

Sheffield (SUWIC/SuperGen) Posters

Professor Jim Swithenbank, Professor Vida Sharifi, et al

1. Energy from Biofuel

Combustion, gasification and pyrolysis of biofuels have been studied at Sheffield using extensive experimental tests that have been validated by advanced numerical modeling.

Fixed bed combustion of various prepared biomass fuels provides data on mass burning rate, temperature and species concentrations in the bed.

Similar information on biomass steam/air/oxygen gasification is provided by our counter-current reactor.

The data is successfully correlated by our FLIC computer code.

2. Waste Resource Management in Urban Environments has been studied by an Academic and Industrial Consortium.

The challenge was met by a holistic project that spanned the range from Management Policy to Materials and Energy Recovery. SUWIC research focused on thermal processing of the waste and associated CHP. Sheffields' extensive program of measurements and modeling included dioxins and heavy metals.

3. Integrated FLIC/FLUENT Modeling of Large Waste/Biomass Plants

Combining the simulations from both codes by matching radiation, species and temperature at the surface of the bed of burning particles gives details of the flow field velocities temperature and composition. Measurements on full scale burning beds by our 'ball instrument' confirms the thin nature of the burning zone. The same modeling method is applied to biomass (wood) burning on moving grate systems.

4. CFD Simulation of a Large UK Biomass Fuelled Power Plant

Ely Power Station generates 38MW_e using straw and other biomass materials. Modeling of the burning bed and freeboard by integrating the FLIC and FLUENT codes provides information on composition, temperatures and velocities throughout the system. The effect of physical or operational changes can be investigated quickly and conveniently by using the model for parametric studies.

List of participants

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