

CLIENT'D NEED

Odour and pollutant substances (VOC) containment

TECHNOLOGY EMPLOYED

Photocatalytic filtering

POLLUTANTS ABATEMENT

Odour removal efficiency $\geq 98\%$
VOC abatement $>90\%$

STRENGTHS

High abatement performances with no use of electricity
High energy saving and no environmental impact

APPLICATION

Photocatalytic filtering of pollutants generated by oil & gas production processes.

BMB Purification photocatalytic filters can be applied to all cases requiring the **abatement of odours and pollutant substances** coming from vents in the oil & gas production process, just as those produced by hydrocarbon **storage tanks**. More in general, photocatalytic filters can be used for **sink tank coverings**, sludge thickening, float units and sewage treatment plant tanks in **refineries**.



PURIFICATION

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CONTEXT 1

The tank collecting water coming from production processes in refineries (**Intake Tank**) presents environmental issues related to the creation of odours and highly dangerous pollutant organic compounds (VOC). The typology of entrance-wastewater varies and presents highly concentrated traces of substances with **high risk of explosiveness**.

SOLUTION 2

The tank to treat has been closed with a **PRFV-covered** (fibreglass) structure where photocatalytic filters have been placed on.

Under the tank's covering the air gets pumped through dedicated fans, regulated by **3 explosiveness gauges** placed under the covering. The insufflated air reduces the explosiveness coefficient in the area under the cover and exits **through photocatalytic filters**, where pollutant substances and odours get eliminated.

The filters' surface corresponds to the tank's free surface before being covered; therefore, it **eliminates the risk of covering's overpressure**.

CASE STUDY

oil & gas - refinery



CONTEXT 2

Tanks containing hydrocarbons and heavy oils may work at **high temperatures** to avoid solidification, therefore the existing hydrocarbons tend to evaporate and **create pressure inside the tank** that must be discharged through proper relief valves. The vent, though not continuous, is therefore **rich in pollutant substances (VOC)** having a high odorous impact. It is therefore necessary to intercept the air coming out of the valves to reduce both the VOC and the odorous impact, yet guaranteeing for the air to enter the tank when it's almost empty to **avoid an excessive vacuum**.

SOLUTION 2

The breathing valve of the tank has been connected through a **series of photocatalytic filters** (activated by sunlight) preceded by a mist eliminator.

The air connection pipeline for filters has been regulated so as to minimise pressure losses, to allow both outbreathing (when the tank gets filled) and inbreathing of the air (when the tank gets emptied).

Photocatalytic filters have been **pre-assembled** in a skid to **make the installation easier and quicker**.

PURIFICATION

CHALLENGES

- Reduce odours and dangerous gases without any increase in explosiveness
- Guarantee the **proper air flux** both for the tank's inlet and outlet processes
- **Minimise the maintenance** necessary to reduce the risks of the staff
- Obtain the **maximum abatement possible** of pollutants with minimum energy consumption

RESULTS

- **Odours removal** $\geq 99\%$
- Total Organic Carbon (**TOC**) **abatement** $\geq 90\%$
- **Environmental authorisation** obtained from the regional entity dedicated to the monitoring of the odorous impact on the territory



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