1-4 Cleaning of Exhaust Gas by Utilizing Waste Material and Coal

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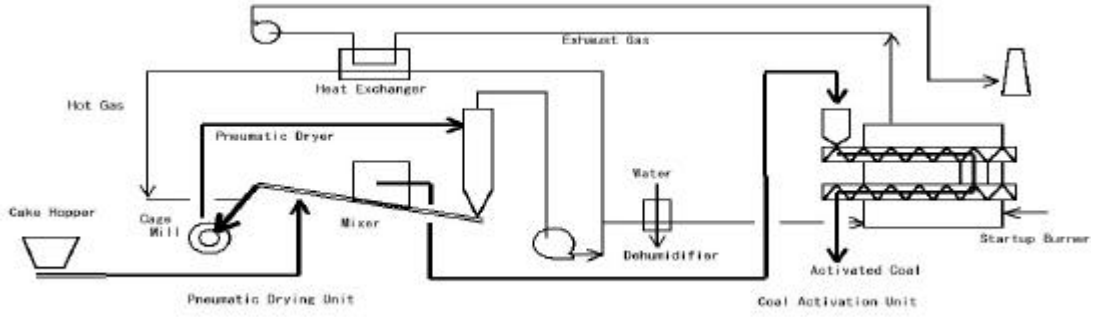
K. Kamei ◎ Center for Coal Utilization, Japan

M. Sawai Kawasaki Heavy Industries,Co.Ltd.

H. Suenaga Mitsui Mining Co.,Ltd.l

By feeding sewerage sludge and coal, and by aiming at moderate quality and a disposable type, we are trying to manufacture low-priced activated carbon. We will report on the devices and adsorption characteristics of the manufactured activated carbon with respect to dioxin, mercury, and other chemicals through field tests and laboratory tests. Activated carbon powder is either sprayed into stacks or pre-coated on bags of a baghouse.



1. Test results of activated carbon manufacturing from sewerage and coal

1) In spite of the small adsorption area of the manufactured activated carbon, the activated carbon showed rapid adsorption and this indicates that it suits for spray-removal of toxic gases.
2) The water necessary for the activation was supplied from the sewerage, the system does not require steam generators any more.
3) Coal particles with smaller size distribution showed faster activation speed, thus feed of a mixture of smaller size coal with sludge results in broader adsorption area.

2. Adsorption and mould test results

Adsorption tests on actual exhaust gas from an incinerator were carried out. The activated carbon powder was sprayed into the stream through the duct.

1) Dioxin and mercury were removed from the exhaust gas about 80% and 90% respectively.
2) Through make gas tests with pre-coated baghouse simulation, activated carbon from a mixture of fine coal particle and sewerage removed 90% SOx and 30% NOx when ammonia gas was injected at the upstream.
3) To develop wider application we conducted mould tests to acquire pellets or cylindrical products. We found suitable condition for screw type extruder with fiber aluminum sol. The extrusion showed proper strength and deodorant properties.