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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 SO_x 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 Na₂O 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 NO_x emissions result from combustion.

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