
REAL-TIME PERFORMANCE MANAGEMENT FOR THE ENTERPRISE
RtPM
SAN FRANCISCO PHILADELPHIA HOUSTON FRANKFURT
OSISOFT USER CONFERENCES 2005
REAL-TIME PERFORMANCE MANAGEMENT FOR THE ENTERPRISE
RtPM

Paul Ireland

Manager – Information Engineering,

RWE npower Technology Services

Cutting the cost of flexible operation in competitive power markets

- Company Overview
- Use of PI (RtPM)
- RWE npower's Added Value Applications
- Start-up Analysis & Optimisation
- Development – the journey continues !

RWE npower's heritage

Pre-1990

Central Electricity Generating Board (CEGB)

1990

National Power

POWERGEN

British Energy

National Grid

2000

Innogy

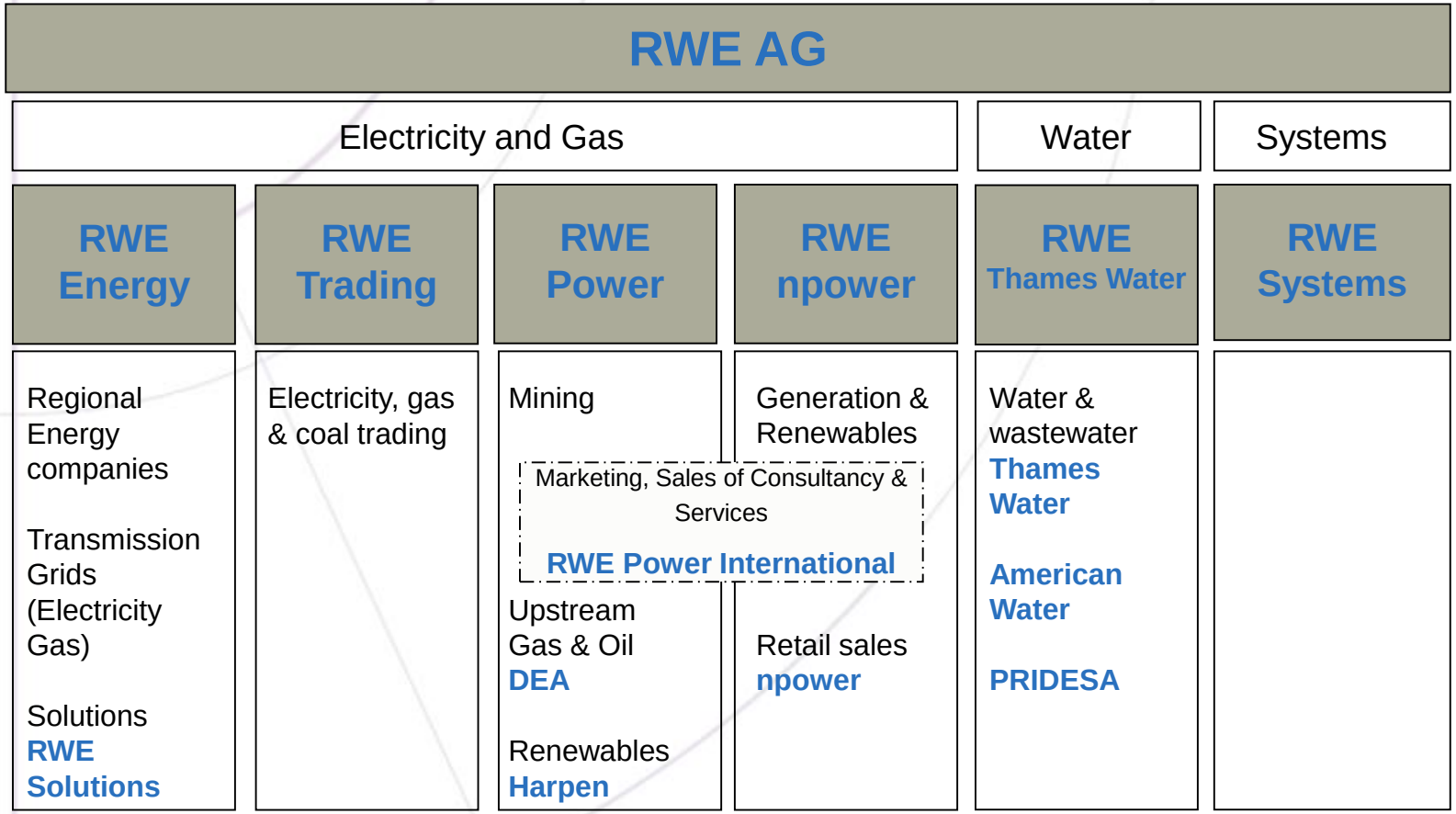
International Power

May 2002

RWE

Innogy became part of the RWE Group of Companies and was re-named RWE npower in August 2004.

RWE Group Structure



RWE npower

- Part of the RWE Group of Companies since May 2002
- Leading integrated UK energy company
- Core businesses are energy production, retailing, operations and engineering
- Own and operate a flexible portfolio of power stations, capable of generating around 10,000MW
- UK Market leaders in cogeneration and renewable energy production

PI (RtPM) in RWE npower

- PI package chosen in 1990 to develop a new Operational Information System (OIS)
- Design and development of a generic OIS system during 1991
- Implementation at a pair of Power Stations, October to December 1991 followed by roll-out to remaining Stations 1992 / 3
- PI is a strategic product for the company i.e. a product to be implemented on all ‘new builds’ and ‘acquisitions’
- At least 5 year’s worth of data available on-line

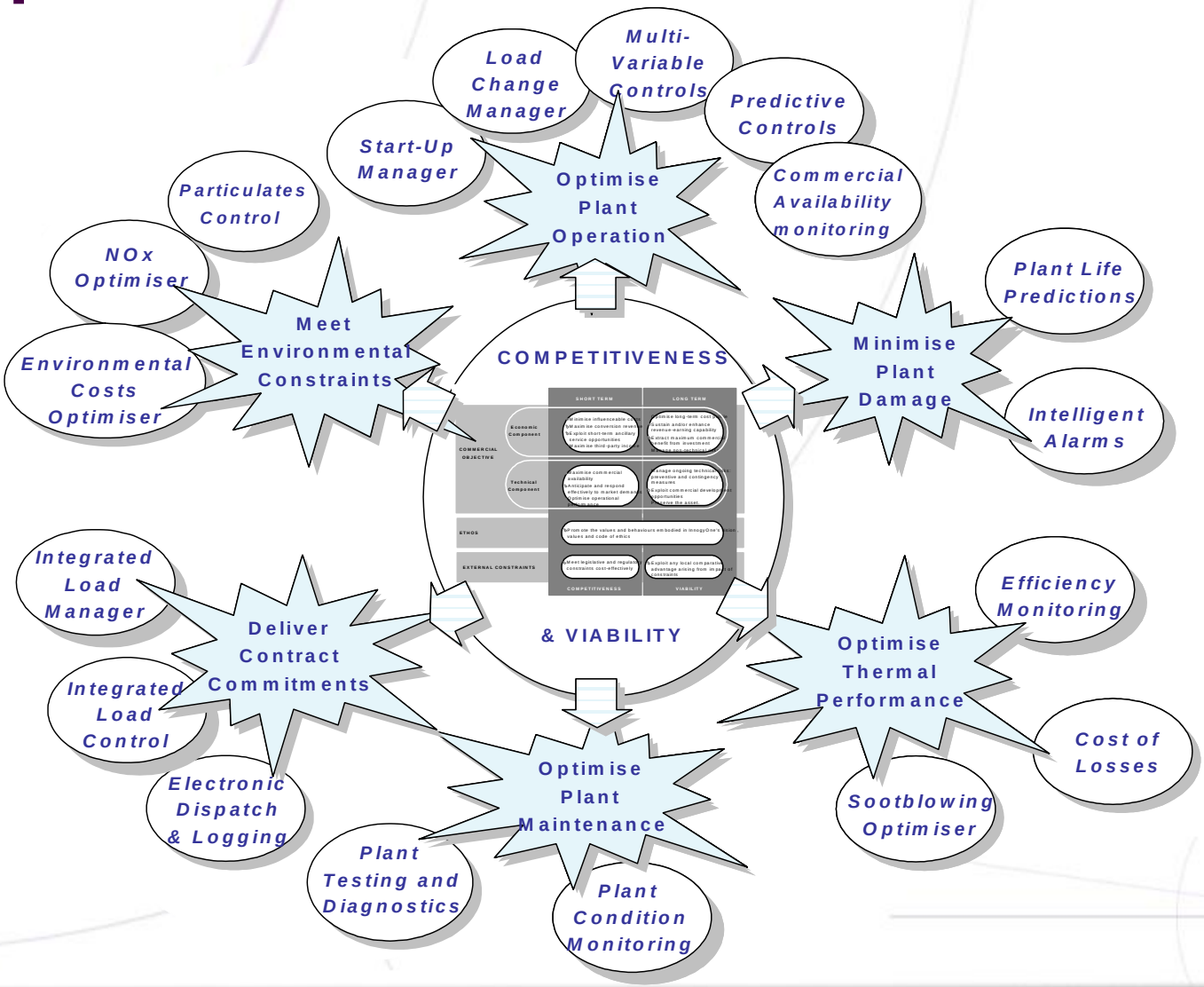
PI (RtPM) in RWE npower

- During 15 years we have implemented PI at 22 of our own sites
- Following plant closures and sales we now have 11 PI systems including a corporate server
- 275 Client Licenses (Process Book & Datalink)
- Evaluating Rt Web Parts with Sharepoint
- First major upgrade carried out during 2003 / 4, upgraded from PI v2 on Microvax / VMS to PI v3 on Wintel

OIS Applications

- PI is an enabling platform not a place to store data
- Strategy – Train & empower staff, integrate disparate systems and invest in applications
- AVA suite aimed at cost reduction, revenue enhancement and process optimisation
- We have seen typical ‘pay-back’ times ranging from 9 months to 2 years

Continual assessment of asset condition and performance

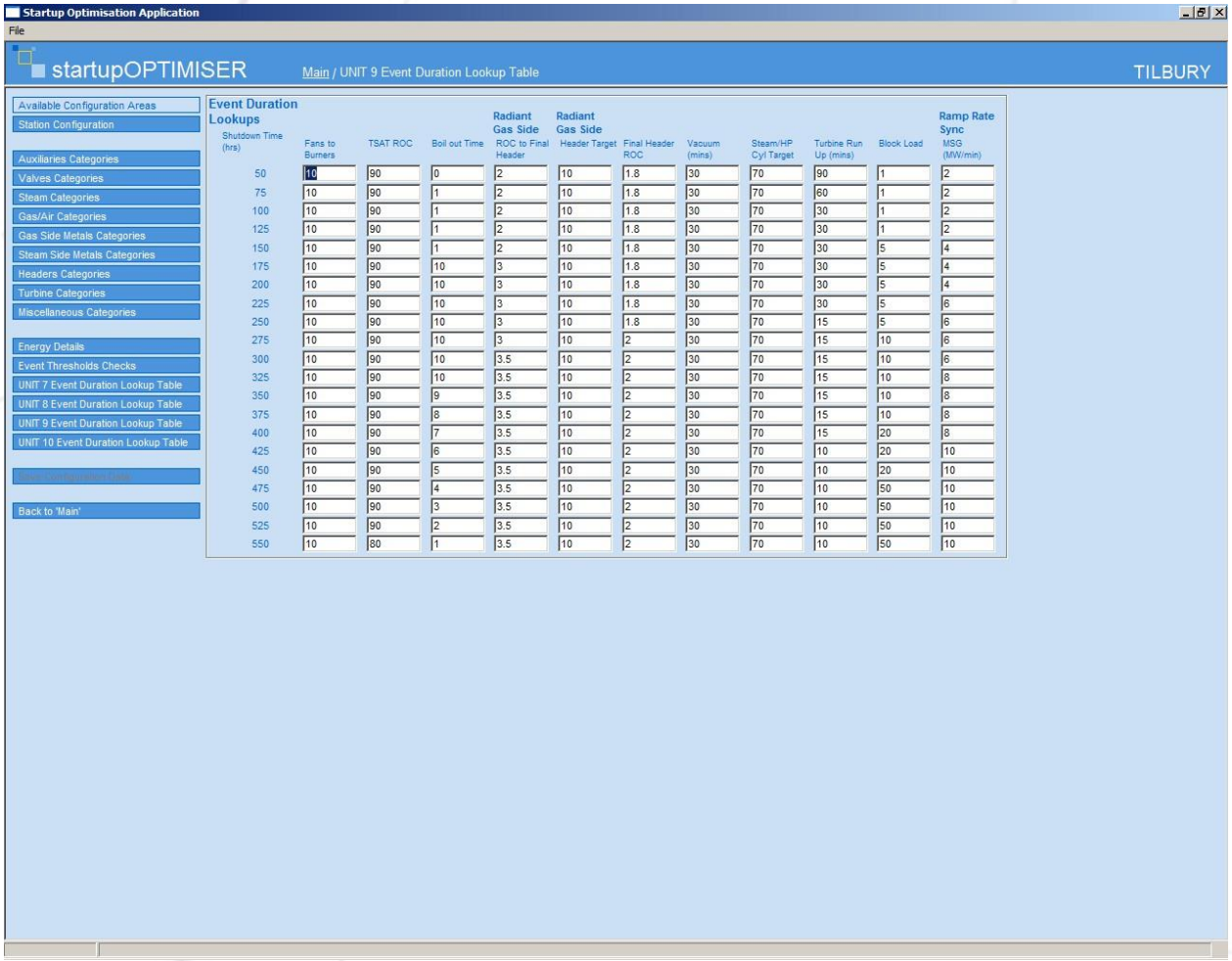


Start-up Analysis / Optimisation

- New / more efficient plant enters the market
- Older / less efficient plant is forced to the margin
- Starting and stopping plant during high / low price periods provides an opportunity to extend the commercial life
- Competition can be fierce, reducing the start-up time and cost can make the difference between the plant running or not
- When operating outside original plant design, best practice must be defined and agreed to ensure safe, reliable and cost effective operation of plant

RWE

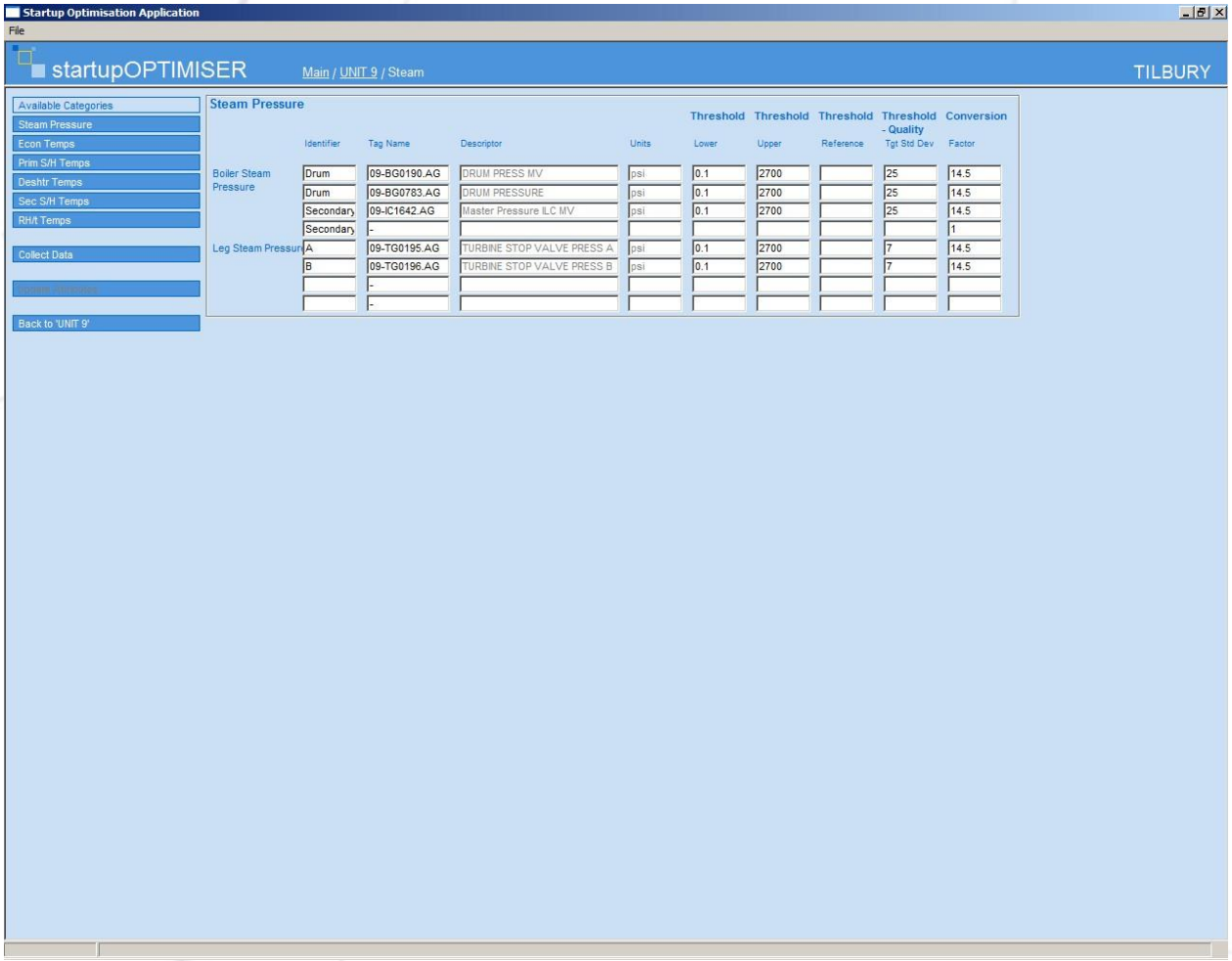
startOPTIMISER - Configuration



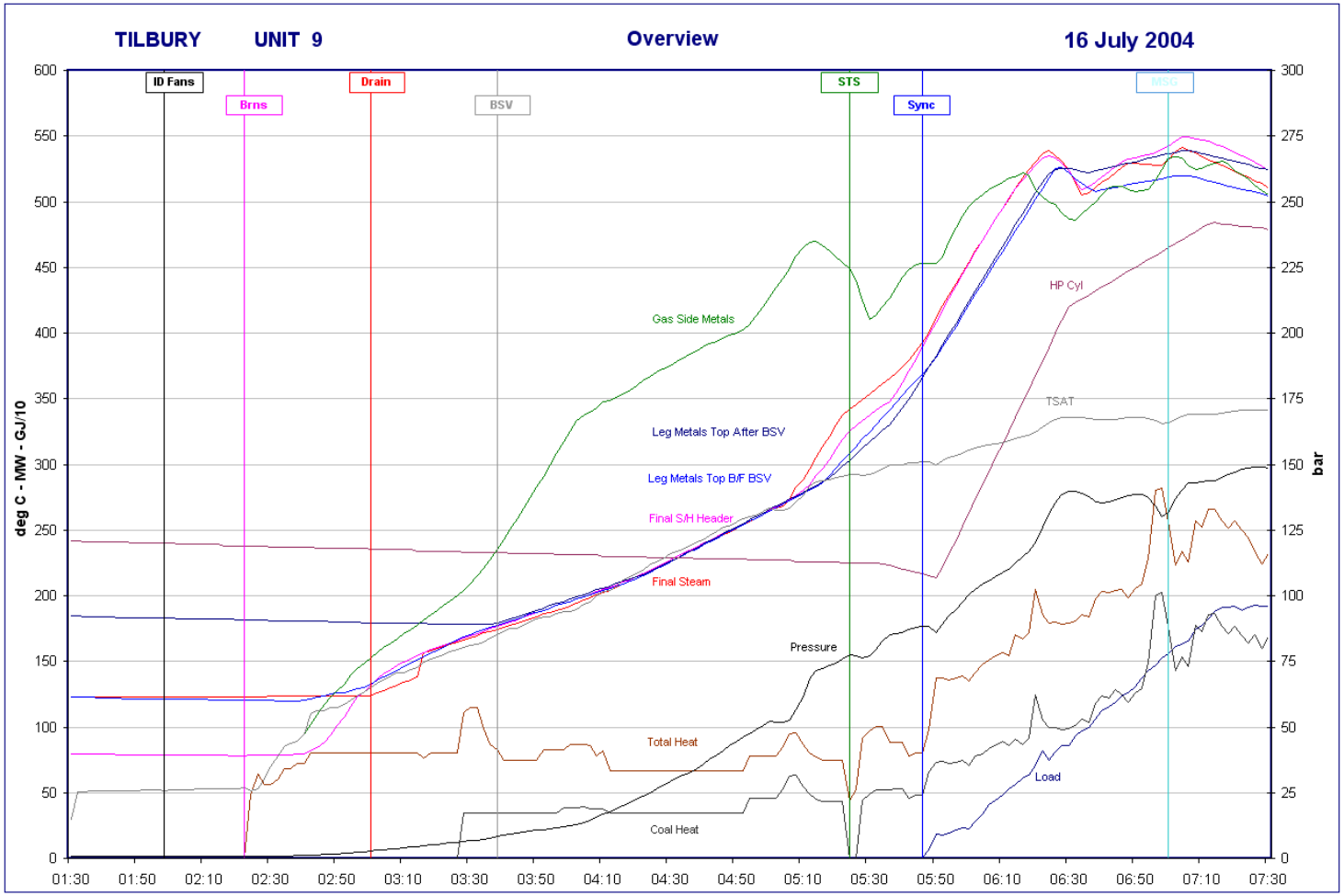
Event Duration Lookups

Shutdown Time (hrs)	Fans to Burners	TSAT ROC	Boil out Time	Radiant Gas Side ROC to Final Header	Radiant Gas Side Header Target	Final Header ROC	Vacuum (mins)	Steam/HP Cyl Target	Turbine Run Up (mins)	Block Load	Ramp Rate Sync MSG (MW/min)
50	10	90	0	2	10	1.8	30	70	90	1	2
75	10	90	1	2	10	1.8	30	70	60	1	2
100	10	90	1	2	10	1.8	30	70	30	1	2
125	10	90	1	2	10	1.8	30	70	30	1	2
150	10	90	1	2	10	1.8	30	70	30	5	4
175	10	90	10	3	10	1.8	30	70	30	5	4
200	10	90	10	3	10	1.8	30	70	30	5	4
225	10	90	10	3	10	1.8	30	70	30	5	6
250	10	90	10	3	10	1.8	30	70	15	5	6
275	10	90	10	3	10	2	30	70	15	10	6
300	10	90	10	3.5	10	2	30	70	15	10	6
325	10	90	10	3.5	10	2	30	70	15	10	8
350	10	90	9	3.5	10	2	30	70	15	10	8
375	10	90	8	3.5	10	2	30	70	15	10	8
400	10	90	7	3.5	10	2	30	70	15	20	8
425	10	90	6	3.5	10	2	30	70	10	20	10
450	10	90	5	3.5	10	2	30	70	10	20	10
475	10	90	4	3.5	10	2	30	70	10	50	10
500	10	90	3	3.5	10	2	30	70	10	50	10
525	10	90	2	3.5	10	2	30	70	10	50	10
550	10	80	1	3.5	10	2	30	70	10	50	10

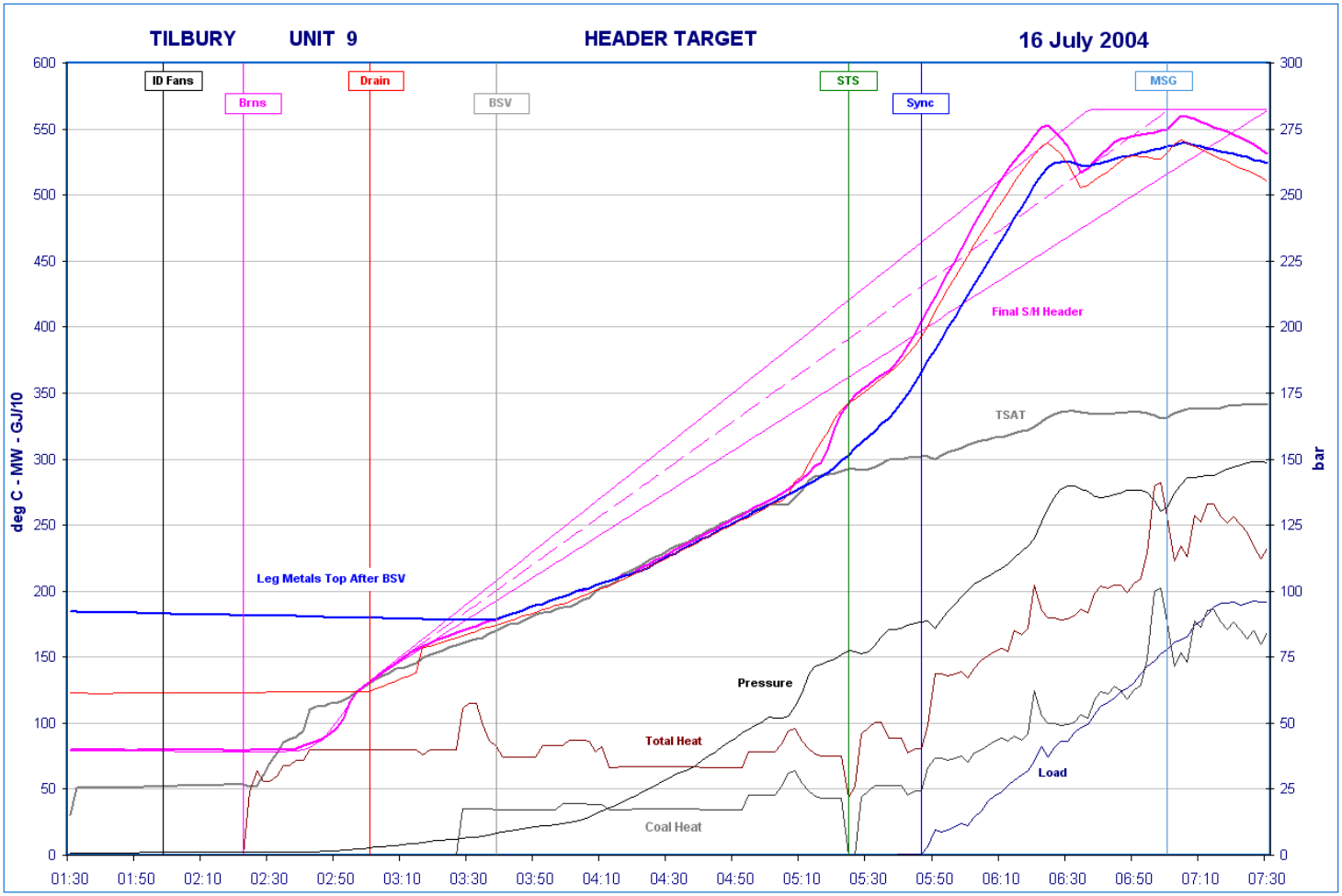
startOPTIMISER - Configuration



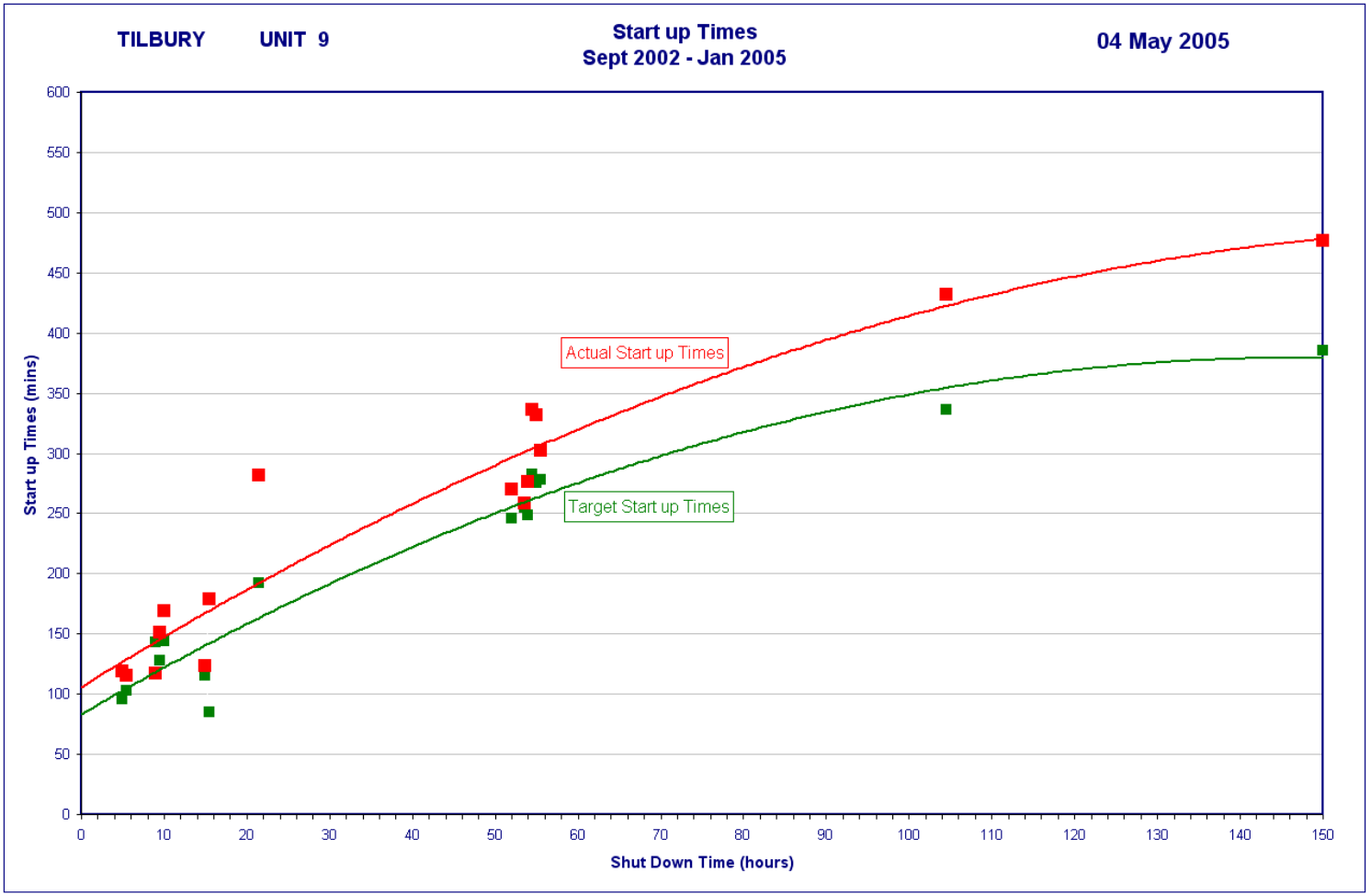
startOPTIMISER - Analysis



startOPTIMISER - Analysis



startOPTIMISER - Analysis

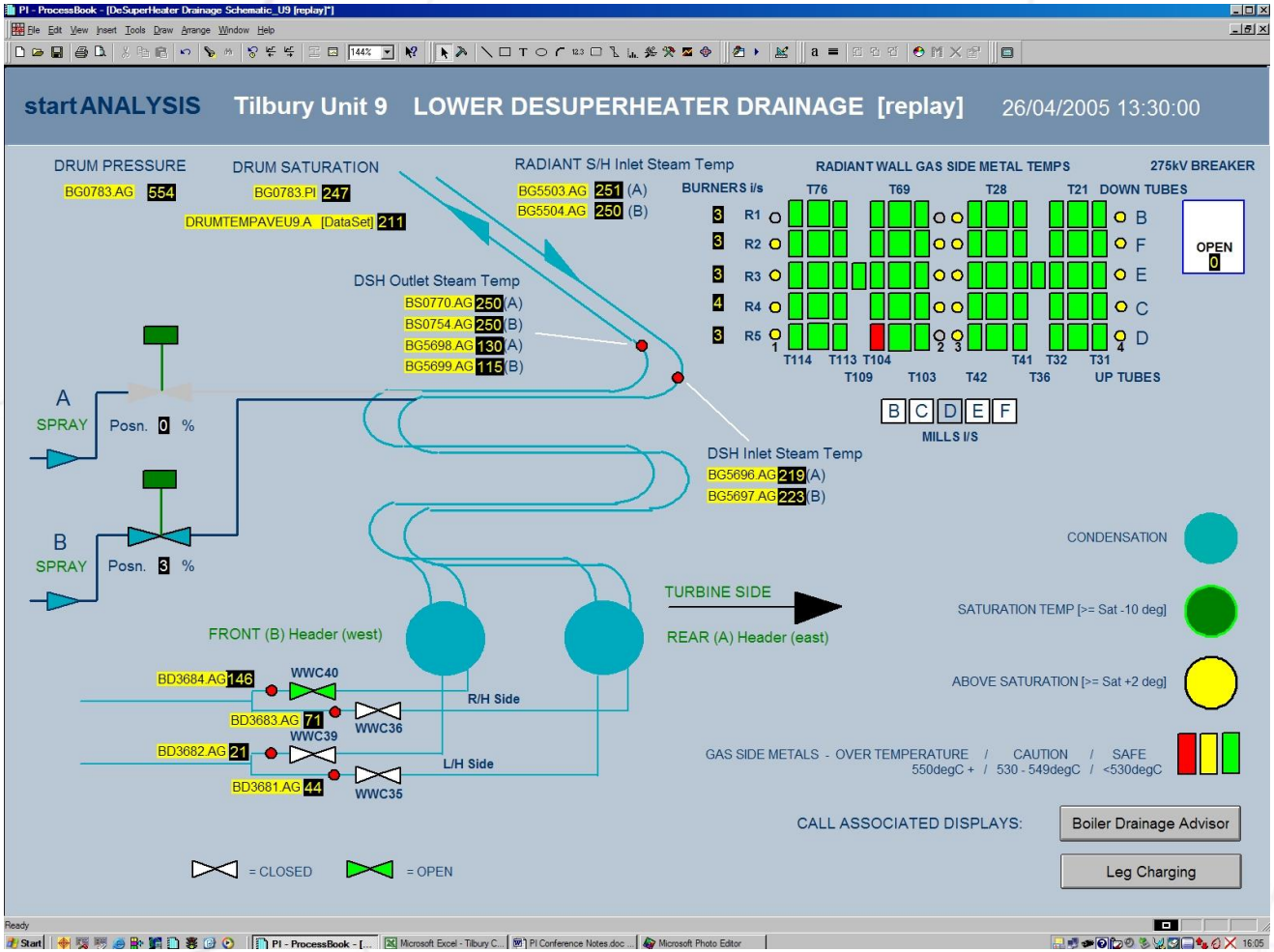


Start Analysis - problems

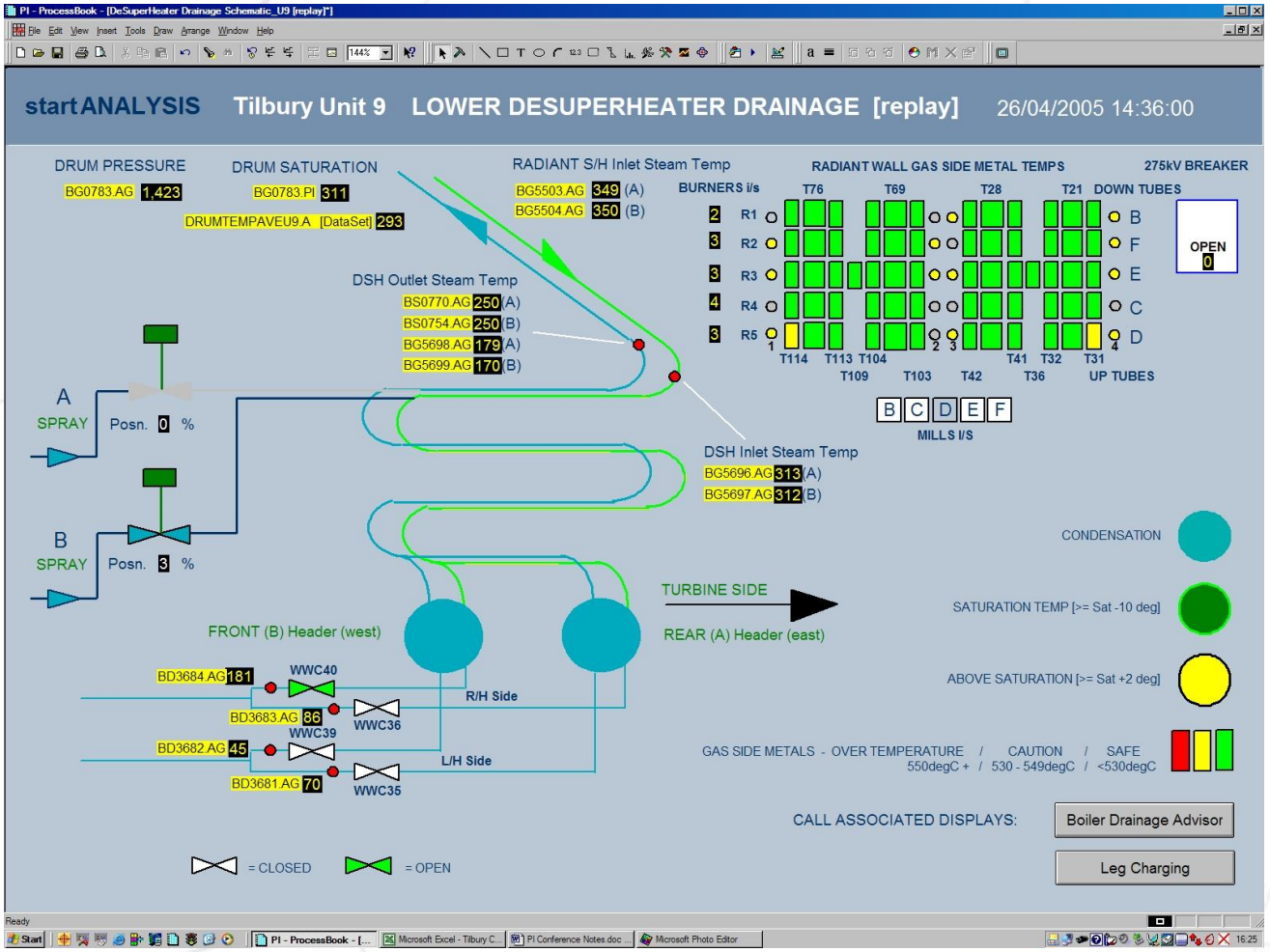
- Significant inconsistency in the operation of boiler drains
- Unusual plant design requires an increased level of understanding of boiler thermal dynamics to avoid plant damage
- Timing of pressurisation of main steam pipes is critical if plant damage is to be minimised / avoided
- Difficult to change deep rooted practices without tools to demonstrate bad habits
- Process Book displays provide guidance to reduce variation in start-up times and ensure the correct sequence of key activities

RWE

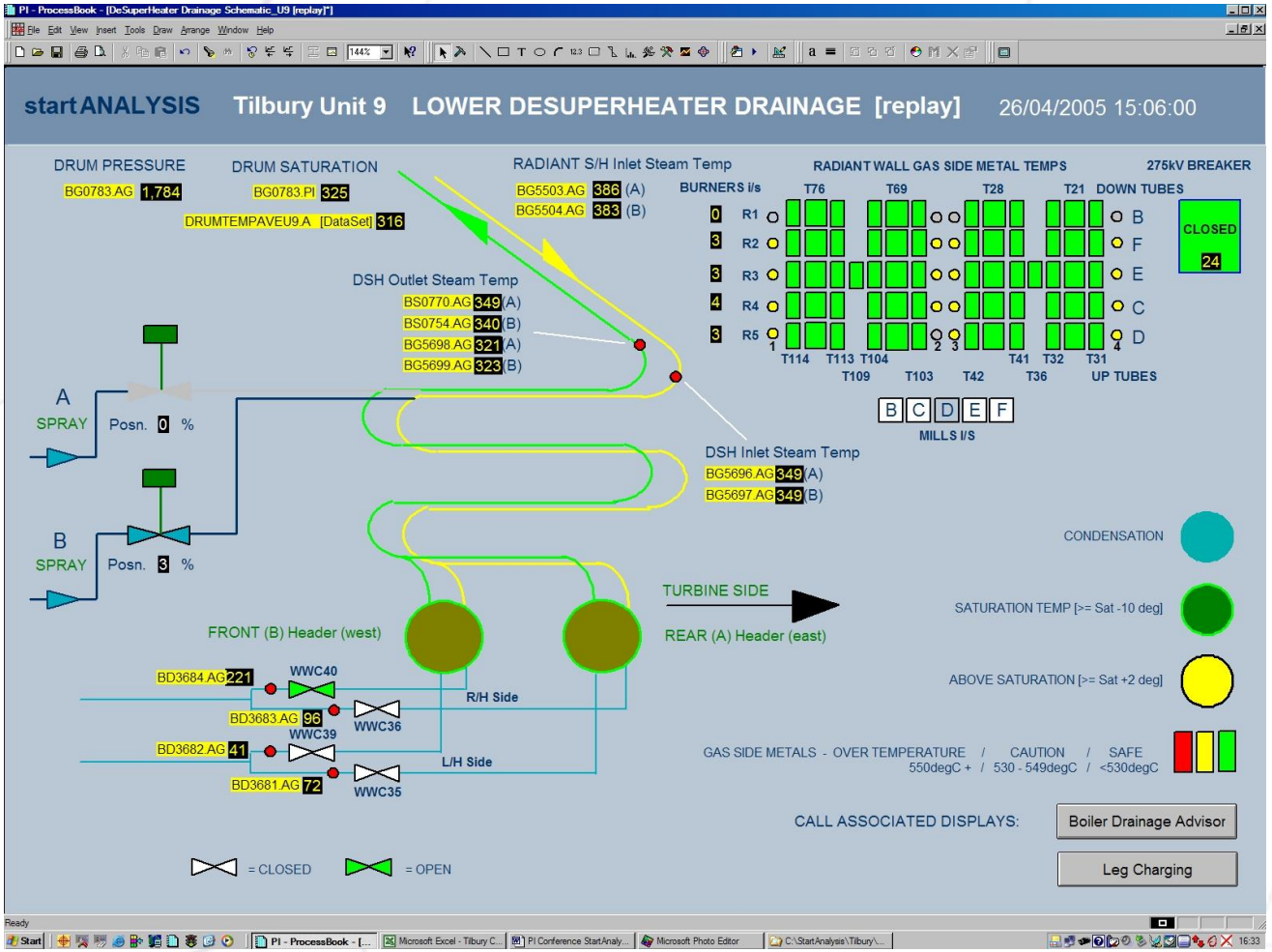
Process Book Displays for the Operator



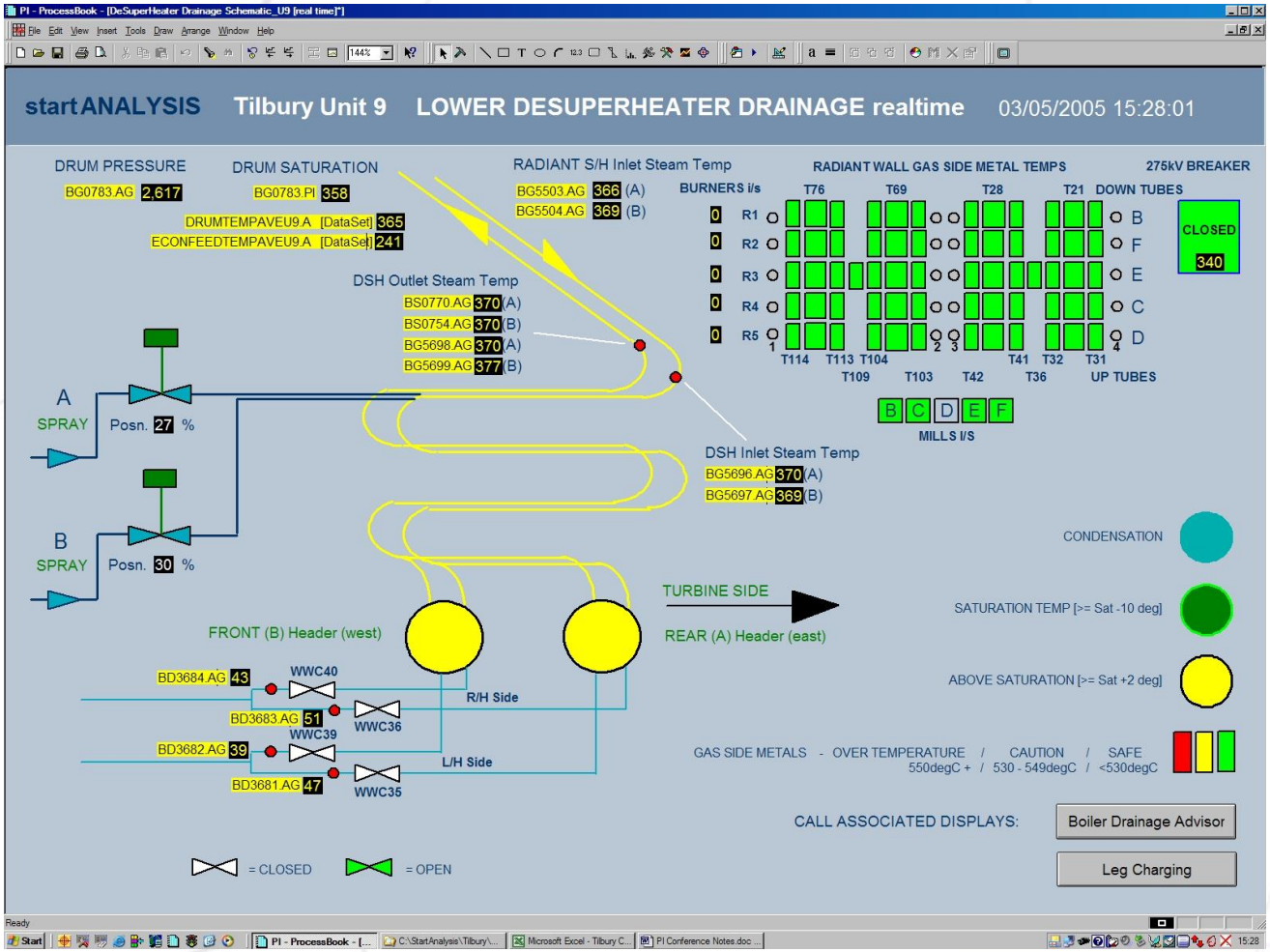
Process Book Displays for the Operator



Process Book Displays for the Operator



Process Book Displays for the Operator



Start Analysis - Benefits

- Start-up costs have reduced by about 1/3rd
- Peak savings for one generating unit doing 250 starts per annum were 120,000 euro's in energy costs alone
- The UK market rules have changed, a typical coal fired unit is now doing around 50 starts per annum BUT now we do not get paid for start-ups, so keeping costs down is still a priority
- Following the introduction of Carbon trading, the start-up cost must also take into account the cost of CO_2
- On a 600 MW oil fired unit in New York state, we reduced the 'cold' start-up time from the 16 hour design to 8 hours, making a significant saving in start-up costs and the unit more attractive to the market

RWE

Development Continues……

- Change is a journey not a destination
- Markets change
- Legislation changes
- New Technology offers new opportunities
- As systems are upgraded and new systems introduced, integration remains our biggest exploitation opportunity

Thank-you for listening

paul.ireland@rwenpower.com

RWE