1) HIGH TEMPERATURE COMPACT DUST REMOVER
Whatever is your application, thermal station, chemical or petrochemical industry, cement factory, incinerator, treatment and catalysts recycling, or any other high temperature filtrations, CTI has the complete solution: its new hot gas filtration system (until 750°C) including silicon carbide membranes answers to the high level requirements concerning industrial gas rejection.

Principle

Porous ceramic support

Ceramic membrane
Thickness 75 µm

Gas Inlet

Partition thickness 5mm
Pores from 25 µm to 35 µm

2) CHARACTERIZATION

Maxi temperature using: 750°C
Geometry: 40x40mm
length: 1,200mm
Porosity: 54%
Thickess selective membrane: 75µm

Membrane selectivity: ex: 1µm (appropriate to the application)

Compression resistance: 40 MPa
Expansion coefficient: 4.10·6°C
Permeability: 4.10^{-12} m²
Filtration surface of a candle: 0.2m²
Average flow by candle: 24m³/h
Ceramic membrane:
Thickness 75µm
Ø pores 3µm

Ceramic support:
Thickness 5mm
Porosity #54%

Technology

Porous ceramic candles are arranged in a casing in a honeycomb way. Warm gas penetrate from outside the candles and flow through porous walls finely calibrated and then evacuated. Particles to filtrate fix on the ceramic membrane and become the « cake » which is automatically evacuated by air pressure flow (reclogging « jet pulse »).

Assembly:

1 – Level sensor
2 – Pneumatic valve
3 – Casing
4 – Clean gas
5 – Fumes
6 – Insulating
7 – Air vessel
8 – Extraction screw
9 - Alveolar

Update: 20/07/2011
Performance
99.9% of efficiency of polluting particles filtration:
- limit the fouling of boilers and exchangers
- improve thermal transfer between different circuits

Improvements
No cooling of incoming gas:
- benefits and possibility of using calories from cleaned warm gas
P very small:
- need of less powered extractor

Endurance
High chemical and thermic resistance at hot temperature:
- thermic stability and high resistance to chemical corrosion at hot temperature of the carbure-based or high purity ceramic oxides-based membrane

Cleaning
Roughness of the membrane almost null:
- no catching of dust
Automated declogging by P:
- penetrating speed controled

Simplicity
Handling and assembly on site simplify by pre-build casing with a capacity of 1200m³/h each one.

3) PILOT FILTER

Filtrating surface: 1m²
Flow: 100 m³/h
Loss pressure: 200mmCE
Max temperature: 450°C
4) REALIZATION

a) Industrial High Temperature Dust Remover

- Flow: 11 400m³/h
- Max temperature: 450°C
- Dust concentration: 1g/m³
- Dust Granulometry: D50=2μm
- Filtration speed: 1.8m/min
- Loss pressure: 250mmCE

b) Polar module

- Bulk: 1700x800x700
- Premise temperature: -20°C à +50°C
- Max temperature of fumes: 400°C
- Filtration flow: 100 m³/h
- Voltage supply: 400 V
- Air compressed supply: 4 to 8 bars
- Air compressed average consumption: 5L/h
- Dust storage: 12 Liters