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Latest Dioxin Treatment Technology for Incinerators

… it can decompose Dioxin by over 99wt %

Dioxin released by incinerators is causing big problems in Japan. The new regulations on air pollution dictate that Dioxin must be reduced to an emission of 0.1 nano gram TEQ/m^3N. TQM: Toxicity Equivalent Quantity. NEDO (New Energy and Industrial Technology Development Organization) has now developed a Dioxin decomposing technology for the off gases of incinerators. This technology decomposes Dioxin directly by feeding active water (mixture of ozone and hydrogen peroxide) into the off gas of the incinerator quencher or stack. This technology also allows the conventional incinerators to be modified for meeting the new regulation. Figure 1 shows a schematic view of the NADO system as applied to the renovation of an existing furnace. The active water is sprayed into the off-gases at the inlet of the quencher. The active water produces OH radical by the reaction of hydrogen peroxide and ozone. This OH radical oxidizes and decomposes Dioxins. The hydrogen peroxide and ozone not consumed for Dioxin decomposition are converted into water and oxygen in the stack. Figure 2 shows the mechanism of this technology, while Figure 3 shows a photo of the test plant. The experimental results have confirmed that: (1) OH radical produced by active water can decompose Dioxins. (2) The system can decompose Dioxin by over 99wt % (Figure 4). (3) Dioxin in ash is reduced. (4) The off gases from stack are safe by the measurement result of hydrogen peroxide and ozone concentration.

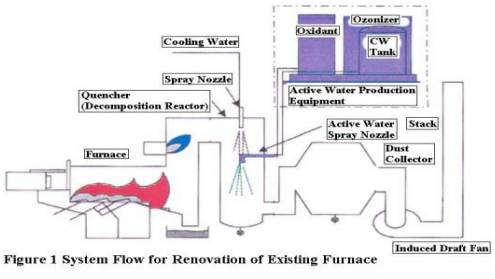

Figure 1 System Flow for Renovation of Existing Furnace

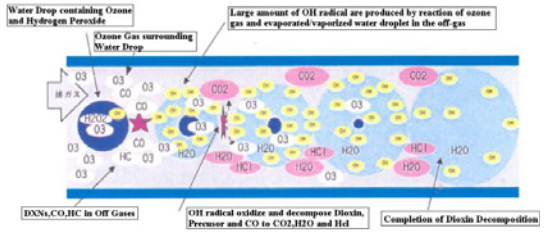

Figure 2 Direct Decomposition Mechanism of Dioxin

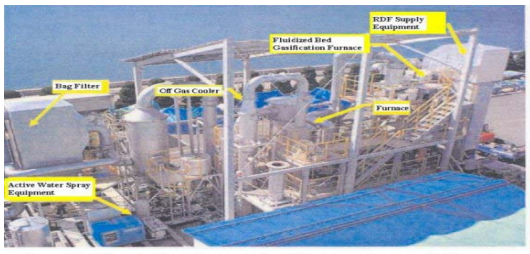

Figure 3 Test Plant for Direct Decomposition of Dioxin in Incinerator Off Gase

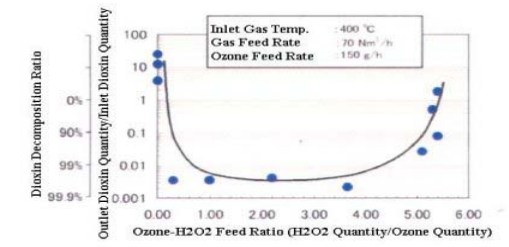

Figure 4 Test Result of Dioxin Decomposition in the Actual Incinerator Off gas

Mechanical & Environmental Sciences