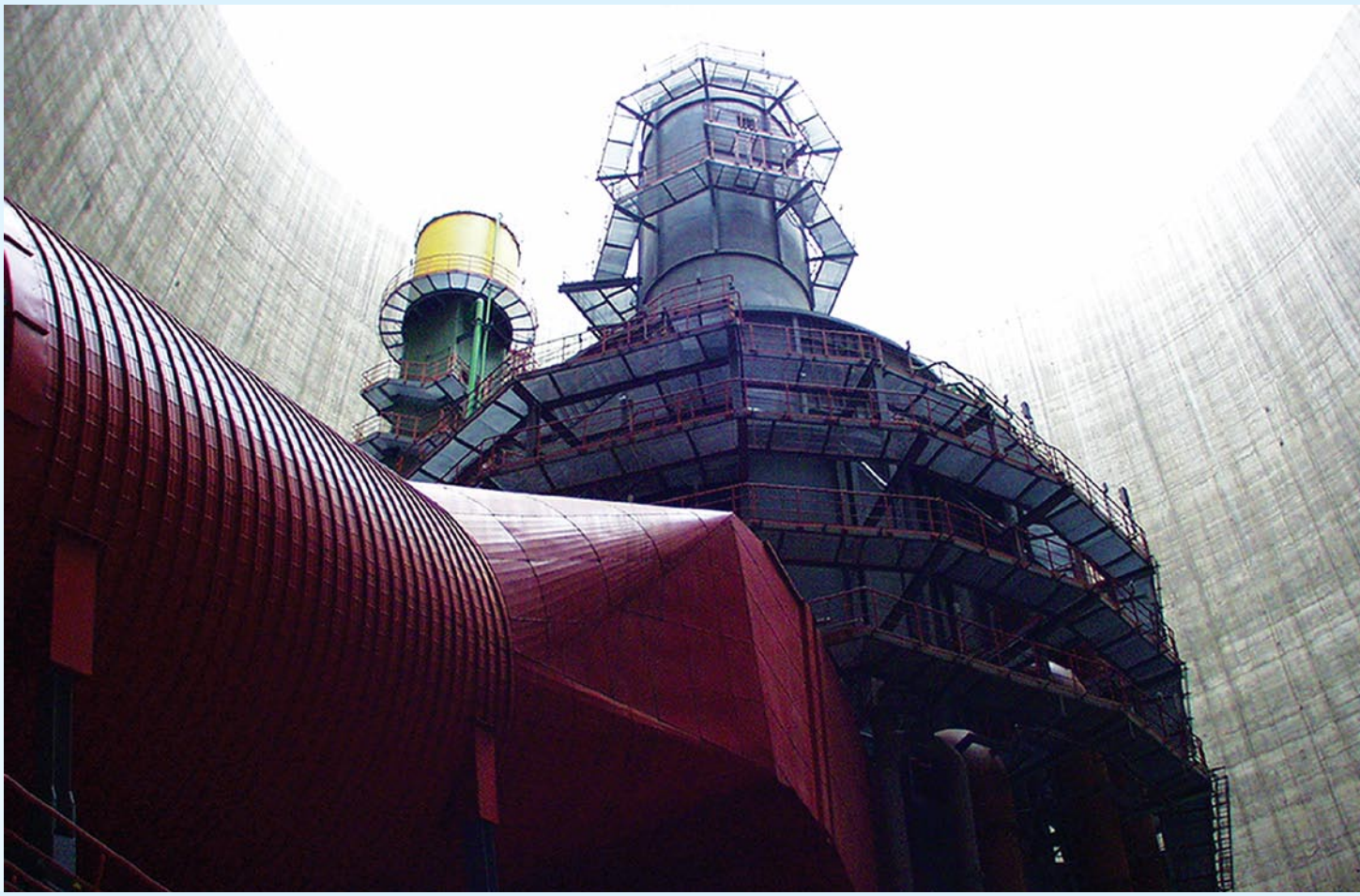

RWE extended the life of Hungary's Matra power station

RWE
The energy to lead

CASE STUDY

A major retrofit programme of Matra power station raised output by 6%, extended its life by about 10 years and assured compliance with EU environmental regulations, protecting investment in a major power generation asset.

The need for our expertise

In 1995, RWE acquired a 51% interest in Matra Erömü Rt, Hungary's largest electricity producer, with a lignite-fired power station park of 3x200MW and 2x100MW supplied by Matra's own lignite mines. The blocks were approaching the end of their design life and emitted significant quantities of sulphur. The entire power station required an extensive upgrade and retrofit programme to increase the output of the 200MW units to 212MW, to extend the lifetime until 2015 and to equip them with flue gas desulphurisation units for compliance with EU emission standards. Disposal of 1.5–1.7 million tonnes of ash per year required significant improvement due to wind blowing dry ash from the disposal site.

Putting our expertise into action

In 1998, after several years of detailed planning, work commenced on several retrofit projects, which had to be implemented with minimum downtime.

Upgrade measures

Boilers were refurbished with new steam pipes, thereby extending their life to 2015. At the same time, steam production capacity was increased from 620t/h to 650t/h by judicious utilisation of the reserve pipes. Installation of new burners improved the heat production capacity while reducing the emission of NO_x and CO. CO_2, SO_2 and dust emissions were also reduced by increased conversion efficiency. At the same time, the electrostatic precipitators were improved to further reduce dust emissions. To utilise increased steam production capacity, the turbines were re-engineered with higher efficiency blades to improve their steam throughput capacity. New instrumentation and control systems delivered increased efficiency.

FGD

Due to space constraints, RWE engineers integrated two wet lime FGD units into the interior of the two dry-cooling towers. This design is a world first; removing the need for smoke stacks and permitting improved mixing of the cool clean flue gases with ambient air. Another advanced design feature was the collection of flue gases of the three 200MW blocks in one common duct, from where they are distributed to the two units. This feature enhances the operational flexibility of the power station because it permits continued operation when one of the FGD units needs to be shut down.

Ash disposal

In order to reduce dust emissions and to minimise the required disposal area, a new ash paste disposal system was designed. Ash is mixed 1:1 with water into thick paste, which is pumped from the power station to the ash disposal site. Prior to hardening, the paste is stable enough to build significant thickness, thereby reducing the area required for the disposal site. The ash paste hardens completely within a few days, minimising dust emission.

The difference we made

The retrofit programme for the Matra power station introduced the first flue gas desulphurisation unit in Eastern Europe, to the benefit of the environment and neighbouring population. Achieving early compliance with EU emission standards assured continued operation of the power station when Hungary joined the EU. Raising the steam generation capacity of the boilers, combined with an improvement to turbines and cooling tower efficiency, allowed Matra Erömü Rt to generate extra revenue while reducing costs. Extending the life time of the 200MW units significantly reduced investment needs at a time when the Hungarian finance market's capacity was still very limited.

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