

RJM resolves the most complex combustion and emissions challenges for coal, oil, gas and biomass-fired plant through the application of cost-effective, innovative solutions

# Combustion Optimisation+

An RJM on-site service



“Regular combustion optimisation is paramount to the performance and profitability of thermal power generation assets”

RJM International is an award-winning provider of technologies, products and services that enable power generators and other large combustion plant to operate cleanly, efficiently and reliably.

With offices in the UK, USA and Singapore, supported by a network of agents in Europe, the Middle East, Africa and across Asia-Pacific, RJM is able to effectively manage projects all over the world.

# Many common plant issues are caused by poor combustion

## Common problems

- Fouling
- Corrosion
- Tube erosion
- Tube failures
- Load limitations
- Poor gas / steam / metal temperature distribution

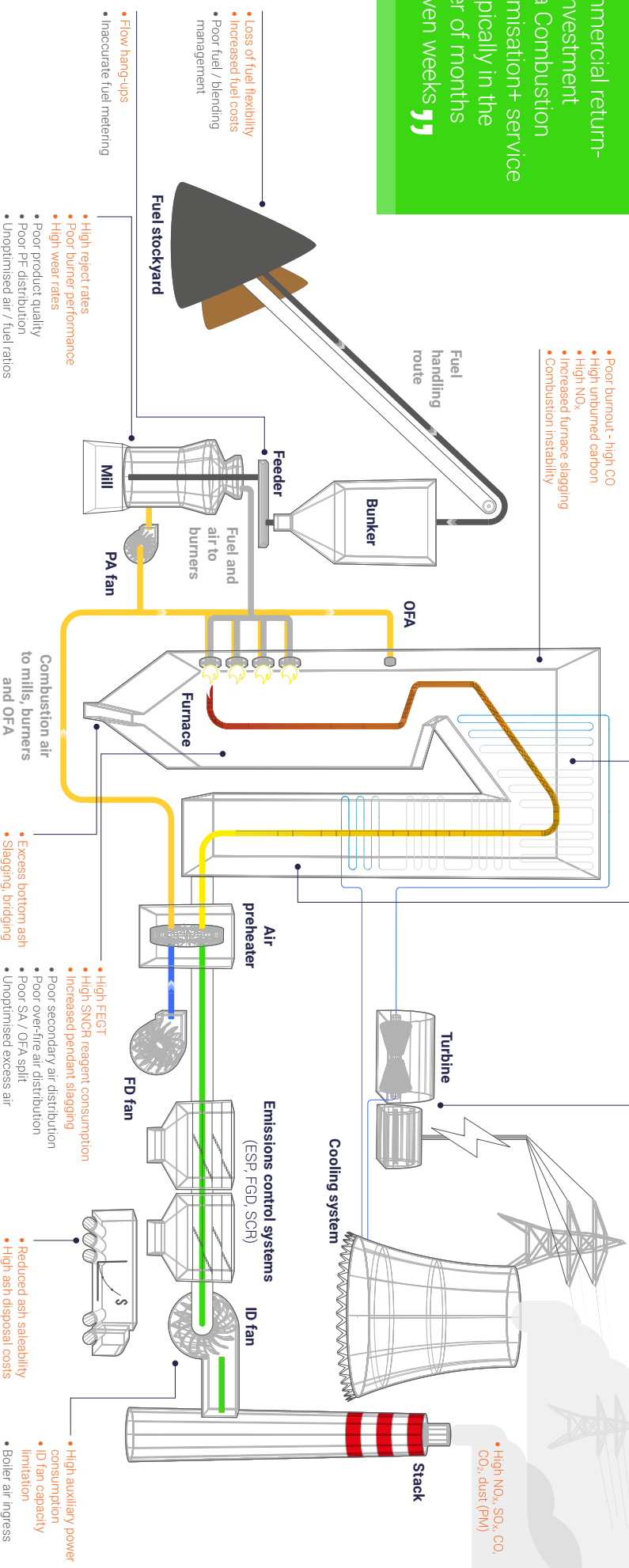
- Poor burnout - high CO
- High unburned carbon
- High NO<sub>x</sub>
- Increased furnace slagging
- Combustion instability

- Reduced boiler efficiency
- Poor O<sub>2</sub> distribution
- Reduced ESP efficiency
- High flue gas exit temperature

- Load restrictions
- Reduced heat rate
- Low availability / reliability

“ Commercial return-on-investment for a Combustion Optimisation+ service is typically in the order of months or even weeks ”

“ RJM Combustion Optimisation+ is an essential activity to maximise performance on any type of boiler or fuel ”



## Our Solutions

- Balance boiler airflows and oxygen levels
- Optimise furnace stoichiometry and over-fired air levels for low NO<sub>x</sub>, CO and CIA
- Measure and improve PF flow distribution between burners (potential for improvement depends on installed PF flow balancing technology)
- Measure and optimise primary airflow to improve mill and combustion performance and minimise mill rejects
- Measure and optimise secondary airflow distribution
- Measure and optimise PF fineness
- Assess burner flame characteristics and optimise for flame shape and stability
- Validate plant measurement accuracy of PA, SA and OFA
- Assess and optimise overall boiler performance
- Review fuel diet and prescribe fuel management improvements
- Identify and cost opportunities for further performance improvements.

## Your Benefits

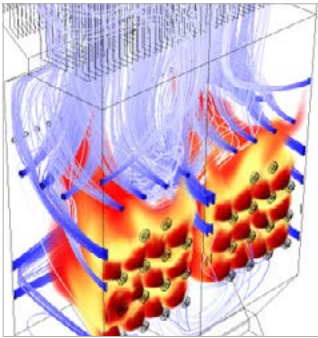
- Reduced emissions (NO<sub>x</sub>, PM / dust, CO, CO<sub>2</sub>)
- Reduced unburned carbon (improved ash saleability)
- Increased boiler efficiency – reduced fuel costs
- Reduced slagging and fouling
- Improved boiler temperature distribution
- Improved boiler stability
- Improved fuel flexibility
- Reduced mill reject rates
- Reduced auxiliary power consumption
- Improved commercial performance (availability, efficiency)
- Reduced maintenance costs

# Why work with RJM...?

Following Combustion Optimisation+, any options for further performance improvement will be identified by RJM. With a commercial business case for further upgrades, RJM can design and implement a customised solution.



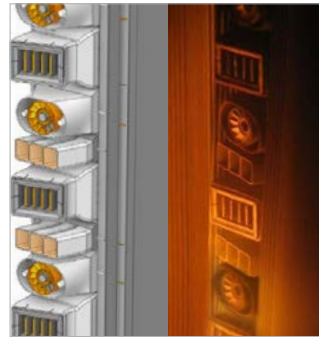
- Delivered over **60,000MW** of successful combustion solutions to leading generators worldwide
- Expertise across **all aspects of combustion systems** and ancillary equipment that impact plant performance
- Offers **full upgrade implementation** programmes in addition to services and consulting work
- Extensive experience across a **wide range of fuels**, boilers and firing systems
- Industry-leading **fuel and combustion experts** working in-house
- **Advanced flame diagnostics** tools to aid combustion tuning
- State-of-the-art **CFD modelling** capabilities for resolving complex combustion and emissions challenges
- Extensive **range of products and services** adapted to suit each individual customer



Proprietary CFD modelling of coal, gas, oil, biomass and waste combustion systems



RJM Ultra-Low NO<sub>x</sub> Burner for wall-fired boilers



RJM Ultra-Low NO<sub>x</sub> combustion system for tangential-fired boilers



A range of products and services for biomass, bio-gas and waste-derived fuels

## What do our customers think...?

“ RJM has been a trusted partner in our efforts to improve combustion efficiency and unit reliability at our 1,200MW Mong Duong II facility in Vietnam. RJM’s engineering strengths, combustion modelling and experience has helped guide us in quickly making the proper decisions on needed modifications. The resulting improvements have completely met our expectations. ”

Kevin Pierce, Plant Manager, AES-VCM Mong Duong II, Vietnam



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