

## **How the experienced use of CFD analysis allows generators to meet strict LCPD NOx emission requirements with proven technology**

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This paper will show how RJM applies its experience and CFD modelling to determine the most suitable technology for NOx reduction to allow three power plants in the EU to meet the strict requirements of the LCPD and their contracted power purchase agreements. The three plants are:

- 1) Plant: AES Tisza II; Hungary, fuels: oil and natural gas, boilermaker: SES Tlmace, burner make: Deutsche Babcock, Firing pattern: upshot, Boiler capacity: 215MWe, Original NOx:  $1000\text{mg}/\text{m}_0^3$  on gas, Target NOx:  $350\text{mg}/\text{m}_0^3$  gas  $400\text{mg}/\text{m}_0^3$  oil, Final NOx:  $199\text{mg}/\text{m}_0^3$  gas,  $250\text{mg}/\text{m}_0^3$  oil. Technology Installed: RJM burner modifications and FGR. Project status: complete.
- 2) Plant: Essent Energie Clauscentrale; The Netherlands, fuels: Bio-oil and natural gas, boilermaker: Stork supercritical, burner make: Lentjes low NOx, firing pattern: opposed, boiler capacity: 640MWe, original NOx:  $\sim 400\text{mg}/\text{m}_0^3$  on gas, Target NOx:  $<200\text{mg}/\text{m}_0^3$  gas. Technology installed: RJM burner modifications and FGR. Project status: complete.
- 3) Plant: AES Kilroot Power Ltd; Northern Ireland, Fuels: coal and oil, Boilermaker: NEI, Burnermaker and type: Alstom Low NOx Concentric Firing System (LNCFS II), Firing pattern: Tangential, Boiler capacity: 260MWe, original NOx:  $650\text{mg}/\text{m}_0^3$  on coal, target NOx:  $<500\text{mg}/\text{m}_0^3$  on coal,  $<400\text{mg}/\text{m}_0^3$  on oil. Technology to be installed: RJM burner modifications, RJM OFA modifications. Project Status: Project complete.

CFD Analysis was used as an important and integral part of the engineering to confirm the expected performance. Significantly two of these projects include the upgrade of existing low NOx systems and show how these may be further improved to allow compliance with the LCPD at minimal downtime.