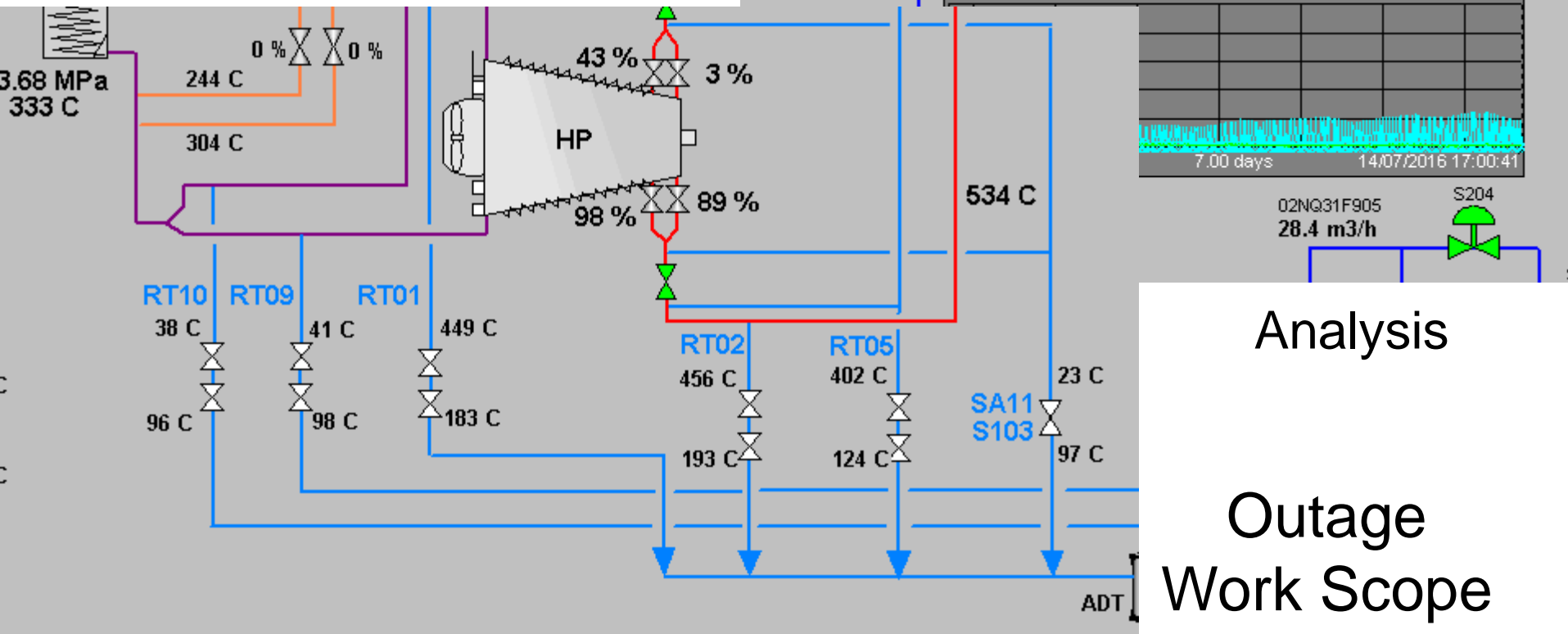
Weekly HFO Price Per Ton €220			
HFO Cost €/h	€0	€497	€321
HFO Cost €/S	€11419	€4253	€3539

Reduce Expensive Secondary Fuel

Commercial			
	U1	U2	U3
Load (Gen)	211	252	249
Load (Exp)	189	228	225
Dis. (Exp)	195	230	230
House Load	21	21	24
Coal Avail	260	285	285
Mix Avail	260	285	285
Freq. Inf.	-4.8	-5.1	-4.1
POR	10	10	10
SOR	14	17	17
TOR1	17	17	17

Grid Code & Availabilities

Maintenance Using PI System



Analysis

Outage
Work Scope



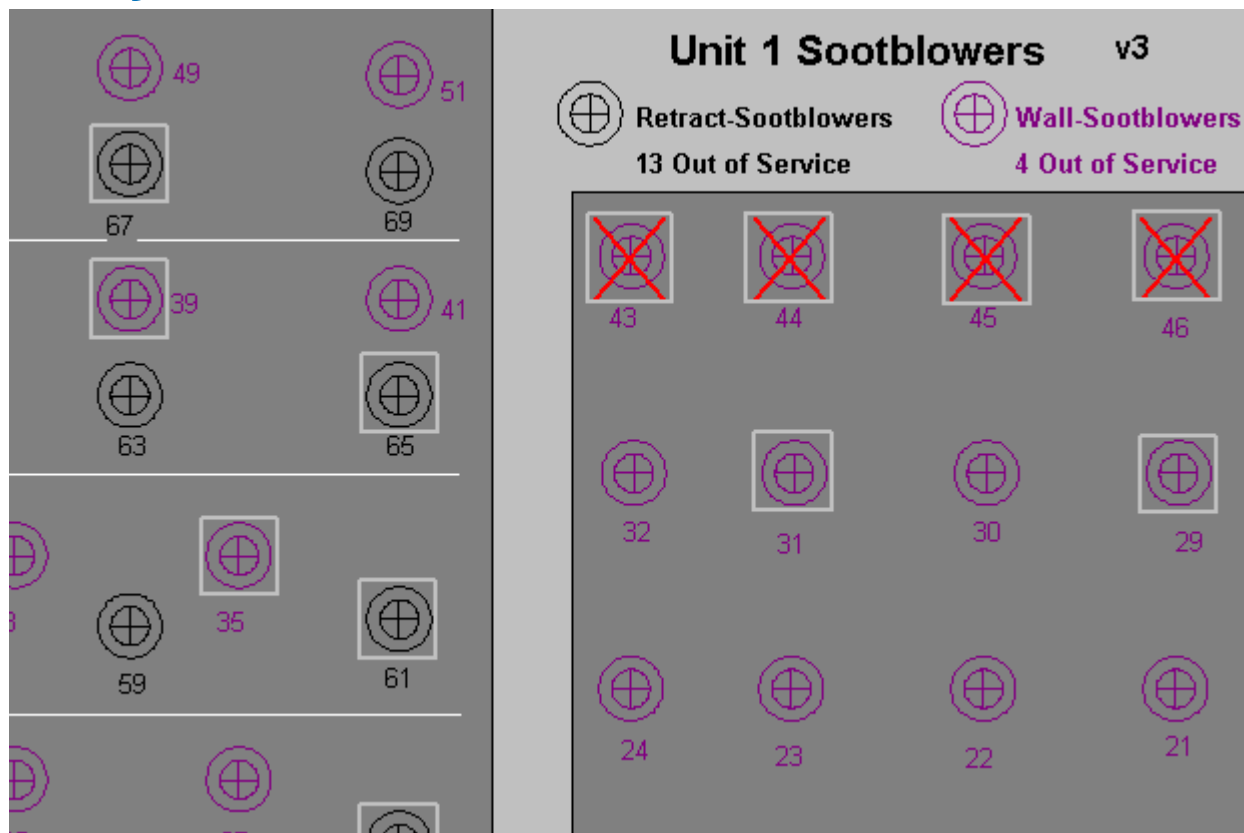
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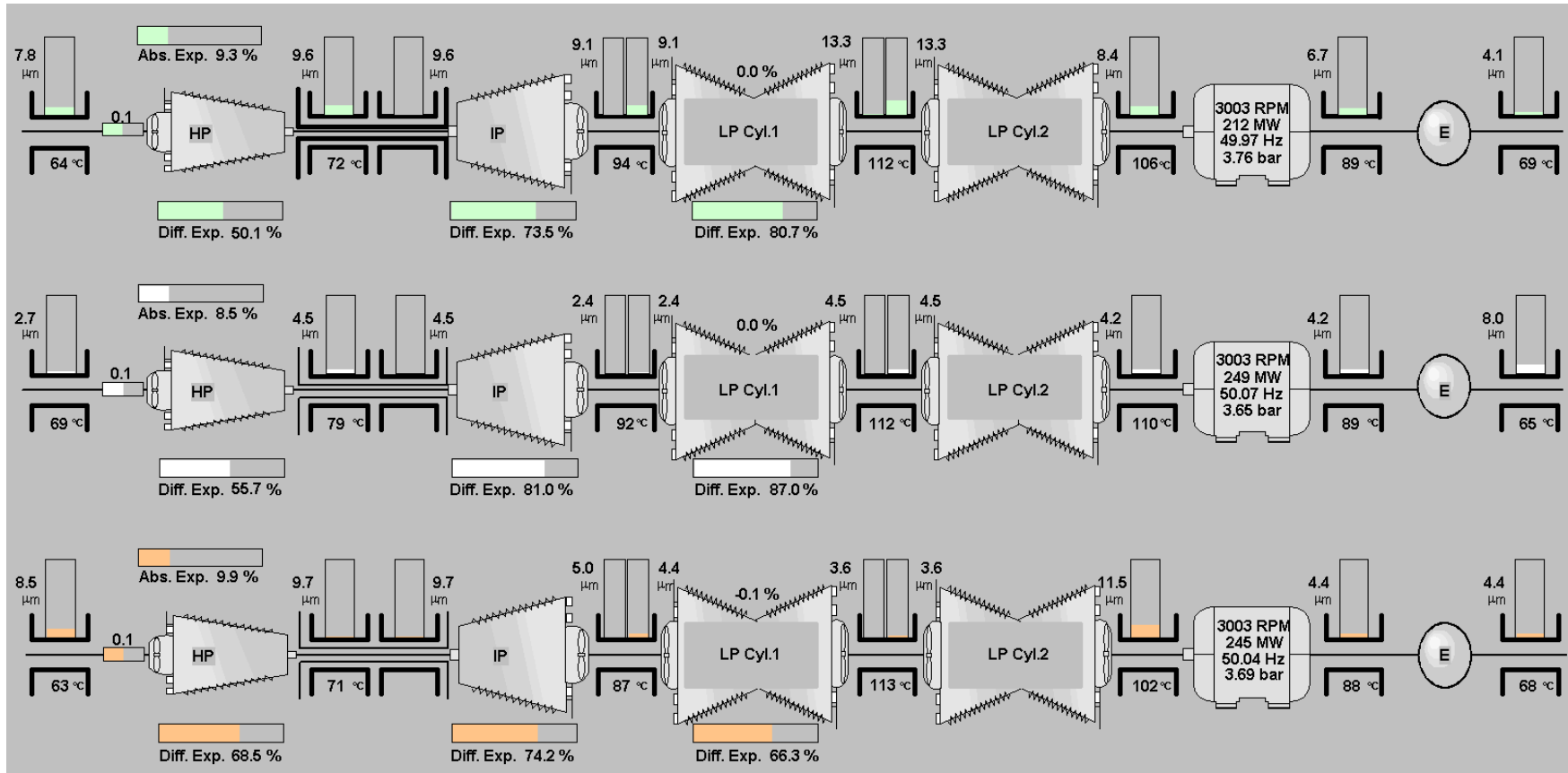
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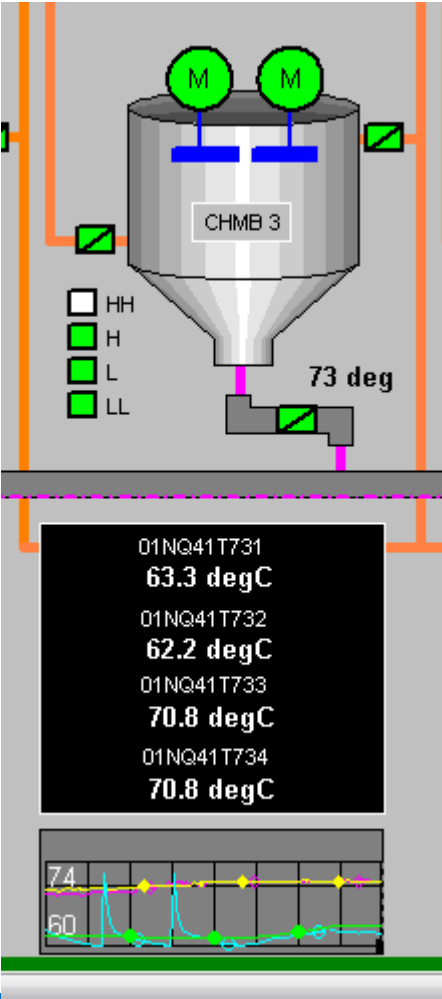
13

Maintenance Using PI System

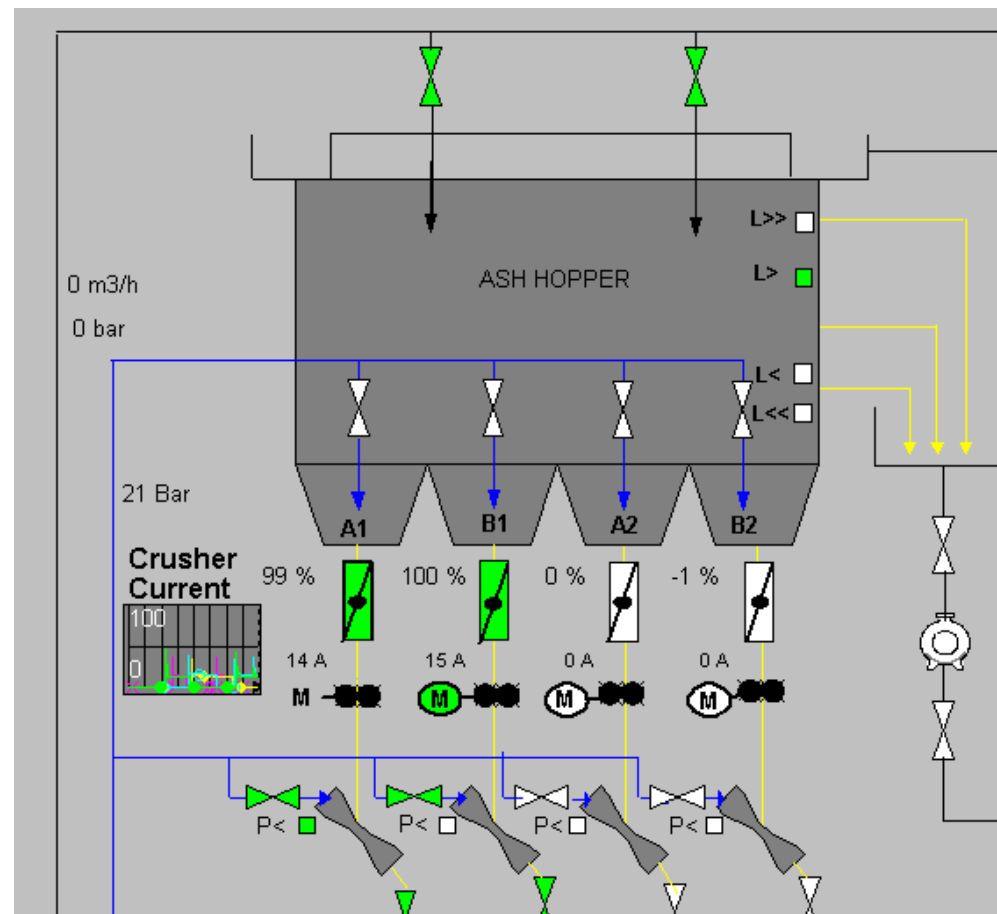


Flexibility With PI System





Screens that Work for the Users



Summary

COMPANY and GOAL

- 1) Vertical Integrated Power Company
- 2) To be Ireland's foremost energy company, competing successfully in the all-islands market.



Energy for
generations



CHALLENGE

- Production in a challenging commercial market, with more onerous Safety and Environmental compliance
- Alarm overload
- Slow response to plant condition
- Plant trends being missed

SOLUTION

- PI System Dashboard
- 120+ Screens
- Flexible Tools for Flexible problems.
- Looking above the control system and alarms to react quickly
- Longer term trends analysis.
- New screens to deliver new challenges.
- Improvements possible in all areas.

RESULTS

- Best practice Availability
- Improved Process Safety
- Compliance with Environmental License
- Flexibility to get the information we need, when we need it, to deliver the performance we demand.
- Future PI System use into Coresight, Event Frames etc.



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Any Questions

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PI System Application Support

ESB Business Services Centre

Questions

Please wait for the **microphone** before asking your questions

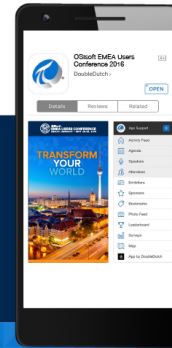


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감사합니다

谢谢

Danke

Merci

Gracias

Thank You

ありがとう

Спасибо

Obrigado



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