GMAB

MercOx™
Mercury Removal

MercOx™ Mercury Removal

GMAB provides GMAB™ flue gas cleaning and flue gas condensation technologies for a wide range of applications, including waste-toenergy, co-incineration and hazardous waste incineration plants.
The MercOx™ process is an efficient flue gas cleaning method for separating mercury from flue gas.
In this process the metallic mercury, which is insoluble in water, is oxidised to water-soluble forms by using the environmentally friendly oxidising agent hydrogen peroxide together with an additive. The process also separates hydrochloric acid and sulphur dioxide.

MercOx process handles mercury release from waste incineration

During incineration of material containing mercury, the mercury is released almost completely into the flue gases.
The variations in flue gas composition and temperature influence the final division of the mercury into metallic (water-insoluble) and oxidised (water-soluble) forms.
Traditional wet flue gas cleaning methods only separate the water-soluble form. It is therefore often necessary to supplement the mercury removal process with an activated carbon filter or alternatively, our MercOx technology.
At thermal treatment plants, mercury is often released during short periods of time, creating very high mercury peak concentrations in the untreated gas.
Many traditional flue gas treatment systems have limited buffer capacity and they cannot reduce these peak concentrations as much as required. In such cases or in applications where the raw gas mercury levels generally are high, the MercOx process offers a very efficient alternative or complementary separation system for mercury removal.

How the MercOx process works

In the MercOx mercury removal process, the metallic mercury, which is insoluble in water, is oxidised to watersoluble forms. The mercury is separated from the flue gas by injection of hydrogen peroxide, an environmentally friendly oxidising agent, plus an additive.
This allows the MercOx process to separate different forms of mercury.
Sulphur dioxide is also oxidised to sulphuric acid and hydrochloric acid will be dissolved in the scrubber liquid.
An acid water flow containing mercury is transferred from the scrubber to the water cleaning process for neutralisation and precipitation of mercury.
The process can also be combined with our ADIOX® packing material for dioxin removal and/or energy recovery through flue gas condensation.

Mercury

Mercury and most of its compounds are highly toxic to humans, animals and ecosystems. There are several types of mercury and it occurs in solid, fluid and gas forms.
Metallic mercury and methylmercury pose the greatest risk. High doses can be fatal to humans, but even relatively low doses can seriously affect the nervous system, brain and kidneys and cause deleterious developmental effects in children and fetuses. Methylmercury is commonly found in fish due to bioaccumulation.
Mercury release comes both from natural sources and human activities. Rocks, sediments, water and soil contain small amounts of mercury, which may be released due to exposure to wind and water and through volcanic activities. The major source of mercury release are coal-fired electric power plants, and municipal, medical and hazardous waste combustors. Also disposal of thermometers and batteries cause contamination of the environment.
Being an element, mercury cannot be broken down or destroyed through chemical processes.
However, there are methods of separating mercury from the waste at incineration and converting it to a stable form for terminal storage.

Effective with high levels of metallic mercury

The MercOx mercury removal process is especially effective in applications with a high proportion of metallic mercury in the flue gas, since this form is not separated at all in a normal acid scrubber.

Examples of such applications are:

- Sludge incineration
- Smelting plants
- Hazardous waste incineration
- Thermal soil decontamination
- Industrial processes

Features and benefits

- Allows higher mercury content in fuel
- Cost-effective (several functions in one unit, e.g., integrated SO_2 and HCl removal)
- Efficient at concentration peaks (large buffer capacity)
- Environmentally friendly oxidant
- High reliability
- Small amount of residual byproduct

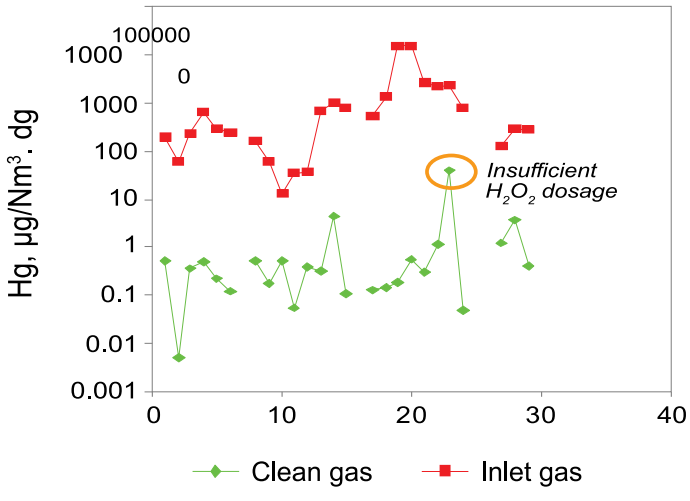
Product types

We offer MercOx mercury removal as a separate product or as part of a larger gas cleaning installation, as an integrated total package scrubber supply. We can also provide it on a licensing basis where existing scrubber systems are easily modified.

Innovative technologies from GMAB

GMAB's unique and innovative flue gas technologies can be retrofitted into existing plants and integrated with our total package solution.

- Multistage/multifunctional scrubbers
- ADIOX™ dioxin removal technology
- MercOx mercury removal process



Actual mercury removal results with the MercOx process at an incineration plant in Sweden.

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With roots tracing back to Götaverken in 1841, from 1988 GMAB pioneered emissions-reducing technologies. Today, it continues advancing flue gas cleaning innovations, collaborating widely to minimize environmental impact.

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