1. Properties of waste air to be purified

Waste air stream from a pump station at a flow rate of 350 m³/h

Tecon suggests to use a proven and environmentally friendly technique in order to solve this waste air problem. That concentrations of odours and H_2S can be handled by means of a 350 m³/h biofilter plant. The combination of a waste air humidifier and a biofilter is highly recommended. Best results were obtained by means of that method with comparable waste air streams.

2. Functional description of Tecon's modular biofilter plants

The biofilter plant suggested and offered here consists of 1 biofilter module. The module is made from FRP. The module is divided into a covered technique cabinet, harbouring the radial ventilator, the cross stream scrubber and the automatic refilling device and the department for the biofilter bed. The technique cabinet can be entered through a door. By this technical design, the sound emission is very low. The modular design allows transport and moving of the ready for use unit at any time.

Waste air is passed through the cross stream scrubber by the radial ventilator. Water is circulated by a circulation pump. Loss of Water by evaporation is automatically supplied by use of three level sensors and an electric valve. After being saturated with humidity waste air is pushed through the biofilter bed, where microorganisms metabolize organic and other odorous compounds.

The back-pressure of the biofilter unit (scrubber, internal tubing, and filter-bed) is less than 600 Pa.
The electrical equipment for automatically running and controlling the biofilter plant is included.
The biofilter module is filled with special prepared root wood fibres, which show a very low back pressure and enhanced long time stability.

3. Scope of supply

1 Piece Biofilter plant for the purification of up to 350 m³ waste air per hour as specified:
1 Unit Radial ventilator for up to 400 m³/h
350 m³/h at 1,500 Pa
Equipped with frequency transformer
resistant against corrosion
Power consumption 0.55 kW, app. 0.32 kW at operating point
1 Unit Air pre-conditioner
Cross stream scrubber with all electrical and mechanical equipment
Circulation pump 0.25 kW
3 Level Sensors for automatic scrubber operation
Drain with siphon to waste water tubing
Freeze protection 2.0 kW
1 Unit Biofilter Filter bed Unit consisting of
Outer container, steel, does not contact with medium
Dimensions: app. 3,100 mm, x 2,100 m x 1,700 mm (L x W x H)
Inner container, made from PE-HD, 4 mm thick
Dimensions: app. 2,000 mm x 2,000 mm x 1,700 mm (L x W x H)
Grid elements made from recycled PE app. 4.0 m²
Technical cabinet with door, illuminated
harboring the Scrubber
internal tubing
the ventilator
Complete Internal tubing and ducting

4. Biofilter material

The biofilter plant is supplied with app. 4,8 m³ of biofilter material.
Specially prepared root wood fibres
Height of filter material app. 1,200 mm

5. Electrical Case

Control cabinet for automatically working biofilter plant
Stable, whether resistant, protection class IP55 for being placed at the front side the technical room of the biofilter plant
Equipped with Programmable Operation Module (Siemens LOGO)
switches and light indicators for
ventilator
circulation pump
water supply
frequency transformer for variable ventilator speed
freeze protection (digital temperature set and display)
fault indication

6. Consumption of electric power and water and service needed

Electric power: Ventilator, pump, Control Unit max. 0.6 kW
Freeze protection: 2.2 kW
Fresh water: depends on humidity of waste air app. 3 l/h

Service Once a week:
Control of the water sieve, eventually purging of the sieve (Time 5 min)
Once all two weeks:
Drain of scrubber (Time 10 min)
Once a year:
inspection of the biofilter plant (time 3 hours)

7. Basic Biofilter data

Filter area loading 87.5 m³/m² x h at 350 m³/h
Filter volume loading: 72.9 m³/m³ x h at 350 m³/h

8. Mechanical and functional warranty

a 2 year warranty on all equipment offered with the exception of wearing parts.

Grade of Purification at 300 m³/h:

for Hydrogen Sulphide better than 97 % at 40 ppm concentration in waste air for odours better than 97 % at 12 000 OU/m³ in Waste air
Further warranties on request

9. Time needed for delivery

8 Weeks after reception of the order and after clarification
of all technical and commercial details

10. Local requirements which have to be provided by the customer

Unrestricted Passage to the installation place, passable for Trucks,
Organisation and payment of a crane or a fork lifter for unloading and placement of the module has to be carried out by the Customer
Preparation of a suitable plain for the Biofilter plant (concrete plate or pavement) load 1.3 t /m²
Dimensions: 3.8 m x 3.0 m, (Length x Width)
Total Weight including biofilter material: approx. 5 tons
Supply interfaces
Waste air ducting to the place of installation DN 160
Water supply ducting (3/4", Pressure 3 bar, with shut off valve
Waste water ducting DN 100
Electricity (230 V, 50 Hz, 25 A)
Earthing connection