

Coal Combustion Research at Brigham Young University

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Abstract

Several coal combustion-related research projects are currently underway at BYU. A high pressure drop tube reactor and a high pressure thermogravimetric analyzer (HP-TGA) are being used to determine high temperature high pressure char reactivities and pyrolysis yields. Fly ash from co-firing coal and biomass is being examined for suitability of use in concrete and for deposition and corrosion characteristics. Comprehensive modeling is used to determine 3-D oxygen profile in industrial boilers, illustrating problems with mixing that persist even until the boiler exit. These mixing problems cause increased carbon in the fly ash as well as local fuel rich zones that can lead to enhanced corrosion.

This research provides advanced models of fundamental processes to help design coal-fired boilers with advanced atmospheric pressure pollution control systems or advanced high efficiency pressurized systems (i.e, IGCC).

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