Doosan Babcock

Doosan Babcock - Overview of Two Decommissioning Projects

Paul Fisher– Lead Development Engineer

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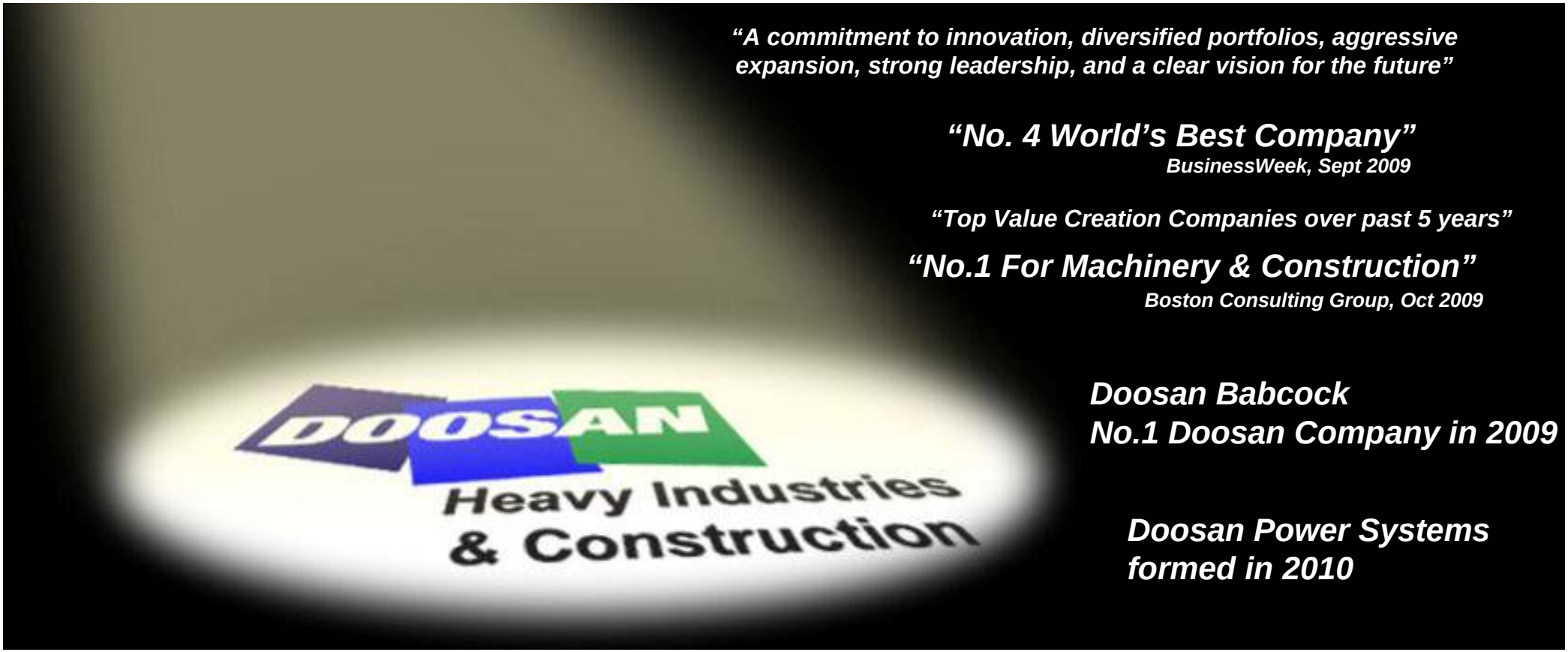
Contents

Doosan – A Highly Performing Organisation

Doosan Heavy Industries is active in Manufacture, Engineering, Construction of Power Plant, Industrial Plant, Engines, Infrastructure, Process and Equipment

- **Turnover £10.0bn**
- **Doosan recognised as a major high-performing global organisation**



"A commitment to innovation, diversified portfolios, aggressive expansion, strong leadership, and a clear vision for the future"

"No. 4 World's Best Company"
BusinessWeek, Sept 2009

"Top Value Creation Companies over past 5 years"

"No.1 For Machinery & Construction"
Boston Consulting Group, Oct 2009

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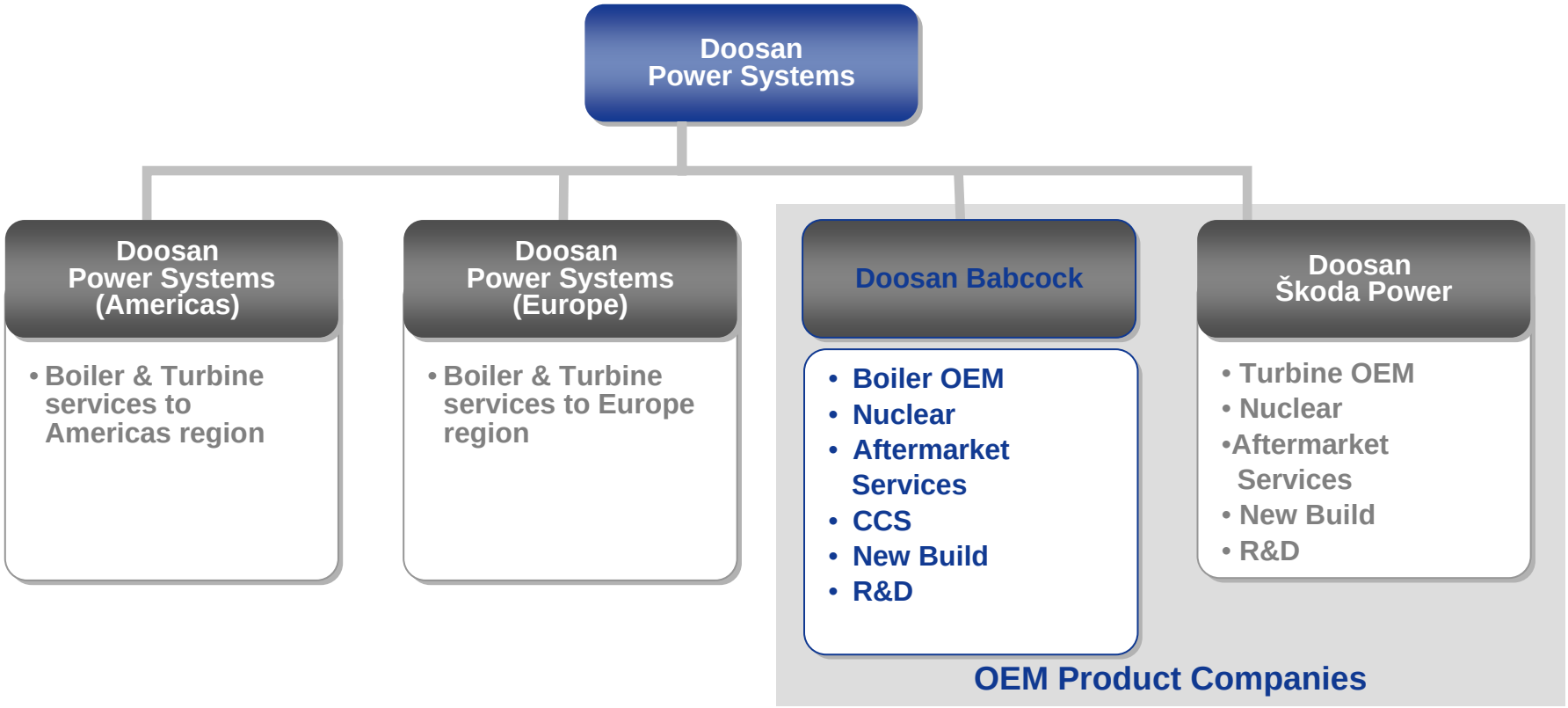
No.1 Doosan Company in 2009

Doosan Power Systems
formed in 2010

DOOSAN POWER SYSTEMS

Doosan Power Systems – a $1.5bn company with a world wide business



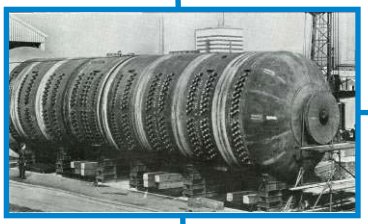
Doosan Babcock Nuclear Business - Currently

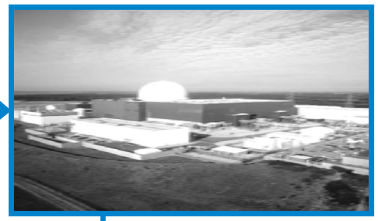
Doosan offers full range of Nuclear capabilities from complete EPC to aftermarket service…

Major player involved in the first UK Nuclear Plant in 1952

Supply, fabrication and installation in Magnox and AGR fleets, Sizewell "B" PWR

New Waste Management
Nuclear Facility delivery
EPC projects
Project management & Planning
Engineering
Supply chain management
Mechanical equipment
Site construction management
Installation staff and labour
Commissioning support
Decommissioning





EPC Project Examples

- *Residue Export Facility*
- *Sludge Preparation Plant*
- *Separation Area Ventilation*
- *Tails Management Facility*

1952 ***1980*** ***1994*** ***2005*** ***2010***

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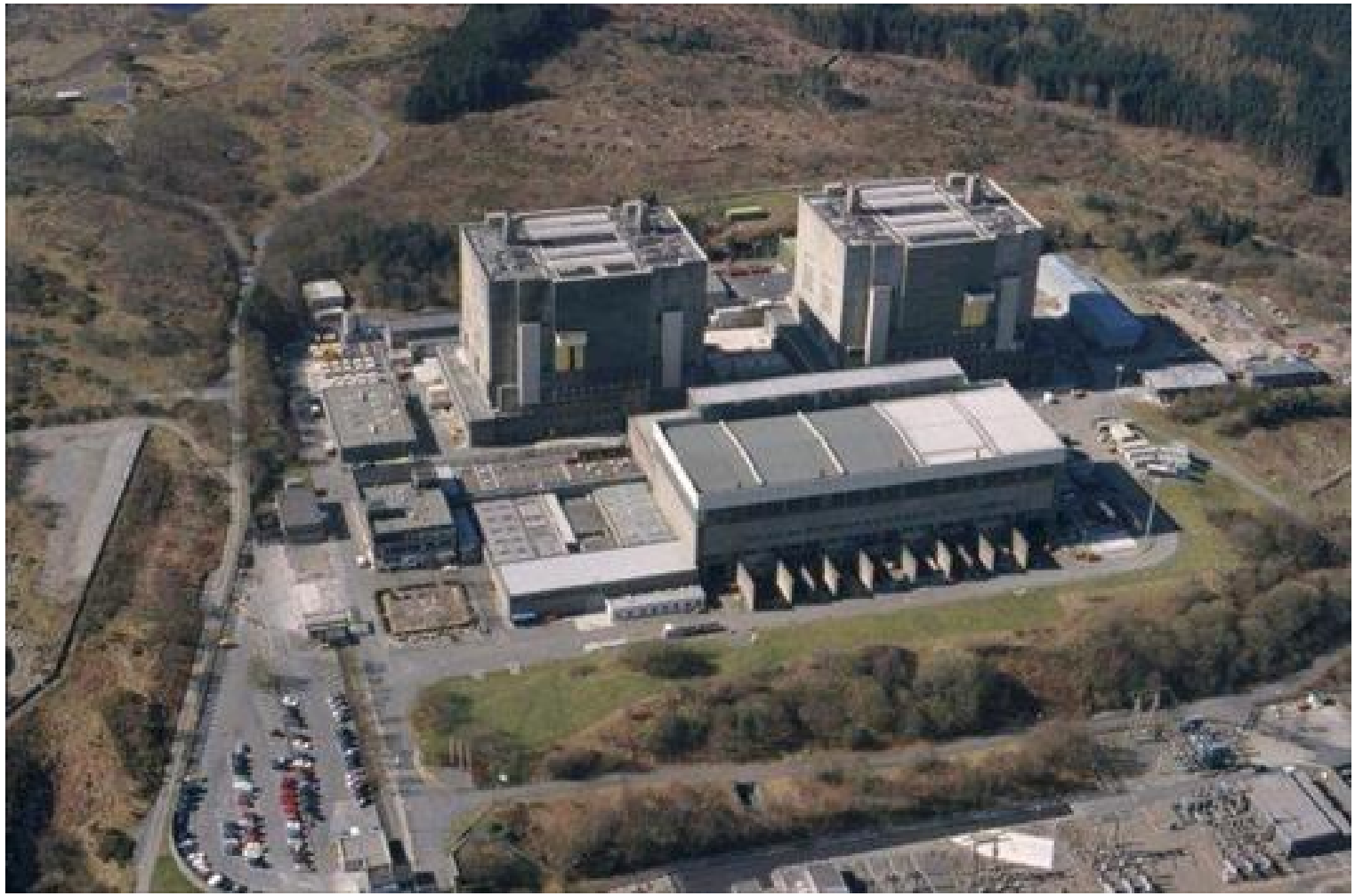
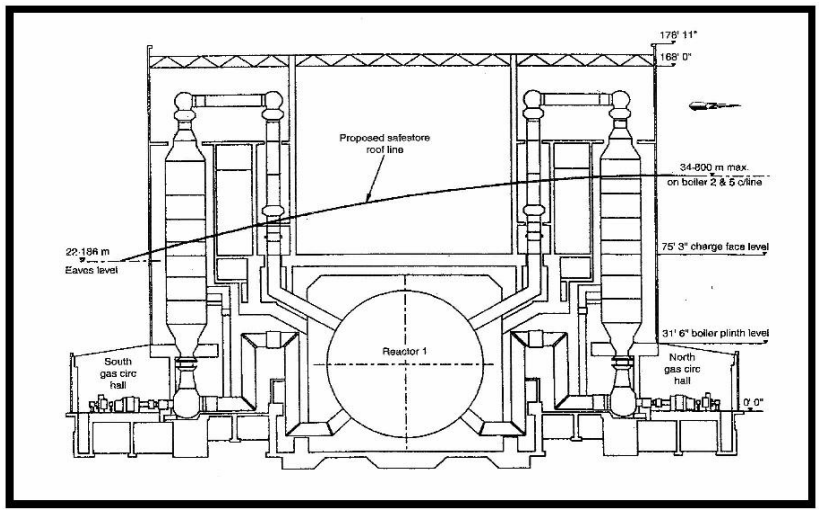
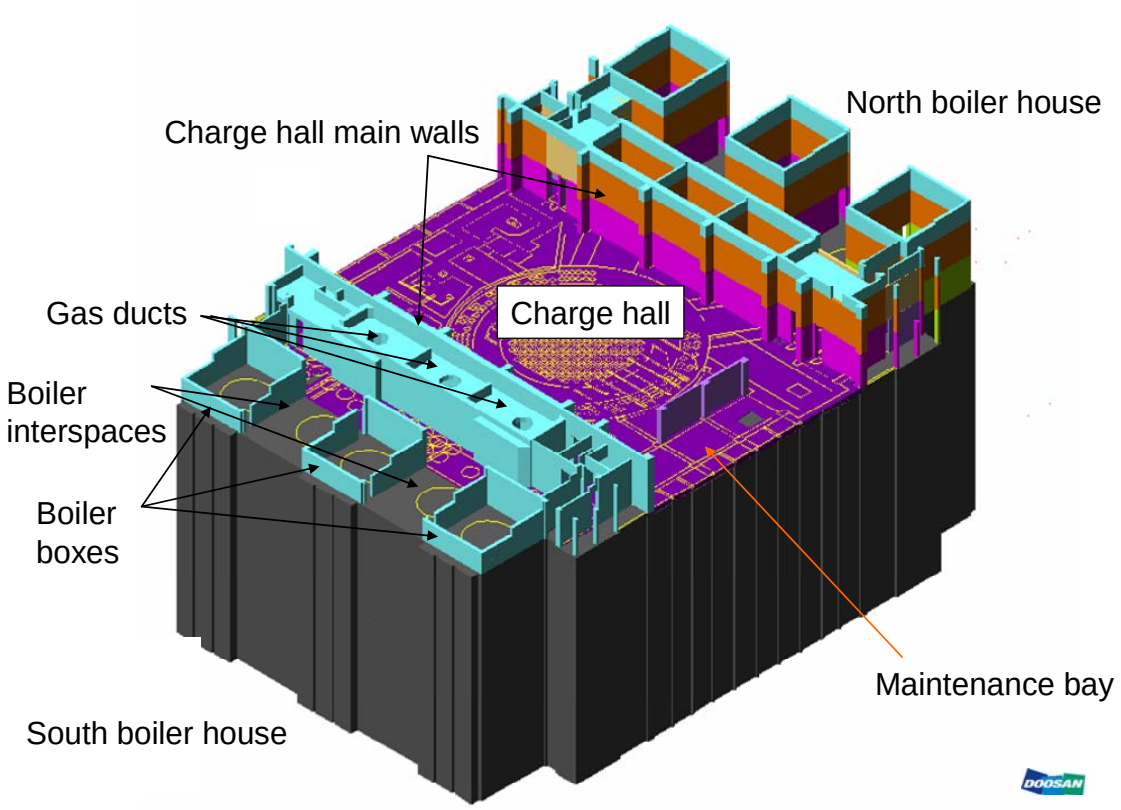
Deplanting Heat Exchangers at Trawsfynydd



Trawsfynydd Power Station in the Snowdonia National Park North Wales.
The twin Magnox Reactors have been defuelled and decommissioning is underway.

Project Description

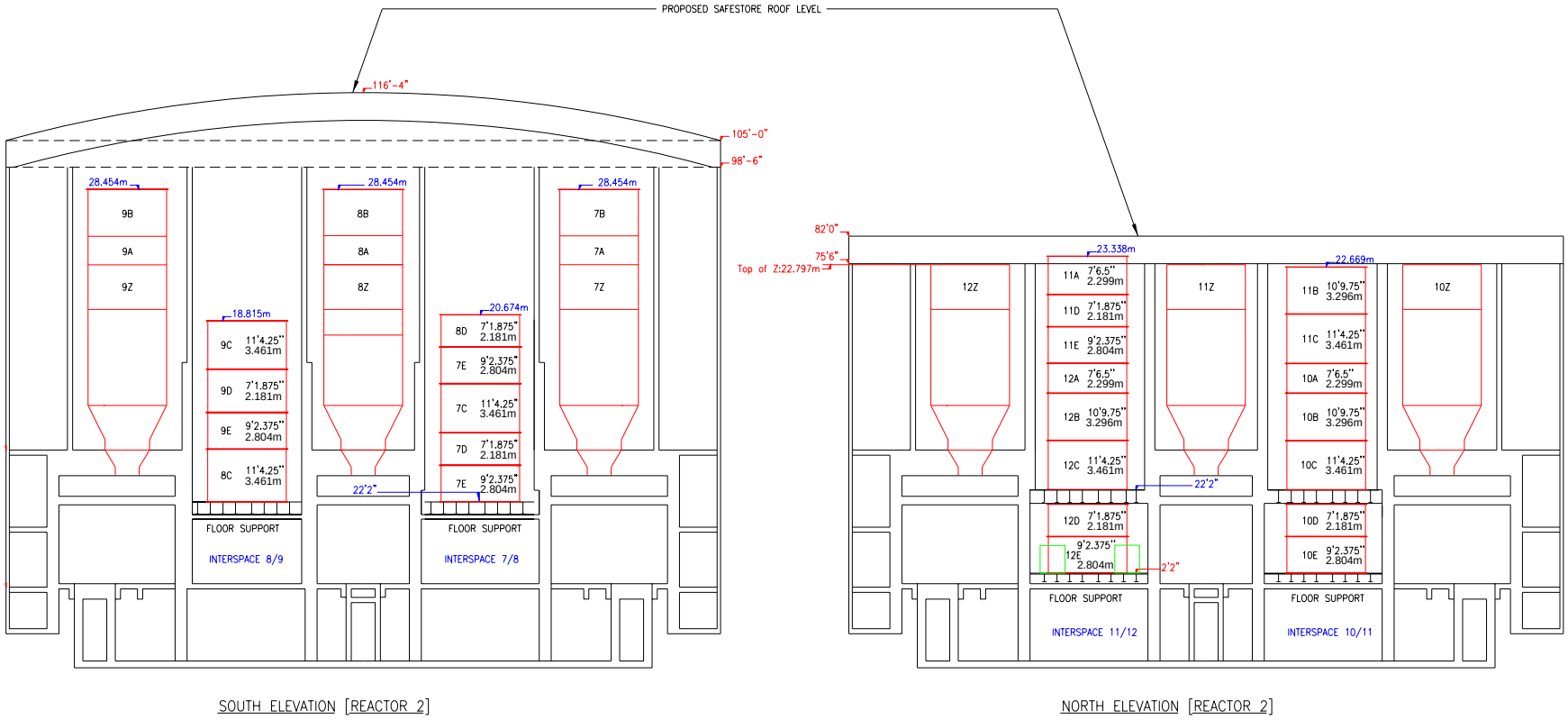




Doosan Babcock undertook the deplanting of the Heat Exchangers at Trawsfynydd:

The project involved the size reduction of 12 heat exchangers to enable height reduction of the Reactor Buildings.

Project Description



Main Works:

- ***Preparatory works***
- ***Installation of new steel floor in interspaces***
- ***segmentation of the Pressure Vessels and Tube banks***
- ***sealing all apertures***
- ***subsequent transfer of boiler sections to interim storage within boiler interspaces.***

Technical Challenges

Technical Challenges:

•Engineering designs and methodologies supplied by Magnox formed a basis for the client specification which were further developed as the project progressed.
•Access to carry out many of the operations was very restricted.
•Boiler Internal Works
•New steelwork (Floors)
•Heavy Lift Equipment
•Contamination Control
•Engineering Substantiation

Resource and Deployment:

•Extensive range of services and (SQEP) resources were required
•The resources had to be optimised to meet the project requirements at all stages of the programme.

Design and Preparation

The Boiler Lift Rig:
To carry out this work a special purpose boiler lifting rig was utilised.
A total of 48 sections were to cut, lifted and capped each weighing between 65 & 105Te,
Total weight = 3818Te.

Training & Preparation:

- ***Extensive planning***
- ***Technique familiarisation***
- ***Boiler Entries***
- ***BLR at Birkenhead***

Transportation & Erection:

- ***Erection of new cranes***
- ***Installation of BLR super track***
- ***Ancillary modifications to building and services***
- ***Commissioning and monitoring***

Execution of Works

Project Delivery:
Careful preparation and project control led to successful project delivery:

- **Value:** **£15M**
- **Man-Hours:** **450,000**
- **Duration:** **2004 – 2009**

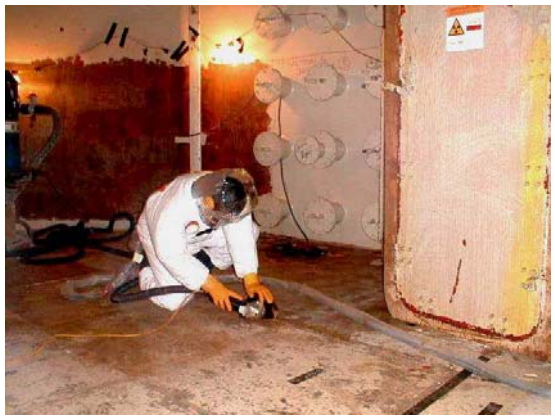
NEC3 Option C Target cost arrangements (KPI – Pain/gain share)

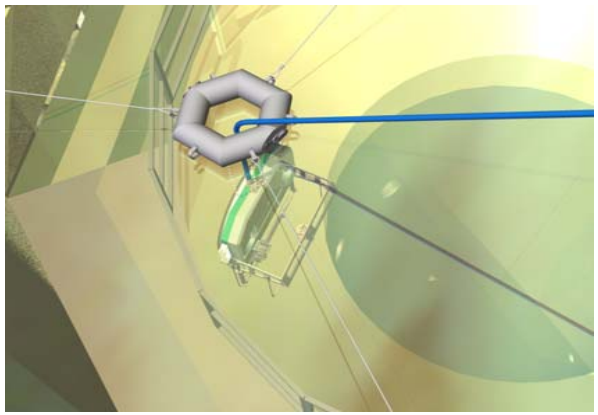
Decommissioning - Faslane

Client : Babcock International (MoD)
Scope : Removal of radiologically contaminated plant items, including:

- **Heavily lead shielded ion exchange column;**
- **Pumps & pipework;**
- **Redundant water, steam, and compressed air and effluent pipe work systems;**
- **Retrieval and treatment of contaminated sludge & ion exchange resins;**
- **Project to dismantle radiologically contaminated effluent barge underway.**

Thank You





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Part of Doosan Power Systems