



# ALFAGY

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## Cleaning Bio- and Sewage Gas with Carbon Filters

### Recommendations and Requirements

#### Recommendation:

The gas quality is very important to reduce service calls, wear and tear. Both biogas and sewage gas have gas impurities depending on the feed stock. Sewage and landfill gas, in particular, can damage the engine if not. Therefore, Alfagy highly recommends that our customer installs a carbon filter to clean the gas to suit the engine gas standards and recommendations. The maximum input for the Siloxane filters is 20 mg/m<sup>3</sup> as a reference value. The lifetime of the carbon is intended to be around 4,000 hours. The ability to adsorb Siloxanes is very different depending on which type of Siloxane that is present. The calculations are based on Octamethylcyclotetrasiloxan (D4). We use the same size of filters for different models and will have different lifetimes according to the gas flow rate. The filter also removes smaller amounts of H<sub>2</sub>S and if present, the gas the filter might be loaded much earlier and must be replaced more frequently. With large amounts of H<sub>2</sub>S, we need to analyse the gas composition to determine the correct gas scrubbing solution. The basic carbon filter solutions are as follows:

#### Different gas flow rates and the respective lifetime of Alfagy's carbon filters

| Siloxane Removal               |                   |        |        |        |        |
|--------------------------------|-------------------|--------|--------|--------|--------|
| Gas flow                       | m <sup>3</sup> /h | 50     | 100    | 150    | 200    |
| Siloxane in raw gas            | mg/m <sup>3</sup> | 20     | 20     | 20     | 20     |
| Carbon change interval         | h                 | 17,664 | 8,832  | 5,888  | 4,416  |
| Siloxane adsorption            | kg                | 17,664 | 17,664 | 17,664 | 17,664 |
| Activated carbon weight        | kg                | 192    | 192    | 192    | 192    |
| Activated carbon volume        | l                 | 400    | 400    | 400    | 400    |
| H <sub>2</sub> S Removal       |                   |        |        |        |        |
| Gas flow                       | m <sup>3</sup> /h | 50     | 100    | 150    | 200    |
| H <sub>2</sub> S concentration | ppm               | 200    | 200    | 200    | 200    |
| Activated carbon weight        | kg                | 192    | 192    | 192    | 192    |
| Activated carbon volume        | l                 | 400    | 400    | 400    | 400    |
| Carbon change interval         | h                 | 8,681  | 4,340  | 2,894  | 2,170  |

If exceeding any of the limit values listed above, the engine must be shut down and the service department of SCHMITT ENERTEC GmbH and Alfagy Ltd. must be contacted immediately. The warranty for the engine is void if the CHP unit(s) is operated further after exceeding the fuel gas content limit values. Alfagy Ltd. and SCHMITT ENERTEC GmbH will not guarantee faults or damages (corrosion, contamination, wear and tear, etc.) caused by substances or gases in the supplied fuel gas that were unknown or not defined in writing at the time of signing the contract.