

## DE STER Industrial Dehydration - Kortemark Waste gas purification using bioscrubbing and biofiltration



De Ster Industrial Dehydration (L. Vandenberghe & Zonen bvba) in Kortemark (B) is an industrial plant where liquid and solid raw materials from agricultural and food industries are dried. Also products like probiotics, proteins and wet corn kernels are being dried. The company disposes of five drying machines.

In order to treat the odorous emissions, a two-stage waste gas treatment unit was built which consists of a combination of a **bioscrubber** and a **biofilter**.

A **bioscrubber** consists of a waste gas scrubber and a biological water treatment plant.

The odorous emissions from the dryers are sent towards the **air scrubber** using fans. In the scrubber most soluble components are washed out: a mass transfer from the gas phase towards the water phase takes place.

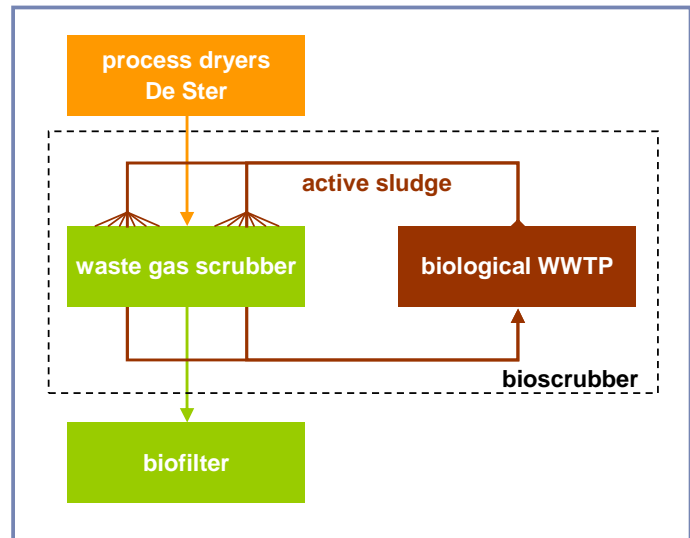
The polluted wash water from the scrubber is collected in the biological water treatment plant.



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## Waste gas purification using bioscrubbing and biofiltration

In the **biological water treatment plant** the dissolved components are degraded by means of a biological activated sludge system. In this part of the plant, organic matter (COD) is decomposed and nitrogen is converted into harmless  $N_2$  by nitrification and denitrification. In this way the wash water can be reused over and over again.



The effluent gas of the scrubber is subsequently treated in a **thermophilic biofilter**. In this biofilter, the poorly water-soluble and odorous compounds are degraded. This biodegradation is performed by a thermophilic microflora that is colonized on the organic carrier material.

Using this two-stage waste gas treatment technique, a very high odor removal efficiency can be obtained for the hot and very odorous drying waste gases.



Design parameters		
parameter	unit	design
<b>Waste gas side</b>		
flow	m <sup>3</sup> /h	90 000
temperature	°C	max. 70°C
<b>Water side</b>		
COD-load	kg/d	100 - 1000
N-load	kg/d	5 - 30

Measuring results	
parameter	rendement
<b>Waste gas side</b>	
odor reduction	≥ 90 %
<b>Water side</b>	
COD-removal	≥ 99 %
N-removal	≥ 99 %



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