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Environmental assessment of the utilization of spent activated carbon as fuel in a fluidized bed combustor

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Spent activated carbon (SAC) can offset the burning of coal, as well as emissions from coal-fired facilities, while avoiding the cost of SAC disposal. To determine the effects of generating electricity from SAC, an environmental assessment was done on a system co-firing SAC with coal in a fluidized bed combustor. Combusting 100 kg of SAC saves the burning of about 92 kg of coal. Low sulfur and ash content of the SAC drastically reduced SOx and particulate emissions, which are estimated to be, respectively, 32% and 99%, less than typical values for new power plants. However, more water than is usually needed for flue gas cleanup (FGC) is likely to be employed for scrubbing the hazardous Na_2O fumes, and to douse the exothermic heat of reaction. FGC waste accounts for around 64% of the total solid. Because SAC has lower heating value than coal, more air is required; hence, higher NOx emissions result from combustion.

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