

Operation of SAP-WCM in Hard Coal / Gas – fired Power Plants of RWE Power





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Agenda

Introduction of the Division

The Application of SAP at RWE Power

The Application of WCM in the Division of Hard Coal/Gas fired Power Plants

The Release Upgrade to ERP 6.0

The Maintenance Process and its Support by Safety Measures in RWE Hard Coal/Gas fired Power Plants

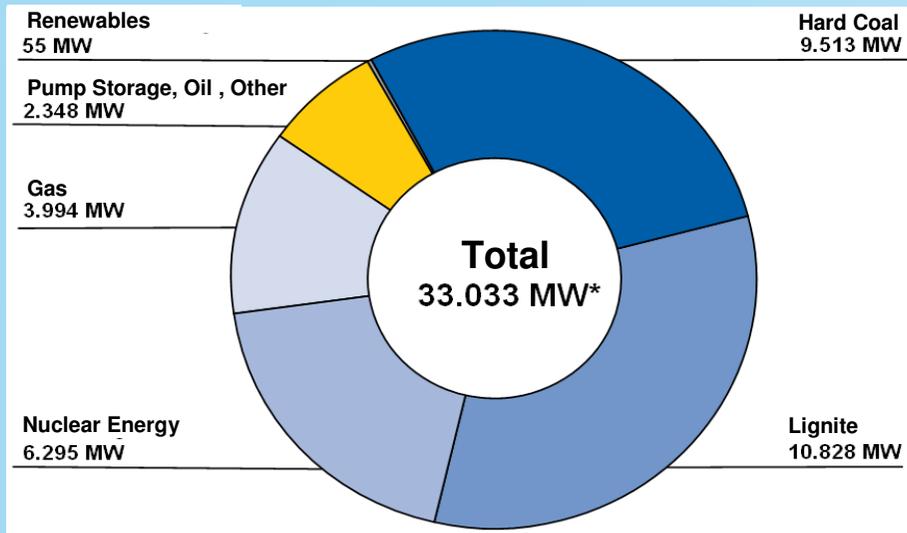
Selected Features of our WCM-Application (Life Presentation)

Results and Experiences

RWE Power AG

Total revenue	11,417 Mio. €
Number of employees	17,505
Power plant capacity*	33,033 MW
Electricity generation*	180 bln. kWh

* Including power plant capacity, which is not directly owned by RWE but accessible based on long-term contracts.



Division "Hard Coal and Gas Fired Power Plants"(1)

Power Plants Cluster West



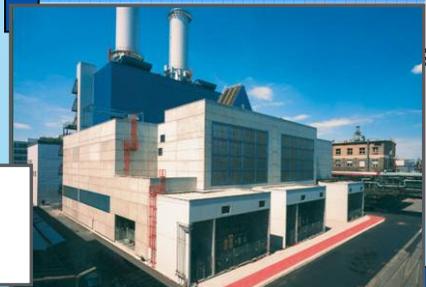
PP Huckingen
recovery gas 2x290 MW_n



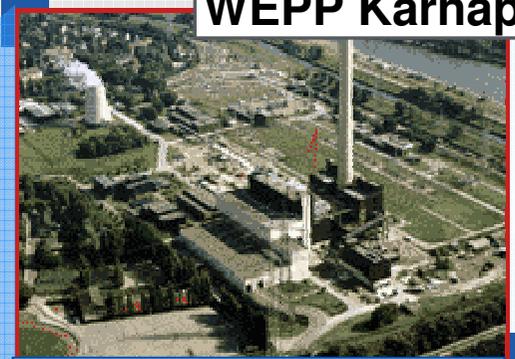
PP Hamborn
Thyssen Krupp Stahl
recovery gas 225 MW_n
150 MW_{th} (com. heating)



CCPP BASF Ludwigshafen
CCGT gas and steam plant
390 MW_n; 410 MW_{th}



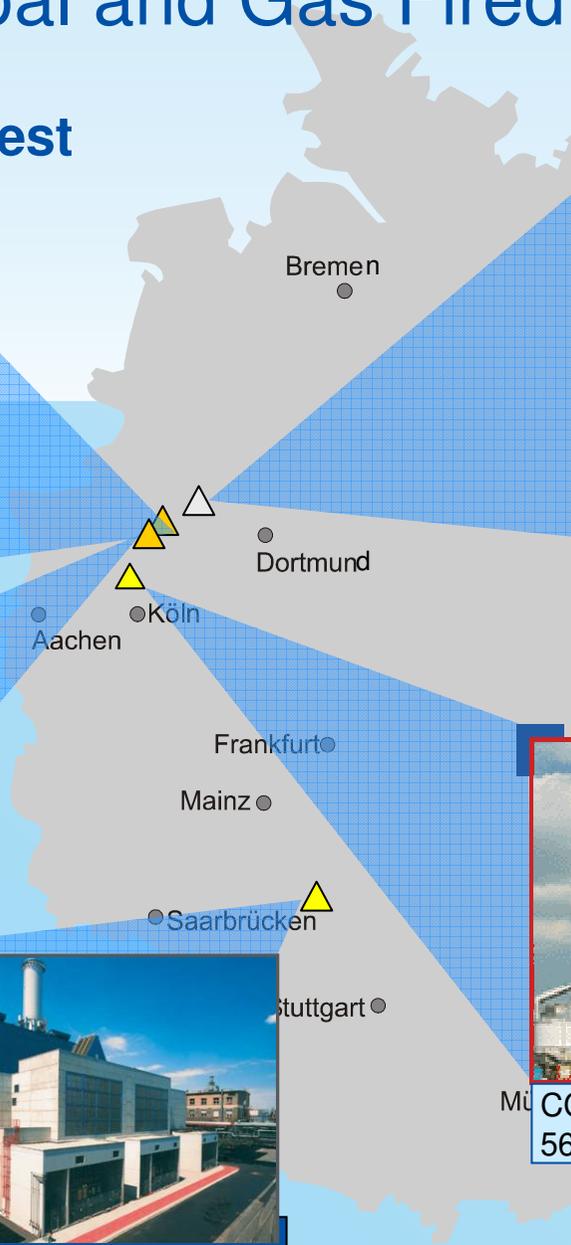
CCGT gas and steam plant
390 MW_n; 410 MW_{th}



WEPP Karnap
waste-to-energy plant 37 MW_n
130 MW_{th}



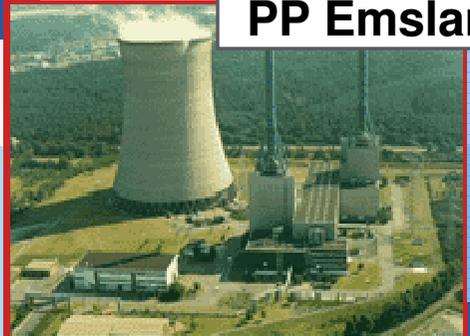
CCPP Bayer Dormagen
CCGT gas and steam plant max.
561 MW_{el}; max. 395 MW_{th}



Division "Hard Coal and Gas Fired Power Plants"(2)

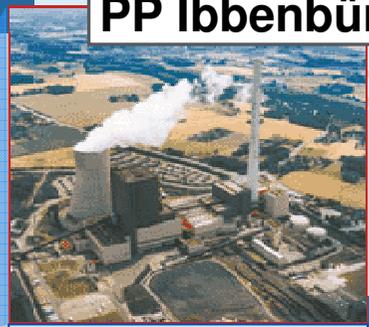
Power Plants of Cluster East

PP Emsland



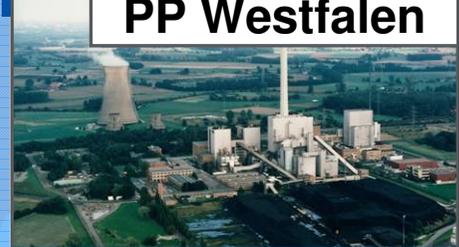
Gas 2 x 410 MW_n, CCGT 876 MW, 74 MW_{th} (district heat)

PP Ibbenbüren



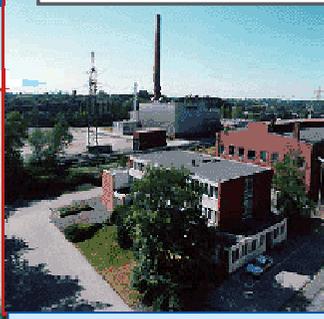
Hard Coal 794 MW_n

PP Westfalen



Hard coal 2 * 152 MW_n + 284 MW_n

PP Bochum

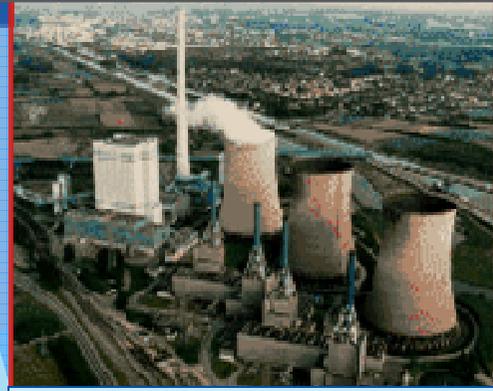


Gas fired plant with district heat supply

PP Dortmund



PP Gersteinwerk



Gas 3 * 410 MW_n; GT 55 MW_n
Hard coal 608 MW_n + GT 112 MW_n



Application of SAP in the Power Plants of RWE Power AG (1)

Divisions:

Hard Coal / Gas

Lignite

Nuclear

Hydro



Number of Power Plants (only RWE owned): 20 with 25 GW_{el} capacity

Number of SAP-User in RWE Power 7,800

Number of PM-User 5,600

Number of Notifications per Year (Generation) 90,000

Number of Work Orders per Year (Generation) 15,000

Application of SAP in the Power Plants of RWE Power AG (2)

01.07.1996: RWE started developing their SAP Operational System

01.09.1999: SAP-System was put into operation with all components

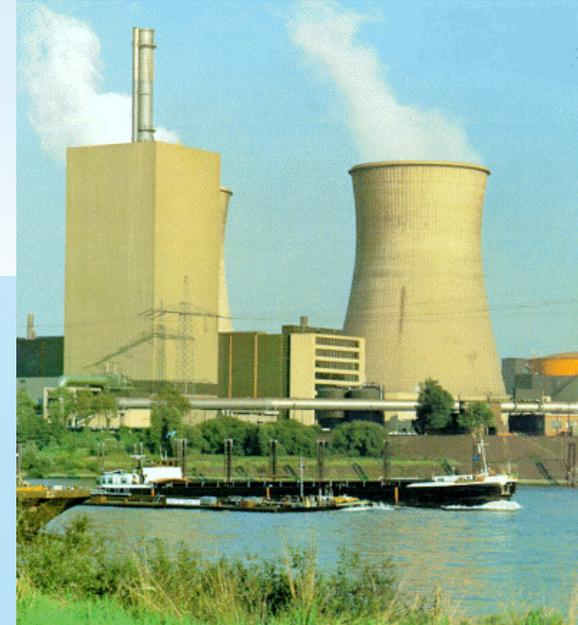
2000 – 2003: Partitioning and re-merging of the SAP-System due to changes in the organisation structure

2005: Decision to implement SAP-WCM as safety measurement system for the Hard Coal/Gas fired Power Plant Division of RWE Power

28.01.2006: Kick Off Project B@S („Operation by SAP“; German: Betriebsführung mit SAP) – Implementation of SAP-WCM at all sites of the division

28.05.2008: Project B@S successfully finalised: 11 power plants control their safety measures based on SAP-WCM

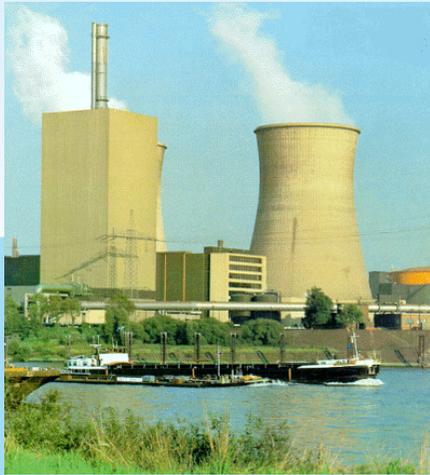
2009 – 2010: Upgrade to SAP ERP 6.0 including WCM-adaptation



The Implementation of SAP and WCM into the Power Plants of the Coal and Gas Fired Power Plants Division of RWE Power

Initial Situation of the SAP Implementation Project

Cluster West



PM
MM



COSIM
TAD
ATD

Cluster East



IBFS
COI

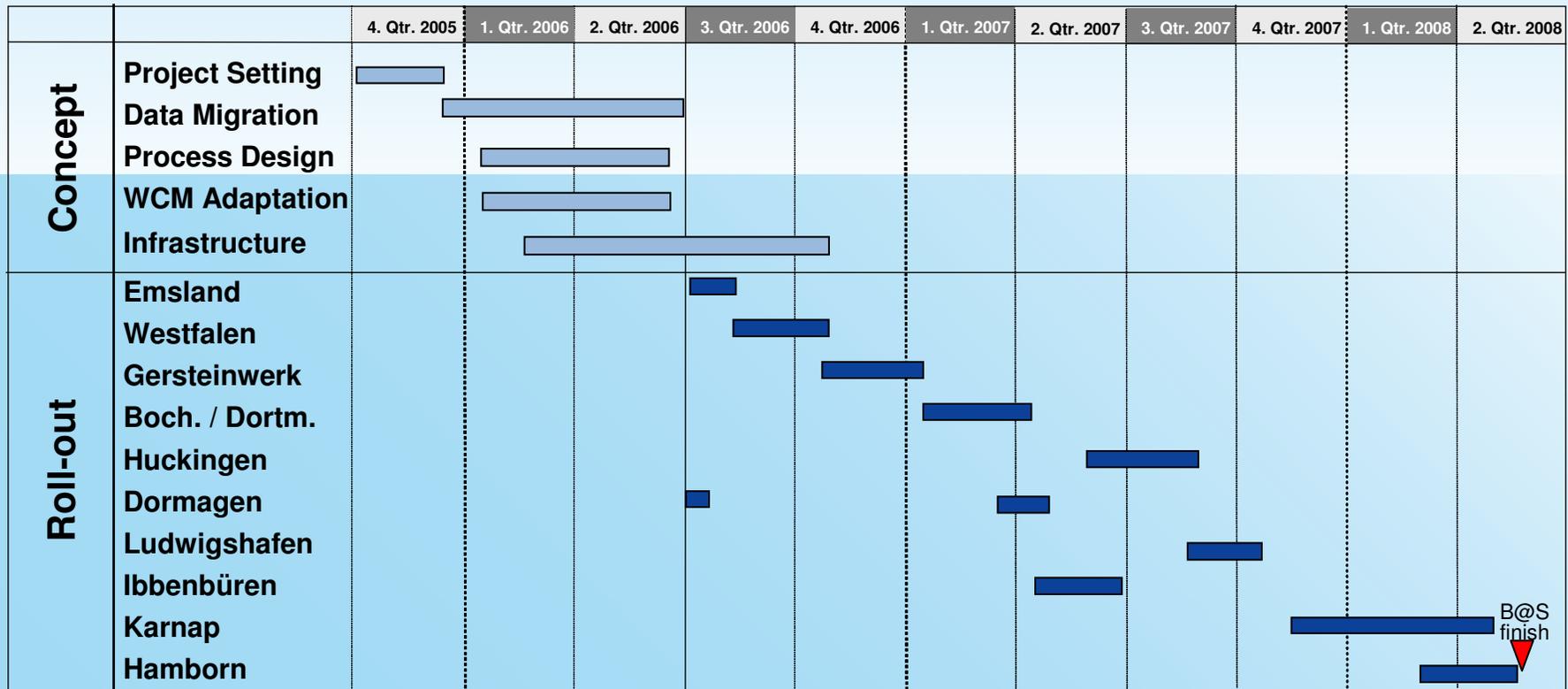
- heterogeneous business processes
- operation of different IT applications
- increased software support costs
- outdated business application
- various non-standardised interfaces
- increased user requirements not satisfactory

Project Goals of the SAP-Implementation

Project Goals

- Replacement of the outdated business application → integrative operational management with SAP
- Implementation of homogeneous business processes within the clusters
- Encouragement of the comprehensive business processes
- Involvement of current projects (BetrSichV- operational safety regulation, ZuKo - access supervision, ...)

Time Schedule of the SAP-Implementation Project



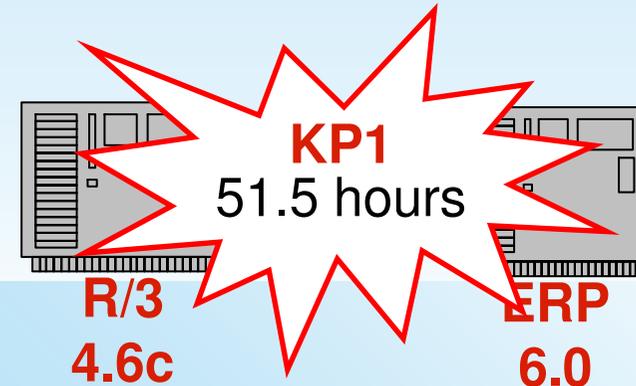
Roll-out



ERP 6.0 Release Upgrade in special consideration of the WCM Application

Release change 4.6c to ERP 6.0/EHP (1)

General key aspects of activity



- Duration of project some 11 month
- Release change executed within 51.5 hours downtime
- Data clearing of 1.2 TB
- Deletion of some 3,000 outdated executive routines
- Change-over of some 4,600 executive routines to unicode
- Reassessment of some 45,000 authorization groups
- No changes and developments during release change
- No activation of Business Functions of EHP 1-4

Release change 4.6c to ERP 6.0 (EHP4)

WCM Aspects

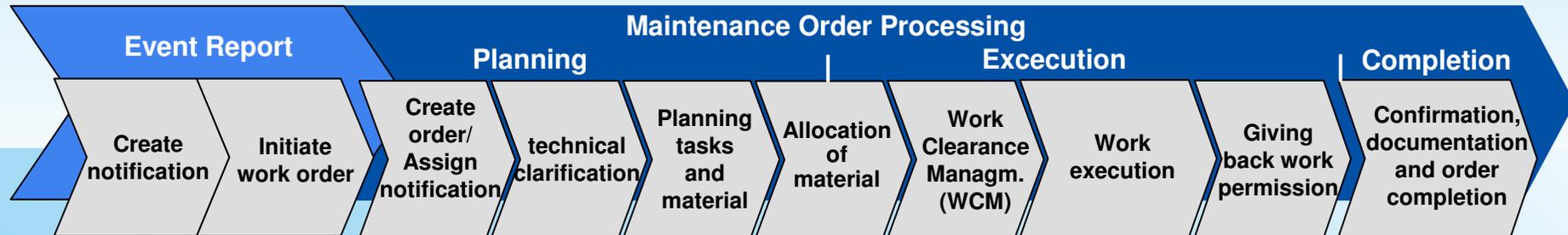


- No incidents during operation interrupt of the production system
- Reduction of system modifications from 13 to 6
- Improved handling of the application by using new standard functions (i. e. pers. settings)
- Production system downtime bridgeover by operating according to the emergency plan (paper-based and Access-Data based process)
- connection to a graphical WCM-tool based on SAP-standard interface
- remarkable improvement of performance
- By using BADI's flexible application design is possible
- Close collaboration with WCM IT GmbH

Maintenance Process and Safety Measures Organisation in the Coal and Gas Fired Power Plants Division of RWE Power

Failure based Maintenance Process in the Hard Coal/Gas fired RWE Power Plants

Process control by Workflow management



Notification

- Description of the event (short and long text)
- Component is concerned select technical location
- Definition of the urgency (priority)
- Responsibility
- Reported by

Maintenance Planning

- Definition of order type
- Definition of account assignments and the WBS-element
- Define Main work center (responsible for cost control)
- Planning operation tasks
 - Work centers (executing workshops)
 - Amount of work involved in performing the activity
 - Reservation of stock material
 - Order non-stock material
 - Order external services
 - Determine safety measures

Execution

- Planning of Work safety measures (isolation, fire protection, ...)
- Create work clearance document
- Print out working papers and work permission
- Processing Repairs and functional test
- Supervising of involved parties

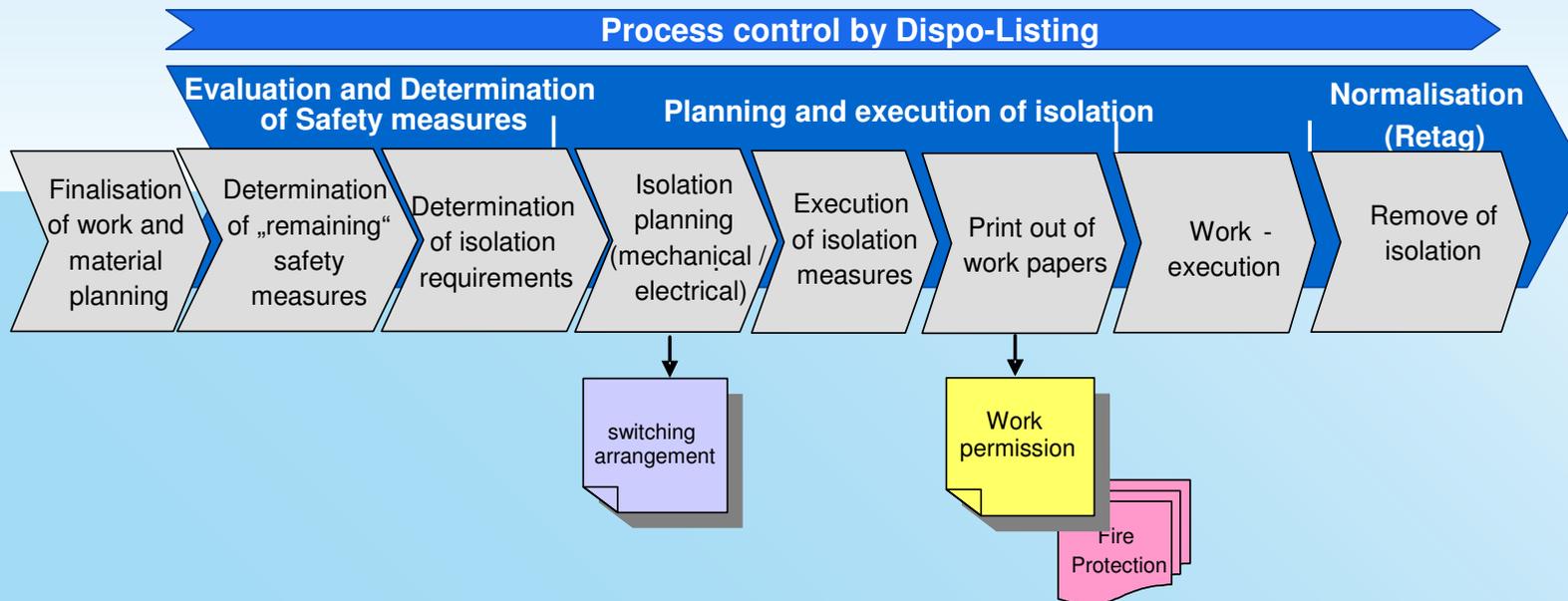
Completion

- Confirm the work hours, material movement etc.
- Measurement documentation
- Technical finalisation
- Commercial finalisation

Reporting

- Special reports for different target groups
 - WBS-Element
 - Order costs
 - Technical object costs
 - Failure statistic

Organisation of Safety Measures in the Hard Coal/Gas fired RWE Power Plants



Determine Safety Measures

- Evaluation of requirements:
 - Fire protection
 - Inspection permission
 - general work safety permission
- Define Isolation Requirements electric./mech.

Planning and Execution of Isolation Measures

- Create component list or copy standard component list
- Print switching arrangement
- Execution of isolation
- Print out of work papers

Isolation Retag (Normalisation)

- Giving back of work permission
- Remove of isolation
- Component operational again

Results and Experiences

- Optimal business processes and IT-support require an enterprise adapted SAP-enhancement
- The Implementation Project B@S:
 - High level acceptance by involvement of the site workers in the workshop groups to design the system and roll out concept
 - Preparation, correction and transfer of the master data (Plant components, materials, ...) from the systems which have to be replaced to the new SAP-System
 - Comprehensive role based training of the potential users (different programme between shift and maintenance departments up to 5 days for each worker)
 - Necessity of a sequential roll out in the several sites with steady increase of operational know how („no mistakes were made twice“).
 - After-Roll-Out-Support and Mentoring up to some six weeks with up to four trainers
- Operational experiences
 - Stabilisation and increasing of long range networks performance (some 100 km, centralised data servers) due to steady growing data quantities is required
 - SAP-availability at week ends (overlap of scheduled IT-downtime and planned weekend maintenance activities in the sites) is to be increased
 - Emergency plan to guarantee safety measures also in case of SAP breakdown

Thank You for Your Attention!

