

Technical information

Exhaust air system



Imprint

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List of changes

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1 Introduction



Attention

This technical information is no substitute for the operating instructions. In particular, the warning and safety instructions required in accordance with DIN EN 82079-1 (preparation of information for use (instructions for use) of products), which are necessary for installation, maintenance and troubleshooting on site, are missing.

This technical information is an abridged version of the operating instructions for the exhaust air system. Contact STEBATEC if you wish to obtain the detailed operating instructions, which contain the necessary warnings and safety instructions as well as further information.

2 Areas of application

If flammable or health-threatening gases can form in external structures, the structures must be adequately ventilated. SUVA prescribes the following in the document "Safe entry and work in shafts, pits and ducts / publication number 44062.d":

Before entering, ensure that there is no dangerous atmosphere in the working area by artificially ventilating the shafts and pits.

This can be achieved, for example, by using a fan to extract the gases at the lowest point until there is at least a 20-fold air exchange. In the case of long ventilation ducts, the drop in ventilation capacity must be considered.

The artificial ventilation must be kept in operation as long as there are people in the shafts and pits and gases or vapours are present or can arise.

The outlet of the exhaust air pipe must be laid outdoors and arranged in such a way that the escaping gases or vapours cannot enter buildings, shafts, pits, or ducts in dangerous quantities and are secured against ignition.¹

Stationary exhaust air systems in outdoor buildings are used when the cost of installing a mobile ventilation system is too high. The decisive factor here is the access frequency, which also determines the installation costs.



Figure 1: Ventilation system

¹ SUVA / Safe entry and work in shafts, pits, and ducts

3 Technical structure

The SUVA leaflet with publication number 66055.d states that ventilation systems must fulfil the following criteria:

Rooms are considered to be sufficiently artificially ventilated if the performance of the ventilation system allows for a 3 to 5-fold air exchange per hour and the extraction points are located directly below the ceiling and above the floor. In this case, 2/3 of the air volume must be extracted at the top and 1/3 at the bottom.

For ducts, the objective is met if the air velocity is at least 0.2m/s.

If the artificial ventilation is set in operation by a timer at certain time intervals, it must be ensured that the ventilation is switched on compulsorily at the latest when entering the room.

Intermittent ventilation must be switched on for at least 10 minutes per hour.

The exhaust air fans, and their drives must not become an effective source of ignition if they are located in the potentially explosive zone or in the exhaust air ducts.²

The exhaust air systems of STEBATEC AG are designed and laid out in such a way that they do not interfere with operation, do not exert any hydraulic influence and the system can be operated with low maintenance.

The following points are given special attention in the design:

- Balanced cost / benefit ratio for the customer
- Noise / exhaust air emissions are not detrimental to surrounding properties

The exhaust air ducts are made of plastic and stainless material to ensure durability in the corrosive environment.

² SUVA / Is your biogas plant safe?

4 Services

As a general supplier of external structures for wastewater plants, STEBATEC AG also provides its know-how in the field of exhaust air systems. The portfolio includes:

- Planning
- Manufacture and installation of wastewater-compatible exhaust air systems
- Intelligent and application-oriented control of exhaust air systems

4.1 Advantages

The use of stationary exhaust air systems has the following advantages:

- Moisture and bad air are extracted from the object, creating a noticeably better atmosphere in the building.
- The service life of steel and concrete is significantly extended due to the better atmosphere.
- Due to the pre-installation and automation, there is no additional operational expense.
- Exhaust air boxes made of concrete ensure vandal-proof air discharge from the structures.
- The axial motors have sufficient ATEX protection. They are located inside the structure for protection against vandalism and UV radiation.



Figure 2: Extraction pipe



Figure 3: Ventilation structure

The exhaust air system extracts the air at different levels depending on the water level: at the very bottom, at the level of the metal lid or at the top below the ceiling.

The solid concrete exhaust air boxes reliably protect against vandalism and unauthorised access.

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