The Development of an Engine Exhaust Pressure and Temperature Monitoring System

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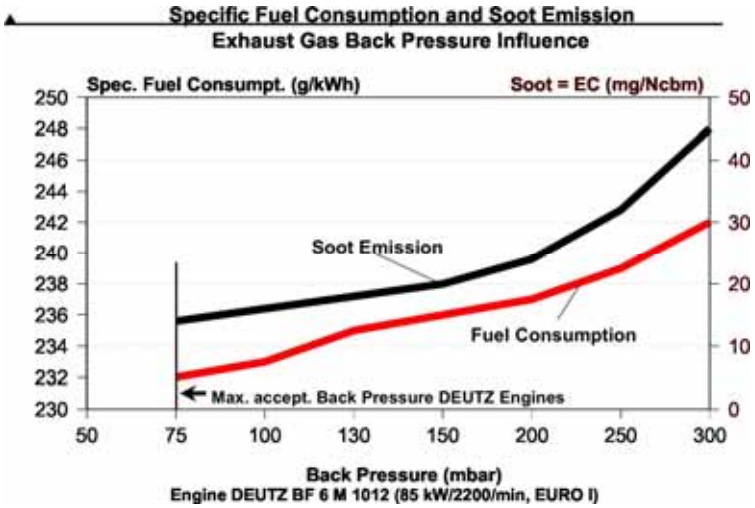
Introduction – Why a Monitoring System?

- Cordierite and SiC Diesel Particulate Filters (DPF) are the most effective means of controlling Particulate Matter (PM) emissions from diesel exhaust.
- While effective, the DPF can plug due to:
  - low exhaust temperature (passive units)
  - changes in machine operating cycles
  - ash buildup
  - engine problems (excessive oil consumption, turbo leaks, etc.)
  - maintenance issues
- The above will raise the pressure in the exhaust system

Introduction – Why a Monitoring System?
(continued)

- The best maintenance program may not catch the problem before it becomes critical.
- DPF plugging can have serious side effects:
  - increased fuel consumption and emissions
  - filter damage
  - turbocharger damage
  - equipment down time
  - lost productivity
- Early warning of a DPF problem and protection from it is critical to keep costs down.

Increased Fuel Consumption



Courtesy of Deutz Corporation

Damaged Filter

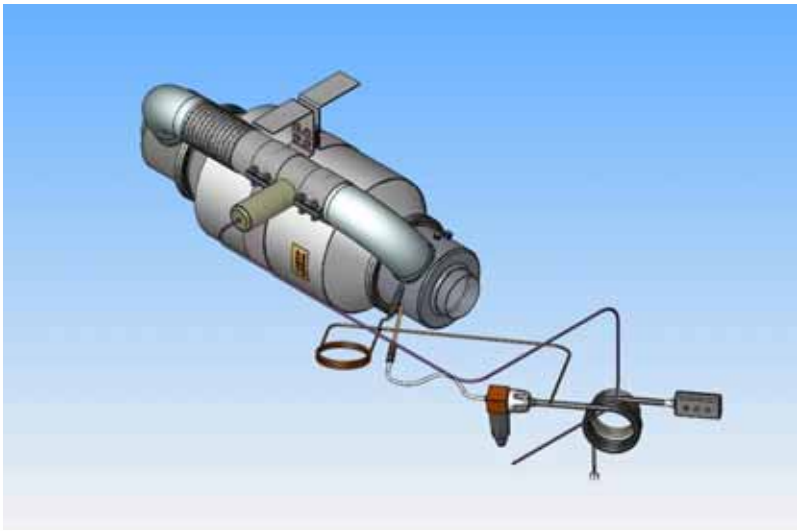
Engine/Filter Warranty Issues

- A highly loaded or plugged DPF could negatively impact engine warranty.
- A highly loaded filter may experience uncontrolled regeneration, which is not covered by the filter warranty.
- The Monitor System can help avoid these issues.

Filter/Engine Protection Measures

- Indicator lights
- Audible Alarm
- Temperature Gauge
- Engine shutdown
- DPF bypass system
- Other DPF protection systems

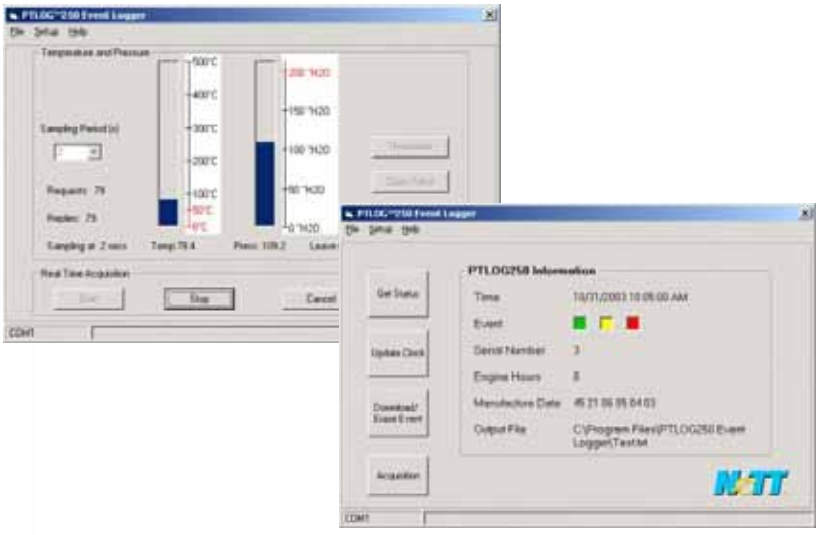
Filter Monitor & Bypass System



Advanced Monitoring System Features

- Memory of events (alerts) with date and time stamp.
  - normal operation (not stored)
  - first level warning
  - second level warning
  - engine hours
  - set able warning levels
- Capability to download stored data to a computer.
- Real time monitoring of back pressure and temperature when connected via serial link to a computer.
- Capability to control engine/filter protection devices.

Screen shots of PTLOG Program



Summary

- Product commercially available.
- Over one thousand units in use.
- Can be used with any manufacturer's filter.
- Easy installation and operation.

Filters with Monitoring & Bypass Systems


Questions & Comments
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