SOLUTIONS FOR THE AGILE ENTERPRISE
ERP SOLUTION for POWER GENERATION

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Agenda

1. Structural transformation – development of the energy market
2. Alert
3. What is ERP for Generation companies?
4. Case study on ERP implementation – thermal
5. It’s a quiz time
6. Solution highlights
7. Benefits of IT solution to energy companies
Structural transformation –
development of the energy market

Institutional changes

- Deregulation
- Integration
- Req. on capital

Effect on the market

- Increased freedom of choice
- Increased cost and profit pressure
- Increased competition

Consequences for the market

- Consolidation
- Internationalisation
- New business models

Source: Vattenfalls view on the Nordic and European marker development
ADVANCED ALERT

MORE PEOPLE ARE LIKELY TO DIE BECAUSE OF FUEL CRISIS THAN FOOD CRISIS
Energy crisis looms large, Govt decides on cut for industries ‘Will help maintain 8-hour power supply in farm sector’
Eleventh Five Year Plan (year 2007-12)

1. Growth has averaged 8 per cent over the past three years and is likely to be at this level again this year.

2. If we achieve the target of 9% growth in the 11th Plan, India will be firmly placed in the front ranks of fast growing economies.
Eleventh Five Year Plan (year 2007-12)

To deliver a sustained growth rate of 8% to 9% through next 25 years till 2031-32 and to meet the life line energy needs of all citizens, India needs, at the very least, to increase its primary energy supply by 3 to 4 times and its Electricity generation capacity by about 6 times.
WHAT IS ERP?
WHAT IS ERP (ENTERPRISE RESOURCE PLANNING)?

1. An integrated software connecting all departments and processes of an organization

2. ERP comes bundled with best business practices

3. When we implement ERP, we land up improving the business processes in the company

4. ERP provides significant business benefit
ERP for POWER SECTOR
Step-by-step to Strategic Asset Management

Step 5
Operational Excellence

Step 4
Engineered reliability
- Life Cycle Costing
- Reliability analysis/improvements

Step 3
Organizational Excellence
- Simulation
- Best practices

Step 2
Proactive Maintenance
Increased predictibility
- Contract Management
- Event/accident tracking

Step 1
Planned Maintenance
- Control Maintenance Work
- Minimise Costs and control budget
- Resource optimisation

Step 0 – Crisis management – No systems
Asset Life Cycle Management

- Go live
- Design/Redesign
- Pre Project
- Pilot Study
- Engineering
- Procurement
- Commissioning
- Check
- Start
- Operation
- Preventive Maintenance
- Condition Based Maintenance
- Improvements
- Analysis
- Feedback
CASE STUDY
1. Poludniowy Koncern Energetyczny (PKE) is the biggest electricity supplier in Poland

2. 17% of the domestic electricity market and 16 percent of the local thermal power market.
Poludniowy Koncern Energetyczny (PKE) is the biggest electricity supplier in Poland

17% of the domestic electricity market and 16 percent of the local thermal power market.

1. Jaworzno III Power Station (electrical 1,635 MW, thermal 464 MWe)
2. Łagisza Power Station (electrical 840 MW, thermal 425 MWe)
3. Łaziska Power Station (electrical 1,155 MW, thermal 196 MWe)
4. Siersza Power Station (electrical 763 MW, thermal 36.5 MWe)
5. Halemba Power Station (electrical 200 MW, thermal 58 MWe)
6. Blachownia Power Station (electrical 165 MW, thermal 174 MWe)
7. Katowice Power Station (electrical 135 MW, thermal 693 MWe)
8. Zespół Power Station (electrical 162.7 MW, thermal 495 MWe)
PKE Case Study: Project Objectives

- Improve PKE performance to combat competition after the deregulation of the energy market and to increase the value of the company.

- Need for more efficient management methods to facilitate cost reduction, improve credit rating and increase company potential. Increase budgetary controls to allow company growth to adapt to a new market

- Improve management structures to provide an instant overview of the company status
IFS system at PKE

IFS Foundation1 V5
Results

1. COMBATED PRESSURE OF DEREGULATION
2. REDUCED COST
3. INCREASED PREDICTIBILITY OF THE PLANT
4. INFORMATION AT THE CLICK OF THE RIGHT MOUSE
5. FLEXIBILITY
6. INTEGRATION BETWEEN SCADA AND ERP
IT'S QUIZ TIME
The Three gorges project

1. The Three Gorges Project is the largest water conservation project in the world, located on the Yangtze River in Hubei province, central China.

2. The project is aimed at improving flood control, producing electricity, and improving navigability on the river.

3. The project is scheduled for completion in 2009, 17 years after its launch.
The Three Gorges ePMS system.

27*700=18,900 MW project

Implementation started in May 2002.

Went Live Jan 2003
China Yangtze River Three Gorges Project Development Corporation

Three Gorges Power Plant, the largest hydro plant in the world with 18,900 MW (27x700MW).

The first batch of units have already been commissioned

Other associated projects:

- Gezhouba Power Plant 2,715MW.
- New construction projects (Xiangjiaba 6,000 MW, Xiluodu 12,600MW, Wudongde 7,400MW and Baihetan 12,500MW).

Total – 60,115 MW
Transmission Corporation of Andhra Pradesh
World's biggest ERP project in terms of scope
ERP Implementation at Hindustan Aeronautics Limited, India
Project Scope: “Factory to foxhole”

17 Divisions
BIGGEST HYDRO PLAYER IN INDIA?
BIGGEST HYDRO PLAYER IN INDIA?

- NHPC
- SEARCH: IFS + NHPC
WHICH ERP PLAYER WAS BORN IN ENERGY SECTOR?
Sweden
Land of the midnight sun
Sweden

Located in Northern Europe bordering the Baltic Sea, Gulf of Bothnia

Slightly larger than California

Coast line 3218 Km

Arable land 5.93%

Population: 9 million

Age; 15 to 64 (65.7%), 65 and above (17.9%)
Sweden
IFS, the only global management systems supplier born in Utilities!

IFS was founded in 1983 to provide management solutions to the Swedish power companies.

IFS expanded very quickly in the deregulating Scandinavian and Eastern European power markets.

In terms of technology IFS is ranked as number one in the world.

All analysts rank IFS as a leader in ERP for Utilities. IFS is the only ERP vendor born in power sector. IFS Applications is specifically designed for power companies.
Energy & Utilities Segments Served

- Power Generation
- Power Transmission
- Power Distribution
- Service providers
- Water & Sewage
Customers Energy & Utilities

Countries:
- Scandinavia – 40%
- Eastern Europe – 20%
- Asia – 30%
- EMEA & Latin America: 10%
- Share of IFS revenue: 15%

Segments:
- Power Generation (60%),
- Transmission & Distribution (30%)
- Gas, Water & Sewage (5%)
- Service Providers (5%)

Solutions:
- 60% ERP including EAM
- 30% EAM
- 10% Service Management
Scenario #1: power system outage

Customer complaints
Pro-Active information
Recovery information

Customer Service

Substation Automation
Real-time information
Disturbance records

Control Center

Customer

Disturbance report
Fault statistics
Spares

Sales
Customer affected
Compensation

Reports

Asset Management

Work order
Work report

Engineering

Accounting

Reports

Repair and Maintenance

Asset records
Disturbance report

Type of disturbance
Time to recover
No. of customers affected
IFS Offering and Integration

- IFS CRM (or integration with 3rd party)
- IFS Billing (or 3rd party)
- Integration with Metering

IFS EAM/ERP/ERP-II

NIS/GIS

3rd parties for NIS and GIS (ESRI, Mapinfo), integrated with IFS

3rd party, integrated with IFS

CIS

EAM /ERP/ERP-II

IFS CRM (or integration with 3rd party)
IFS Billing (or 3rd party)
Integration with Metering

SCADA
SOLUTION HIGHLIGHTS
EXCEPTION BASED PROJECT MANAGEMENT
Project- and project status

Top Issues in project

Search documents,
These two activities are delayed. Action plans are attached to delayed activities to ensure that action will be taken to handle the deviation.
Alerts

Portal is configured to display only measures where indicators are red.

Current view of the organization. How much has each Profit Center sold so far in this month?

Current view of the organization. How many orders do we have right now and how does that compare to history?
Measure Areas
Alerts Portal - BPF McKenzie

**Scorecard Exceptions**

- Finance BP Package
- Finance BP Package
- Finance BP Package
- Finance BP Package
- Finance BP Package
- Profit Center 1
- Profit Center 1
- Profit Center 2
- Profit Center 2
- Profit Center 2

**Net Sales this period**

- Cost_center
- Amount

- NA
- SRE
- SRN
- SRS
- SRW

Information Updated 2003-04-10 09:25:50

**Orders**

Site: 1 Main Plant

- No of orders
- Avg qty shipped

Information Updated 2003-04-10 09:22:41

**Current view of the organization. How much has each Profit Center sold so far in this month?**

**Portal is configured to display only measures where indicators are red**

**Current view of the organization. How many orders do we have right now and how does that compare to history?**
Fault Report To Be Created When Motor Switched Off
Number Changed to 4 Indicating Motor Stopped
Fault Report Created in IFS

Message from IFSINDIA to ADMINISTRATOR on 11/9/2003 2:22:01 PM

A new Work Order 200144 has been reported by 1002 for Equipment PM-312-PA-001
The Description is: The new value is: 4. Regards Nitin

Fault Report Created in IFS
Event Inserted in OEE as well
IFS Application Integration with ABB Process Portal A
IFS Application Integration with ABB Process Portal A
IFS Application Integration with ABB Process Portal A
IFS Application Integration with ABB Process Portal A
IFS Application Integration with ABB Process Portal A
### Functional Object Information

**Object**: PM-311-PA-003 Feed Water Pump 003  
**Site**: 70  
**Type Designation**: -  
**Status**: Active  
**Level**: Object Id  
**Group**: 50

#### Functional Object Has

- [x] Supplier Warranty
- [ ] Documents
- [ ] Type Designation has Documents

#### Object Information

##### Spare Parts

<table>
<thead>
<tr>
<th>Site</th>
<th>Part No</th>
<th>Part Description</th>
<th>Structure</th>
<th>Inventory Part</th>
<th>Dimension/Quality</th>
<th>Quantity on Hand</th>
<th>Unit</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>70</td>
<td>10520001 Single Roller Bearing</td>
<td>No</td>
<td>Inventory Part</td>
<td>80 x 140 x 26</td>
<td>1000 pcs</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>70</td>
<td>10600019 Bearing set for APP3 Pump</td>
<td>No</td>
<td>Inventory Part</td>
<td></td>
<td>0 pcs</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>70</td>
<td>10600021 Pump wheel open d=410 APP20-300 No</td>
<td></td>
<td>Inventory Part</td>
<td></td>
<td>0 pcs</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

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**AABB**
Fault Report Wizard

This is what you have registered for the event.
If you want to save your fault report, click Finish.

Reported by: ALAIN
Site: PM-312-PA-001-EC01-M-01
Object ID: PM-312-PA-001-EC01-M-01
Description: Fault report with WO number 200037 is created.
Short Description: At next inspection
Fault Description: Alarm
Exec. Depart: 6
Priority: Production Problem
Discover Code: 19
Symptom:
IFS Application Integration with ABB Process Portal A

Process Simulation
- Start
- Stop
- Reset Values

Level
- 65
- 13

OP Time
- 176
- 135

On/Off's
- 6
- 0
IFS Application Integration with ABB Process Portal A
India as an IT Major
Matrimonial
: an example

27 years boy IT grad in computing, techno savvy seeks confident girl, Java & C++ knowledge essential. Caste, religion no bar
Political Slogan – Paradigm Shift

Food

Cloth

Shelter

Bandwidth
Return on investment
Business Applications: Return on Investment

1. Benefit through adoption of best business practices

2. Increase in the useful life of the power generation facilities, transmission & distribution line

3. Increased efficiency in operation & maintenance system

4. Reduction in inventory carrying costs (inventory requirement forecasting, analysis & replenishment)

5. Improvement in manpower productivity (competency management, planning, removing non-value added activities etc.)

6. Controlling time and cost overruns of projects (through exception based project management)
Business Applications: Return on Investment

Powerful executive information system to facilitate proactive decision making process

Increased ability to respond to the changing needs and demands of customers
Recap-salient features for ERP in thermal

1. Energy industry specific ERP solution
2. Increased predictibility of the plant
3. Fuel management- a must for thermal companies
4. EAM
5. Integration : DCS/SCADA, mobile devices- PDA, MS Project/Primavera/Excel, GIS, CIS
6. RCM
7. Two types of organisations in future
ERP SOLUTION for POWER GENERATION

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