

Technical data sheet

BAT- Best Available Technology



Scrubber SCR - Ghibli

Main characteristics

Air flow rate: ranging from 100 to 100.000 m³/hour per tower, multiple towers in parallel can be used for higher flowrates

Structural material (tower and washing solution vessel): polypropylene or stainless steel (AISI 304, AISI 316)

Nuts and bolts: stainless steel (UNI EN ISO 3506:2009)

Nozzles: depending of the requirements, generally, full-cone nozzles made in PVC/PP

Water and reagents consumption: they depend by chemical-physical air flow characteristics

Water pressure required by nozzles: approx. 2 bar

Energy consumption: it depends by the scrubbers' size, but is approximately the same of the fan/s

Service life: >10 years **Vessel dimensions:** diameters ranging from 200 to 3.000 mm, heights typically up to 10 m

Description

Scrubbers, also known as wet scrubbers are air treatment plants where pollutants are removed using the principles of mass transfer between a gaseous and a liquid phase. Generally, scrubbers are realized by means of vertical column in which the purification process takes place by washing and by neutralization of harmful compounds presents in the polluted gas. **SCR-GHIBLI** are realized with packing material; in this case, scrubbers are called packed towers. Scrubbers can be realized with static or floating bed. Scrubbers allow the removal of both organic and inorganic compounds; for high removal yield, the use of suitable reagents (i.e., acids, bases, oxidants - depends on the type of contaminant to be removed) is mandatory. If no reagents are used, scrubbers are mainly used for the humidification of the air flow and only high soluble compounds can be removed. Scrubbers that use chemicals are equipped with appropriate probes so as to maintain an appropriate absorption driving force between the polluted air and the washing solution.

In the field of odour removal, the so-called counter-current configuration is generally used for; this means that the flows of polluted air and the washing solution (i.e., water + chemicals) cross the tower with opposite directions (upward the air flow, downward the washing solution). Washing solution is taken from the vessel (generally located at the bottom of the tower) and pumped to the spray system (i.e., nuzzles) by means of a pump and a hydraulic circuit, generally made in polypropylene. Washing solution is recirculated until it is exhausted. Finally, in order to prevent droplets of liquid from exiting the tower with the exiting treated gas stream, clean air flow pass through a droplet separator (also called demister).

Scrubbers can operate as a single-stage or multistage systems; in this latter case, different chemicals are sequentially used for pollutants removal (for instance, first stage: sulphuric acid; second stage: sodium hydroxide). Other configurations (i.e., horizontal fixed-bed scrubber, co-current or cross-flow configurations) can be realized.



Packing materials: scrubber is (generally) supplied with plastic packing. Packing type is chosen depending on the chemical-physical characteristics of the air to be treated and the type of column chosen (i.e., static or floating bed).

Drops separator: high efficiency, usually in plastic material

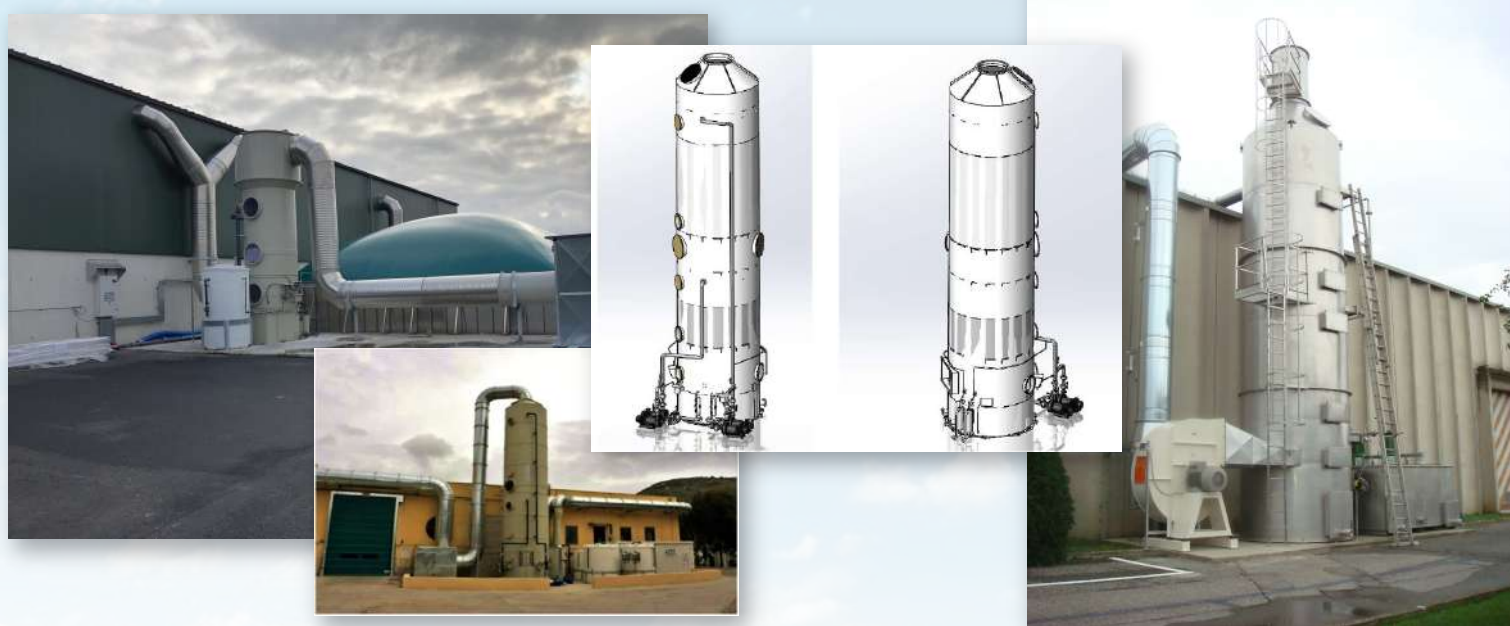
Performances

Removal yields that can be obtained with the **SCR-GHIBLI** depend on the number of stages used for pollutants removal and type of contaminant to be removed.

SCR-GHIBLI represents an excellent solution for deodorization. With respect of biological processes (e.g., biofilters), they can be advantageously used for the treatment of medium-low flows rates having high concentration of contaminants. Under optimal operating conditions it is possible to achieve odour removal yields > 98% and an ammonia abatement yields > 95%. In addition, **SCR-GHIBLI** can also be used to remove VOCs, inorganic compounds (such as HCl, HF, SO_x) and particulate (very fine size, i.e., less than 4 µm), if present in "low" concentrations.

Advantages

SCR-GHIBLI allows the treatment of medium-low flows rates (also warm and humid) having high concentration of contaminants. They can be useful in those situations where it is necessary to remove, in addition to odours, fine particulates in low concentration and ammonia and halogen compounds. **SCR-GHIBLI** can be for reducing the temperature of the air to be treated and feed to other systems (e.g., biofilter) a gaseous stream with a constant moisture content. **SCR-GHIBLI** allows the removal of a wide spectrum of pollutants with a small footprint. Thanks to the computerized management system, it is possible to reduce the consumption of water, electricity and chemical reagents



Maintenance

SCR-GHIBLI requires a periodic revision (ranging from monthly to annual frequency); the main interventions consist in cleaning (or replacing) the packing, calibrating the probes and checking the recirculation and dosing pumps. Maintenance interventions must be carried out by qualified personnel.

Recommended for ...

SCR-GHIBLI is recommended for (public and private) companies who want an efficient and long-lasting product. **SCR-GHIBLI** scrubbers are ideal for companies that want a reliable, effective, efficient and low-maintenance product.