### AirAdvanced<sup>®</sup> Treatment Treatment of odor emissions Advanced biotrickling

### **DESCRIPTION OF THE TECHNOLOGY**

The trickling filter or biotrickling filter is a self-regenerating biological process used for the treatment of emissions with a high presence of hydrogen sulfide (H<sub>2</sub>S). It uses an inert material with a high specific surface area as a support. The process has a residence time of the gases that varies from 5 to 15 seconds, depending on the concentration of hydrogen sulfide in the emission to be treated. In conventional processes, there is a leachate recirculation that allows the complete acidification of the support, creating conditions where only thioxidizing microorganisms capable of transforming H<sub>2</sub>S into  $H_2SO_4$  can live.



SUEZ AIR & SUEZ AIR & CLIMATE has developed an advanced technology where there is a pH gradient, in such a way that, at the bottom of the column it is possible to purify  $H_2S$  thanks to the thioxidizing microorganisms, and as the air rises through the column, the pH increases approaching neutral, which allows the proliferation of other microorganisms and the purification of other compounds. In addition to removing  $H_2S$ , it is also possible to purify other Volatile Organic Compounds (VOCs) in the same equipment.



**SJES** 

**Reduced electricity consumption** as a recirculation pump is no longer required.

(+)

Fast installation and start-up (plug & play), reaching maximum operating efficiency in two weeks.

(+)

Allows the **purification of other odorous compounds besides H<sub>2</sub>S**, resulting in higher deodorization efficiency.

(+)

Shorter residence times, allowing for **more compact equipment** than conventional systems.



### **KEY FIGURES**

## 10-500 ppm

SUEZ AIR & CLIMATE's advanced biotrickling is able to **treat with high efficiency streams with H2 S concentrations** between 10 and 500 ppm.

# 650 m²/m³

The support used is a threedimensional pyramid-shaped polymeric network that allows a high gas-liquid contact surface with a low pressure drop.

> 95 % H<sub>2</sub>S removal efficiency



Odor concentration at system outlet.

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#### DESIGN AND EFFICIENCY DATA

The main difference between the SUEZ AIR & CLIMATE **Advanced Biotrickling** and other Biotricklings is the filling of the column. This is an ordered plastic material with a specific surface area of more than **650 m** /m<sup>23</sup>, which guarantees a **better fixation of** the inoculated **microorganisms** responsible for the purification, increasing the density of microorganisms in the system. The design of this equipment allows the advanced Biotrickling to operate **without the need to recirculate the wash water**, which has two important advantages:

- On the one hand, it **reduces electricity consumption** by not requiring a recirculation pump.
- On the other hand, as there is no recirculation of the washing liquid, the aforementioned **pH gradient** is created, which allows the purification of H<sub>2</sub>S and VOCs.



This technology can be considered the **Best Available Technology** to treat odorous emissions mainly due to hydrogen sulfide, being able to reach a deodorization efficiency exceeding 90%, with a  $H_2S$  removal efficiency of 95%.

### INDUSTRIAL APPLICATIONS

Among other possible applications, the following can be highlighted:

- Wastewater pumping wells.
- Reception and pretreatment of industrial and municipal wastewater treatment plants (WWTPs).
- Biomethanization plants.



