CASE STUDY:
Air Treatment for Odorous Waste

Air Treatment for Odorous Waste
Location: Istanbul, Turkey
Product Installed: MASSdek® Structured Packing
Results: Outlet gas odor concentration of < 600 odor units

A client reached out to Brentwood for help with the design of scrubbers for an air treatment system in Istanbul, Turkey. They were building an air handling and treatment system for odiferous air being emitted from pumping stations, sewers, and aerated beds across 11 municipal sewage plants around the city of Istanbul.

The total air rate to be treated was 134,000 m^3/hr. The client's requirements included 99%+ removal of ammonia and hydrogen sulfide from the inlet airstream, an outlet odor measurement of less than 600 odor units, a modular scrubber design, low energy usage and operating costs, and high operational reliability.

Brentwood provided the scrubber process design and operating parameters for the requested air cleaning. For the odor control scrubbers, bio-trickling was the technology of choice to meet the low operating cost requirement, and a suitable packing – MASSdek Structured Packing – was selected from the structured packing product portfolio to meet the needs of the application.

In order to reduce cost, Brentwood produced the structured packing layers in different specific weights with the heaviest construction in the bottom layers for extra strength and the lightest construction at the top.

Multiple two-stage bio-trickling filters were designed for countercurrent odor control. The design process involved calculating the required bed heights for odor elimination, hydraulic design of the column diameter, and mechanical design of the packed beds and supports.

Following installation, the trickling filters achieved more than 99.8% ammonia removal, 99.9% hydrogen sulfide removal, and an outlet gas odor concentration of less than 600 odor units.

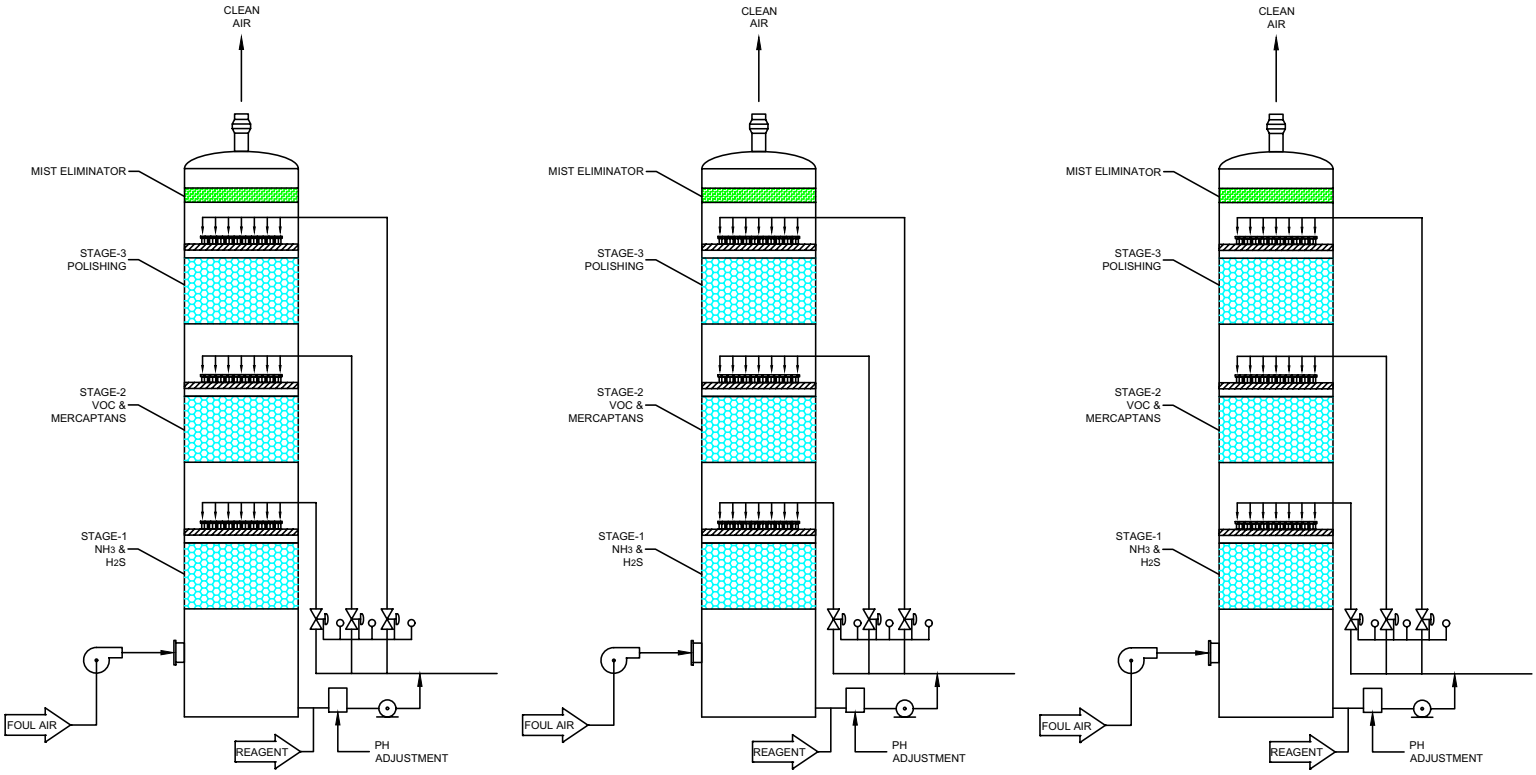
The system performance enabled the client to meet their emission requirements with reliability better than 95%. The client was pleased with the success of this large project and awarded repeat business to Brentwood.

MASSdek Structured Packing

BRENTWOOD INDUSTRIES, INC. 500 Spring Ridge Drive, Reading, PA, 19610
brentwoodindustries.com • masstransfer@brentwoodindustries.com • Phone: +1.610.374.5109

BRENTWOOD®

Flow Schematic for the Air Treatment Project:

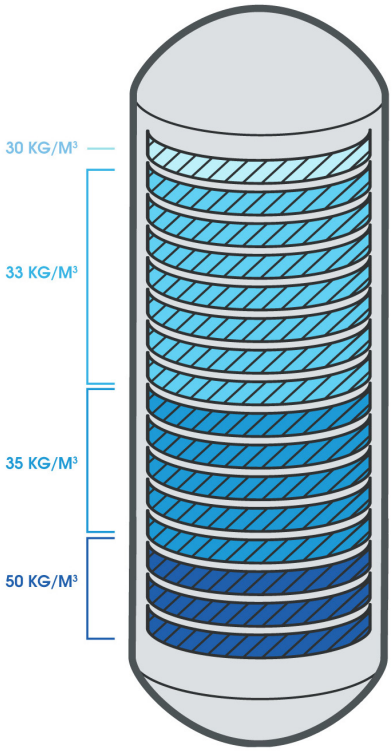


Calculated Scrubber Dimensions

Internal Diameter:	2,200 mm

Process Parameters

Total Flow Rate:	22.500 m^3/hr
Inlet H2S Concentration:	100-200 ppm
Inlet NH3 Concentration:	50-100 ppm
Inlet Source:	Pumping Station
Flow Rate Per Scrubber:	7500 m^3/hr



Brentwood's Expertise:

Brentwood utilized its application and manufacturing expertise to produce different layers in different production weights, with the heavier layers used at the bottom of the tall beds. This was a cost-effective solution to add strength to the honeycombed structure, allowing for taller beds without the risk of crushing the bottom layer.

BRENTWOOD INDUSTRIES, INC. 500 Spring Ridge Drive, Reading, PA, 19610
brentwoodindustries.com • masstransfer@brentwoodindustries.com • Phone: +1.610.374.5109

BRENTWOOD®