

Dioxin removal by ADIOX®



Typical applications in various flue gas cleaning processes

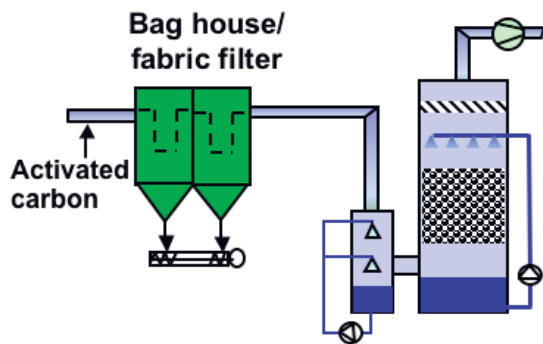


ADIOX® as “police filter” and/or prevention/ reduction of the memory effect

- To reduce the effect of dioxin release from old scrubbers due to the “memory effect”.
- To serve as a “police filter” (safety filter) to reduce the effects of abnormal dioxin release (bag failure, dosing system failure, increased dioxin production).
- For integration in a condensing scrubber to permit high levels of energy recovery, and at the same time serving as a police filter for dioxins.



Transporting a scrubber incorporating ADIOX® for memory effect prevention to a waste incinerator in Karlstad, Sweden.



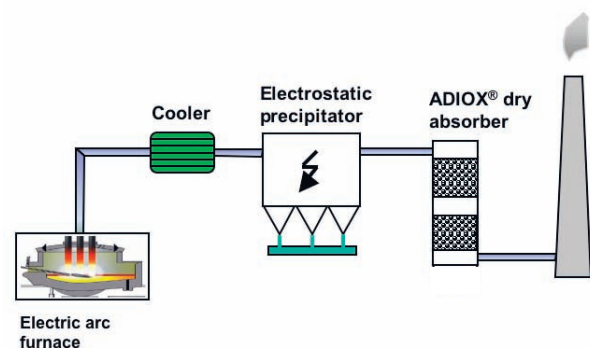
Multifunctional condensing scrubber at SYSAB in Malmö, Sweden, with ADIOX® for memory effect prevention.



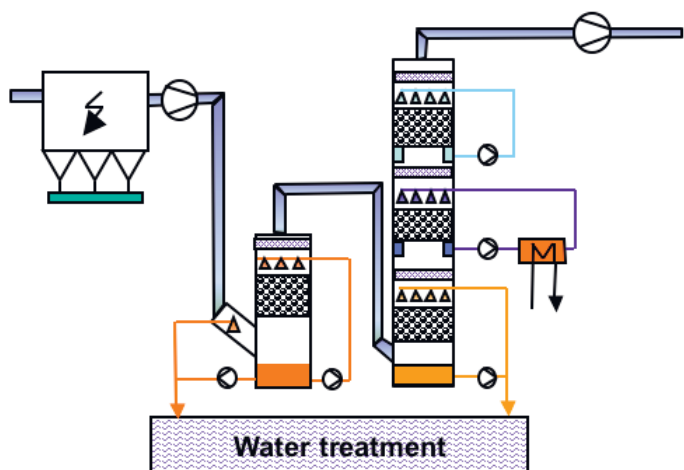
Dry ADIOX® absorber installed after fabric filters at a waste incineration plant at Gärsåderverket in Linköping, Sweden.

ADIOX® installed in a dry process

- To reduce dioxin concentrations to well below 0.1 ng TEQ/Nm³.
- Installed in a dry process or after a wet system as a polishing/police filter.
- High reliability.
- Low operating costs.
- Suitable for installation at various waste incineration plants and metal production facilities and for chemical industries.



Typical installation in the metal industry.



ADIOX® for primary dioxin removal, integrated in a multi-functional scrubber

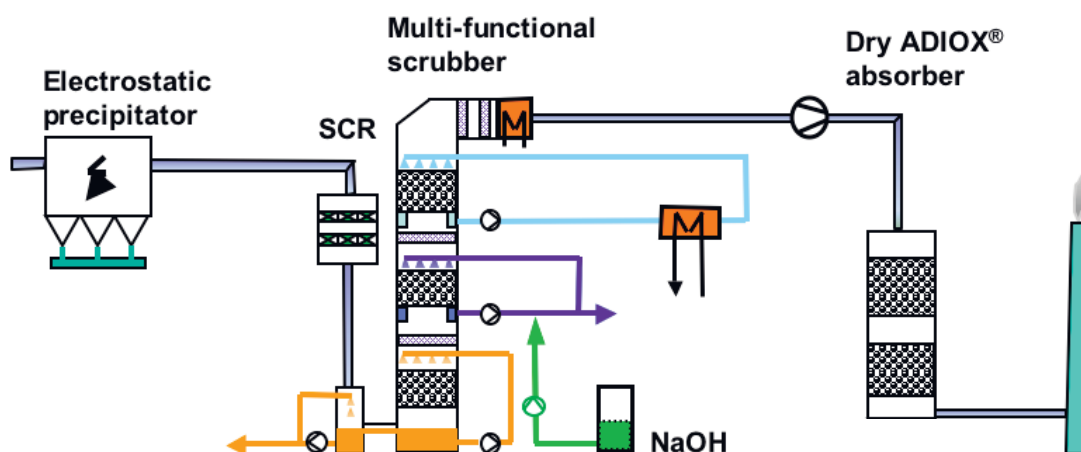
- To reduce the concentration of dioxin to below 0.1 ng TEQ/Nm³.
- To simultaneously reduce concentrations of HCl, HF, Hg and SO₂ to meet the requirements of the EU directive.
- With integrated energy recovery.
- For cost-effective dioxin removal, with removal efficiency depending on the quantity installed.
- Suitable for installation in various waste incinerators and biofuel/RDF power plants.



Multi-functional scrubber at Måbjærgværket in Denmark as a primary dioxin removal system with dioxin removal rates in excess of 99%.

ADIOX® combined with SCR technology

- To reduce dioxin concentrations to well below 0.1 ng TEQ/Nm³.
- Reheating requirements for SCR will be reduced by installing SCR upstream of the scrubber, so keeping energy consumption to a minimum.
- Can be installed as a multi-functional scrubber.



ADIOX® is a new but already well established technology in a range of processes. Waste incineration and the chemical industry are its primary fields of application.



About the ADIOX® technology

Dioxins are readily absorbed from flue gases into plastics such as polypropylene (PP). Dioxin molecules tend to migrate to the surface if conditions change when they are inside plastics, and so are released back into the flue gas. This increase in the dioxin content of the flue gas is known as the “memory effect”.

The **ADIOX®** process is based on the high affinity of dioxins for carbon – when in contact, the bond between dioxins and carbon is very strong. Dispersing small particles of carbon in PP plastics forms a material ideal for dioxin removal.



A dioxin molecule present in the flue gas is first absorbed into the PP. From here, it migrates to a carbon particle, where it is very strongly adsorbed (bonded to its surface). The plastic acts as a selective filter with an affinity for dioxin molecules, among others.

As the affinity for carbon is so high, there is no tendency for dioxin molecules to be released even when the concentration of dioxin molecules in the flue gas decreases. As a result, the memory effect is kept to a minimum.



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