Filtration Group application example – Air Filtration

Conical dust filter cartridges for flue gas filtration

Factory Equipment

Initial situation

Our customer is a manufacturer of pellet heaters. The product range contains small heating systems for private households but also municipal cogeneration plants. Because of increasing demands on the emissions of such systems. Our customer was looking for an efficient and reliable solution to eliminate contaminations from the flue gas and to reduce the environmental impact. Up to now electrostatic filter systems are used as standard. These filter systems separate particles via the electrostatic principle. The customer is looking for a more compact and also more cost effective construction as an alternative to the electrostatic filter systems.

Solution statement

- Filtartion Group recommends for this application conical dust filter cartridges. For stabilization of the pleats, the dust filter cartridges have been equipped with a coil spring.
- The cleaning pressure of this application comes up to approx. 6 bar.
- Glued with K201 (high-temperature resistant ceramic adhesive).
- For fuse of the bottom end cap, the inner tube was fixed with a metal sheet including a hole.
- Thanks to the conical design of the dust filter cartridges, the distance between the cartridges on dirt side, comes up to 240 mm each , based on the middle. Distance from the middle of the cartridge up to the filter housing comes up to 120 mm each.

Customer value

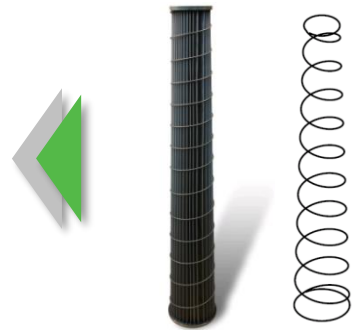
- Compact design due to the possibility of small distances between the cartridges
- Effective cleaning by constant upstream velocity and reduced inside capacity (operation of multi-jet nozzle MJD)
- Cost-efficient by smaller compact filter housings
- Higher filtration efficiency (dust content on clean side < 10 mg/m³; differential pressure in clean condition approx. 0,7 mbar; better dust sedimentation (smaller area of the bottom end caps)

Challenge

The retention rate of an electrostatic filter is challenged by contaminative fine dust in the range smaller one micrometer. After a long-time operation, the filter media is blocked and the differential pressure of the dust filter cartridge increases. Customer uses star-pleated filter cartridges type 852 054 DRG 50 V4A SO with a DRG 50 wire mesh material as support . Cleaning by multi-jet nozzle MJD-16.

Technical Data

- Volume flow: 900 m³/h
- Temperature: exit flue temperature 120 – 200 °C with uncleaned tank target: approx. 150 – 160 °C
- Kind of dust: dry, fine, strong and agglomerated dust powder density = 0,25 g/cm³
- Filter cartridges: in conical design, filter material DRG 50 wire mesh
- filter surface: 1,7 m², diameter 165 mm connection RD 100, length: 1.000 mm inner tubes and end caps in V4A



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