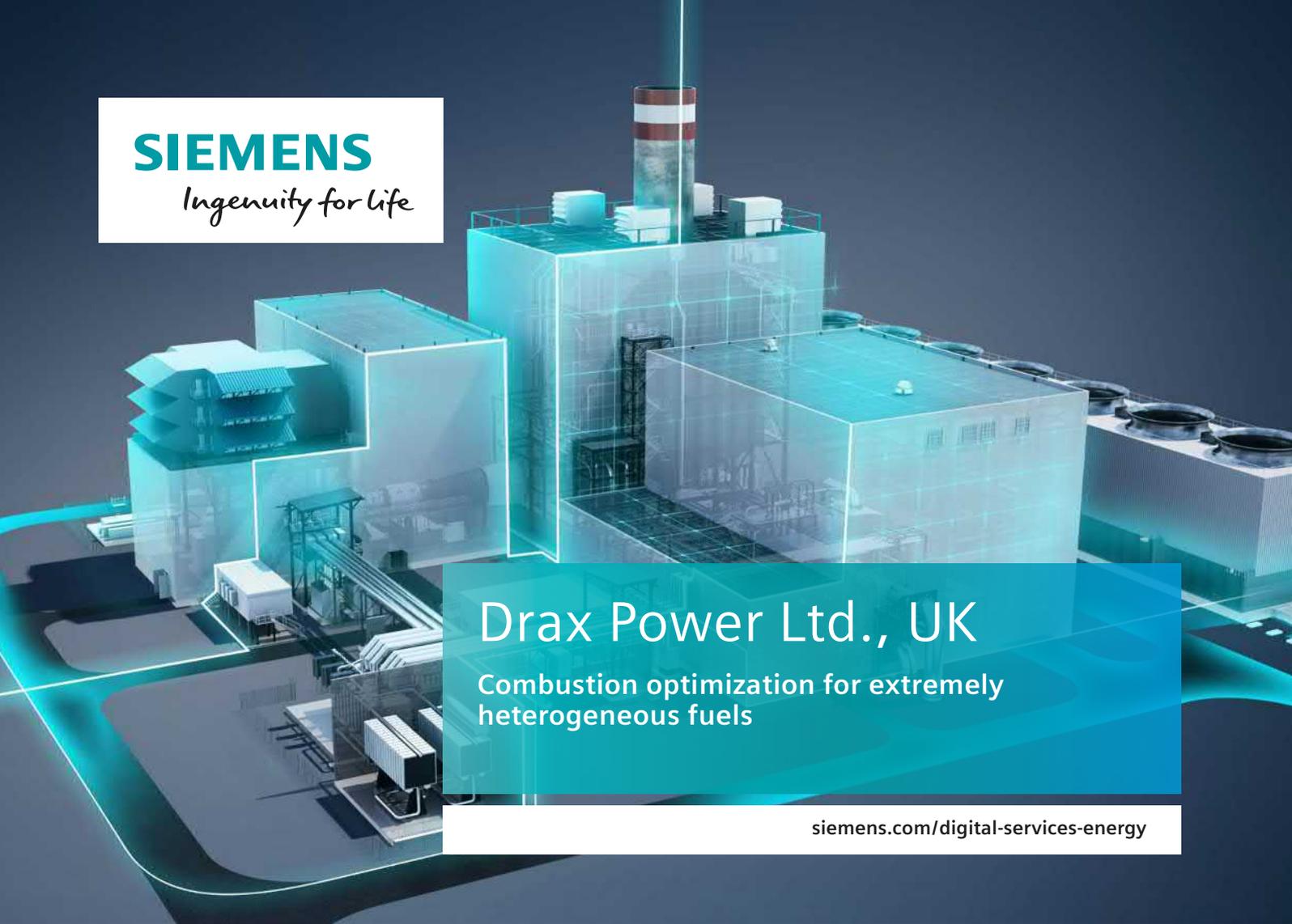




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Ingenuity for life



Drax Power Ltd., UK

Combustion optimization for extremely heterogeneous fuels

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England's biggest power plant comprises of **six** units generating **660 MW** of electricity.

Climate-neutral power generation with **100%** sustainable biomass.

The Plant

Drax Power Limited operates England's biggest power plant, comprising six 660 MW units. As a contribution to climate-neutral power generation, almost three units have been upgraded to run on 100% sustainable biomass instead of coal. In 2014, Unit 3 was the first biomass system to be equipped with the NO_x Reduction performance optimization solution, part of the Siemens Digital Services Omnivise suite of solutions.

The Task

For the last ten years Drax has been developing the capability to provide renewable electricity through upgrading almost half of the power station to run on biomass.

In addition to reducing NO_x emissions, Drax wanted to cut operating costs by using biomass more efficiently. Key requirements were the fast implementation of the solution, the integration of the measurement signals into the secondary deNO_x process (SNCR) and guaranteed reduction targets for NO_x and excess air.

The Solution

The NO_x Reduction performance optimization solution enabled the targets to be met. The solution features a laser measurement system, which determines the temperature and flue gas composition directly in the combustion chamber.

The fuel composition, for example the sodium content, can also be determined. This detailed information on the combustion situation forms the basis for optimizing the combustion parameters in real time. The additional measurements of local O₂ and CO concentrations over and above the temperature distribution, are an important contribution to the improved use of the SNCR installations.

Combustion optimization is made possible by the individual adaptation of the existing air-fuel controlled variables, especially the air staging and excess air, in accordance with requirements. Classic, model-based control concepts are used here to ensure transparency and long-term maintainability by trained customer personnel.



With the help of Siemens NO_x Reduction performance optimization solution, Drax was able to meet its contractual reduction targets while cutting its operating and investment costs.

The Result

- **Reduced NO_x emissions and increased efficiency:** Optimization of the combustion process helped the operator to exceed governmental requirements and improve efficiency of the plant
- **Reduced operating costs:** Lowered coal consumption and a more efficient burn cut operating costs
- **Improved transparency and controllability:** Laser-based measurement of the combustion products directly in the combustion chamber

“At Drax we didn’t just want to upgrade our units to run on biomass, we wanted to optimize the combustion process as much as possible. The strong partnership between Drax and Siemens had a large role to play in our success in achieving this and we are both extremely proud of what we accomplished.”

Les Lemmon, Engineering Manager, Drax Power Limited

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