A New System for the Removal of Polychlorinated Dioxins and Furans in Small Plants.

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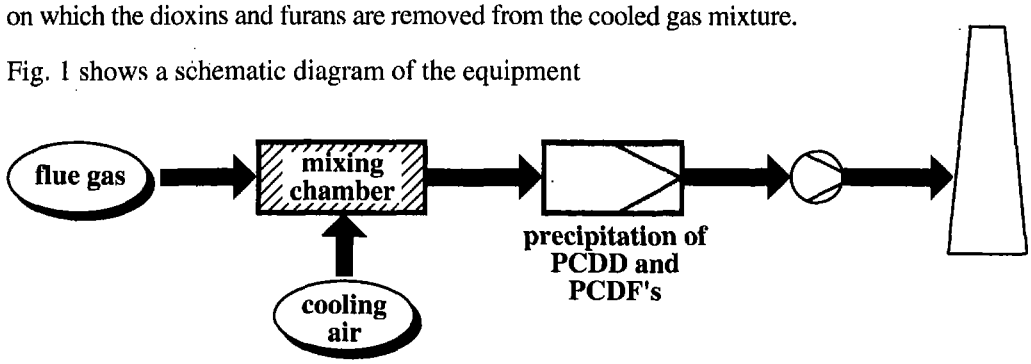
The systems currently used for the removal of polychlorinated dioxins and furans from gases, in particular from flue gases, require dustfree gas for troublefree operation. Furthermore, they suppose the existance of extensive safety precautions and of auxiliary plants for the preliminary treatment of the gas that has to be cleaned. In particular the safety precautions are fixed costs incurred whatever the size of the plant. In small and medium-sized plants they cause high specific costs in relation to the quantity of gas treated. This economic disadvantage becomes even more apparent with batch-operated plants as the above-mentioned auxiliary plants have to be started and stopped at the beginning and at the end of each plant operation.

It is well-known that better dioxin removal is achieved on the dust by reducing the flue-gas temperature in conventional bag filters. However, the reduction in flue-gas temperature is limited to approx. 120°C, which mostly corresponds to the dew point of the flue-gas, whereas dust removal must be done in dry atmosphere.

The solution to this problem is to convey the whole gas to a mixing chamber where it is mixed with cooling gas and thus cooled. The cooled gas mixture is routed to a paraffin impregnated dust filter on which the dioxins and furans are removed from the cooled gas mixture.

Fig. 1 shows a schematic diagram of the equipment



This ensures that the temperature of the gas that has to be cleaned is lowered to such an extent that a conventional downstream dust filter can extract the dioxins and furans contained in the gas without any condensation of the steam. The filter elements on which the pollutants have been deposited can be taken to an incineration or pyrolisis plant for thermal destruction to prevent the formation of solid or liquid hazardous waste.

The advantage of this equipment is its simple design. Consequently, with this equipment which mainly consists of conventional single elements, there is no need for extensive plant retrofitting.