Oil shale particles were being overheated and produced odorous organic compounds.

CFD Modelling of Combustion and Particle Behaviour in a Rotary Dryer

Gas Fired Combustor

Modelling Summary:
- CFX4 commercial software used
- Reynolds stress turbulence model
- Mixed-is-burnt combustion model
- Discrete transfer radiation model
- van-Leer higher order differencing
- Coupled Lagrangian particle tracking
- Modified spray-dryer model for particle

Dryer Information:
- CFX4 commercial software used
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Modelling of Combustion and Particle Behaviour

- Multi-stage solution approach
- Particle reaction model for odour release based on drop tube furnace measurements

Industrial Problems:
- Oil shale particles over heated and produced odorous organic compounds
- CFD modelling reduced odour release while increasing throughput by nearly 20%