DIESEL PARTICULATE FILTER: A SUCCESS FOR FAURECIA EXHAUST SYSTEMS

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Faurecia Exhaust Systems
DPF Experience in Europe by Faurecia

DPF with Fuel Borne Catalyst

Exhaust system : Faurecia
Filtration : Ibiden
Regeneration : Rhodia
Cleaning and remanufacturing : Faurecia
DPF: large success for Faurecia Exhaust Systems

1995: First research on DPF by Faurecia
1998: System development for Peugeot 607
2000: SOP Peugeot 607 DPF
2001: SOP Peugeot 307 DPF
2002: Start of remanufacturing facility
2003: SOP planned with new customers

- Since 3 years: 500,000 DPF already produced
  - Faurecia market share: 70%
- In 2003: More than 2,000 parts already cleaned by Faurecia
# DPF with FBC*: an efficient and reliable system

## System configuration

- Exhaust Systems by Faurecia
- Regeneration with Eolys™ fuel-borne catalyst by Rhodia
- Filtration on SiC Filter by Ibiden
- Cleaning & remanufacturing by Faurecia

## Technical Key points

- FBC to lower the temperature of soot combustion process
- Fresh nano-crystal catalyst is continuously delivered in the soot
- Homogeneous Catalyst dispersion that favors diffusion of soot combustion process to the entire soot layer
- Fast, complete and safe DPF regeneration
- No sulfur sensitivity
- Cleaning: 120,000 km with the 2nd Eolys™ generation
- Target: to achieve 250,000 km

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* FBC Fuel Borne catalyst (additive)
DPF with Coated Filter: a concept in development

System configuration

- Exhaust Systems by Faurecia
- Regeneration assisted by coating
- Filtration on SiC Filter by Ibiden

Technical Key Points

- PGM coating on filter to
  - accelerate soot oxidation
  - lower oxidation temperature
  - promote NO2-oxidation
- Possible High dependence on sulfur level
- Low kinetic with low thermal gradients

Key Points to be solved

- Regeneration in city cycle?
- Durability?
- Cleaning and Remanufacturing?
DPF with FBC or Coated DPF regeneration temperature

Loading

250°C

Loading and continuous NO₂ regeneration

continuous O₂ regeneration

V_{reg} > V_{load} ?

Soot regeneration

550°C

400°C - 450°C

650°C

600°C

Coated DPF

Loading

Exhaust T(°C)

DPF with FBC

Loading

Exhaust systems
System DPF: a global system where thermal management is critical

Areas for development:

- Ageing of the oxidation catalyst due to high temperature?
- Thermal gradient of the SiC to reach a complete regeneration?
- Durability?
Example of temperature repartition (Dynamic)
DPF with FBC Service interval of 120 000 km have been reached thanks to Rhodia Eolys™ fuel-borne catalyst.

Service Interval

200,000 km -

100,000 km -

Regeneration system

Ceria-FBC (1st Gen.) Rhodia

Improved FBC (2nd Gen.) Rhodia

2004 Target New FBC (3rd Gen) Rhodia

Estimation for 1700kg vehicle with 2 L engine:

- oil consumption: 0.1l /1000km

faurecia

exhaust systems
The 1st Automated Diesel Particulate Filter Remanufacturing service in the World
Faurecia & PSA Peugeot Citroën Partnership

Remanufactured DPF

M&E Site

M&E core collecting

SECOIA

OES

OEM

R&D Bavans

Beaulieu Site

Confidential property of Faurecia
Cleaning process for Particulate filter

- Drying
- Weighting and marking
- Cleaning with water
- Visual Control
- Regeneration
Remanufacturing Steps – Inlet Aspect

DPF 80 000km

DPF after cleaning

DPF after drying
The Remanufactured DPF

- As good as a new part
- 30 to 50% less expensive than a new DPF
- Environmental friendly product and packaging
DPF Remanufacturing site – Industrialization – 2003

DPF Remanufacturing module
Capacity 250 units per day

Today water treatment capacity 1,000 DPF per day

Regeneration
The 1st and the only automated remanufacturing process working in the world.

A flexible process, adapted to all DPF types based on SiC substrate & Rhodia additives.

A safe & efficient process - more than 2,000 DPF already remanufactured and Zero warranty problem