



CMI ENVIRONMENT

AIR TREATMENT

THE SAFETY SCRUBBER IN PRACTICE CASE OF METHYLTRICHLOROSILANE (MTS)

Usual cases:
safety scrubber for

Halogenated
compounds

Ammonia

Bromine,
Fluorine,
Iodine...

etc.

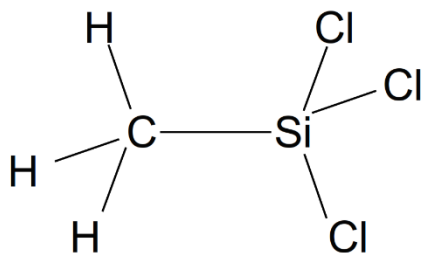
Signage

Customer	CONFIDENTIEL	Localisation	France
Company in charge of the works	CMI Europe Environnement	Order date	2018
Company in charge of the process	CMI Europe Environnement	Commissioning	2018

Application

During their manufacturing processes, some industries use products that are extremely dangerous for humans and the environment. This is the case of methyltrichlorosilane (MTS) used by a Defence equipment manufacturer.

Pollutant description



MTS, which has a chemical formula SiCl_3CH_3 , is a colourless liquid with a pungent odour and is mainly used to form highly resistant polymers.

MTS vapours, which are highly flammable, can form an explosive mixture with air because this substance is extremely sensitive to moisture, let alone violently reactive to water.

According to Regulation (EC) No 1272/2008, this product is classified as



GHS02
Flammable



GHS05
Corrosive



GHS06
Toxic



GHS07
Harmful



GHS09
Environmental
hazard



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Customer issue

The silica extracted from the MTS by hydrolysis¹ improves the thermal and mechanical resistance of the manufactured parts. This highly exothermic reaction leads to the formation of the desired product based on silica and large quantities of hydrochloric acid (HCl).

The purpose was to set up a gas treatment system capable of managing accidental cases, and to improve operator safety during tank filling (potting), particularly in the event of an emergency stop during these liquid transfer operations.

Solution

The treatment consists of an ejector to ensure the decomposition of the MTS before introduction into the slaughter column, followed by a packed gas scrubber column, water-powered.

The safety scrubber has been designed for a maximum flow rate of 900 m³/h with a wide range of use, achieved by recycling the gases at the inlet in the event of a shortage of gas supply to be treated.

- In steady state: continuous treatment of 6 m³/h of the MTS tank vents maintained at a slight overpressure to prevent any entry;
- In potting flow rate: treatment of 18 m³/h during 5 minutes by pressurizing the truck's tank;
- In emergency stop or accidental case: 900 m³/h treatment

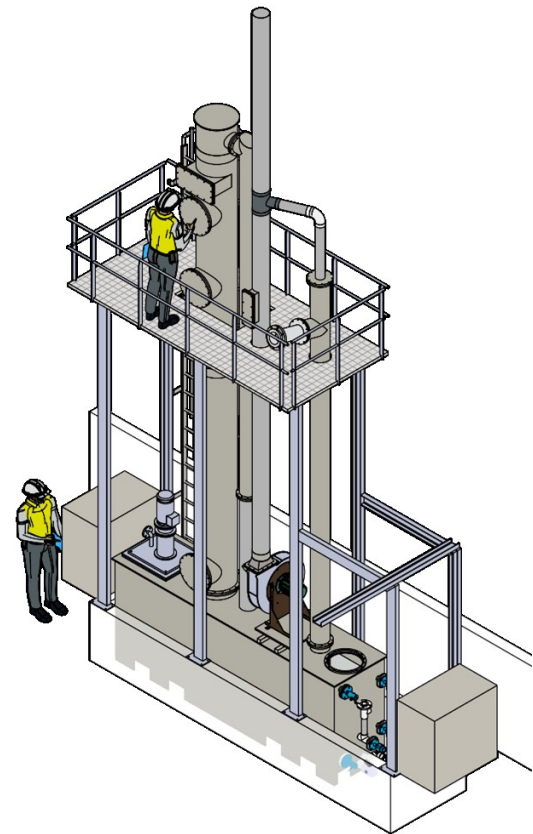
Provided services

- Design of the treatment system
- Manufacturing in our workshops
- On-site assembly (with all operational constraints related to safety)
- Commissioning with performance monitoring by an independent body
- Training of personnel in use and maintenance

Treatment efficiency

- System input: 200 000 mg/m³ hydrochloric acid (HCl)
- System output: 10 mg/m³ hydrochloric acid (HCl)

Abatement measured by an approved body: > 99,99%



¹ Chemical decomposition of a body by fixing water.