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High performance biotrickling filter for odour treatment at WWTPs.

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Chemical Deodorisation at WWTPs

Odour emissions from Waste Water Treatment Plants (WWTPs) result from the breakdown of organic matter present in waste waters. The odorous pollutants present at higher concentration include hydrogen sulphide (H_2S) and ammonia (NH_3).

Chemical scrubbing operation presents as main disadvantage the chemical consumption, which depending on the air flowrate and pollutant concentration, can be very significant. Other important costs include the energy consumption associated with the pumping system for process control and chemical supply.

The OBiT technology

Nowadays, the odour biological treatment at WWTPs is a reality. The OBiT technology operates in an analogous way to chemical scrubbers, in a packed-column in a counter-current mode, with the purpose to enhance the uniform contact between the air and the liquid in recirculation in the tower. The process is carried out by specialised microbial cultures immobilized in a particular packing material that warrants the biological treatment process its high performance.

Main attributes

- Highly efficient biological treatment for the removal of hydrogen sulphide, with good robustness towards fluctuating loads.
- Low running costs due to the absence of chemicals consumption and lower energy demand when compared to chemical scrubbers.
- Usage of WWTP reclaimed water as nutrient supply, avoiding drinking water consumption.
- Continuous operation with low pressure drop.
- Sustainable technology with clear environmental and economic benefits.

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WEDOTECH

OPPORTUNITY

Conversion of chemical scrubbers to high performance biotrickling filters.

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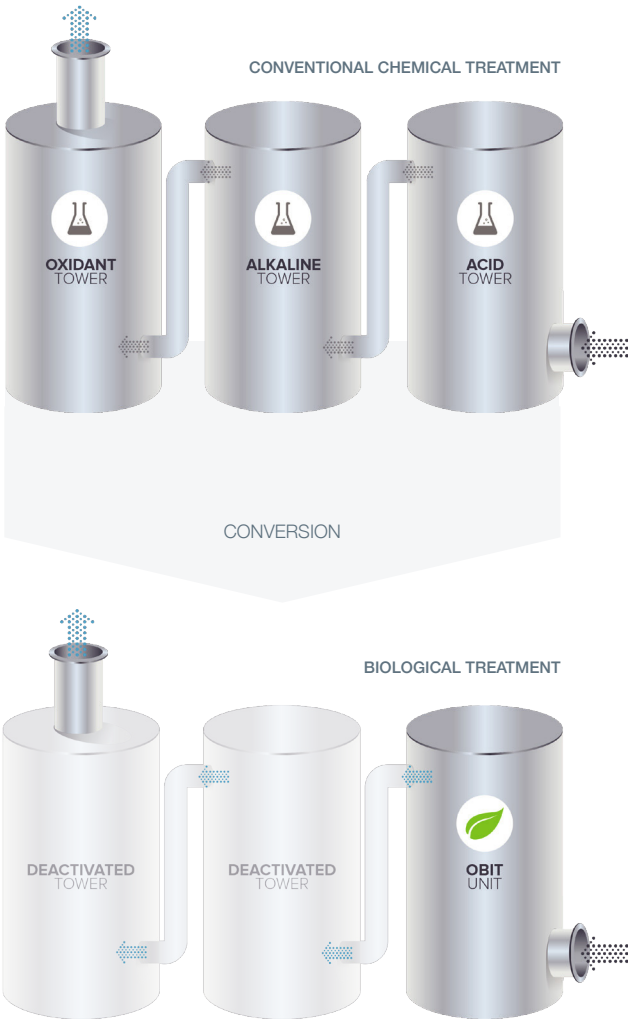
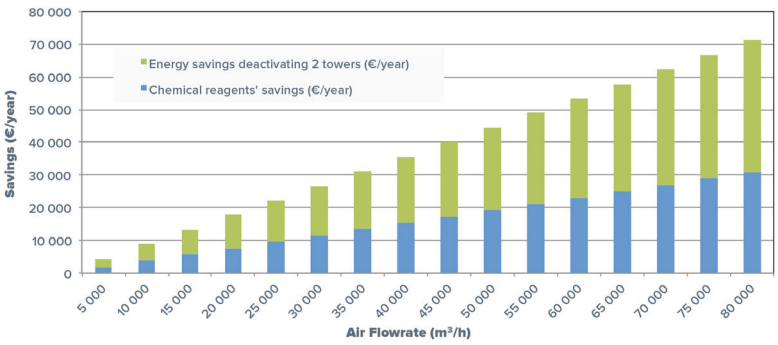


Context

As the biological treatment occurs in equivalent operating conditions as the conventional chemical treatment, where air flowrate and pollutant concentrations are concerned, there is a clear opportunity to convert chemical scrubbers into high performance biotrickling filters – OBiT Unit – with significant advantages at the economic and environmental levels, while improving work-safety conditions.

Advantages associated with OBiT conversion

Summary of the energy and chemical consumption savings achieved by the conversion of a chemical scrubber system into an OBiT unit*:



*Considering a 3 tower chemical scrubbing system; air inlet composition (average concentrations): 8mg/m^3 H_2S, 1mg/m^3 NH_3, 0,7 mg/m^3 CH_3SH; Energy and chemical reagent prices in 2014, Portuguese market.

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