

JM

Johnson Matthey
Inspiring science, enhancing life



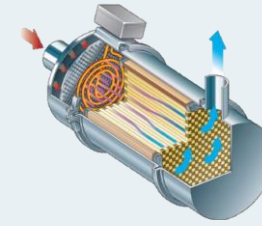
DPFi™ electrical regeneration DPF filter for
light duty vehicles

Up to 400 hp for light duty vehicles

Mine Requirement: DPFi Solution needed - Long Life & Low Emissions

- An aftertreatment system for equipment producing high levels of PM
- A DPFi system for machines that does not generate sufficient exhaust gas temperature to facilitate PM regeneration (e.g. Toyota Land Cruisers, Forklifts & Wheel loaders)
- A DPFi system that creates no secondary emissions such as NO₂
- Easy Maintenance and Long Filter Life (minimum 1000hrs)
- Ability to monitor Product Performance and record data
- Dependable system performance, simple operation

Our Solution: JM DPFi Technology Journey



Over 3 million on-road & 200,000 off-road DPF systems installed*

Over 30 years of DPF Technology Leadership

From On-Road Innovation



JM CRT® – Continuously Regenerating Trap

- Industry benchmark for Heavy Duty Diesel Retrofit Technology.
- 1st filter verified for US EPA's voluntary retrofit program and the 1st filter verified by CARB (California Air Resource Board)

to Off-Road know-how



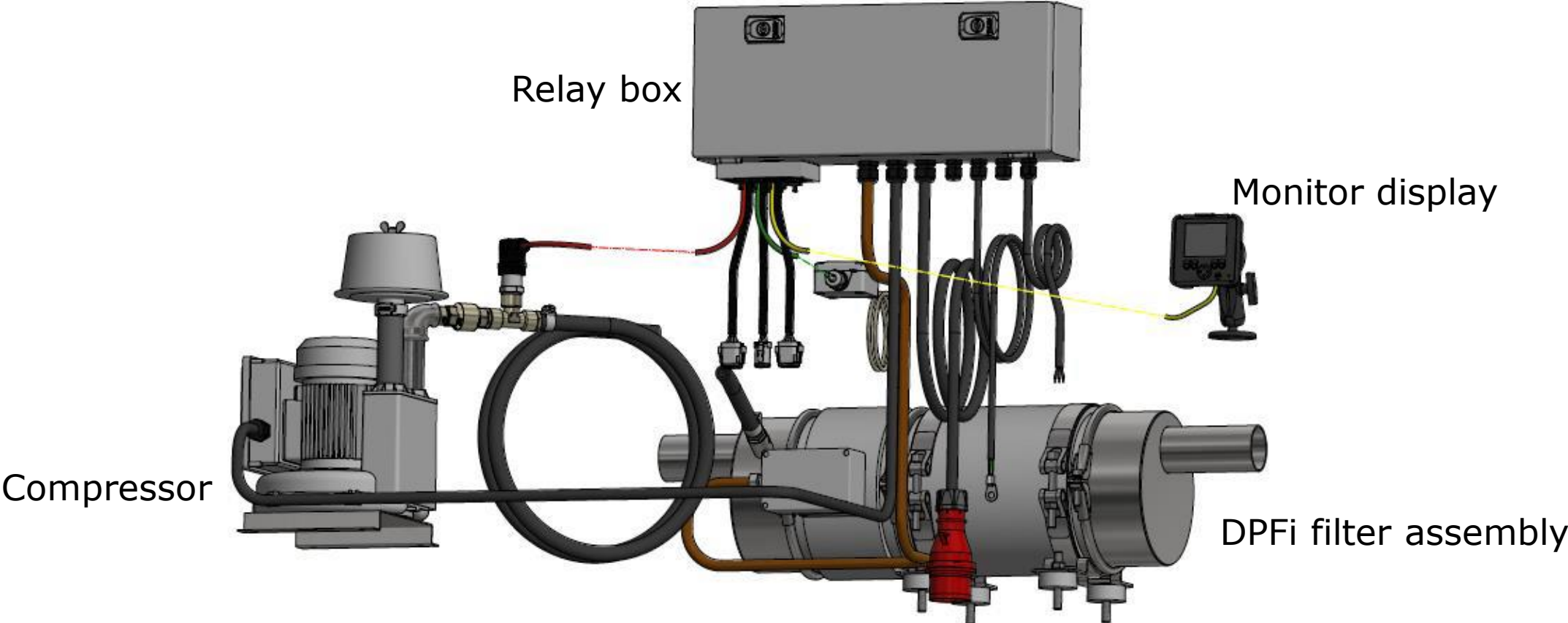
to Underground solutions



JM Mining CRT® and DPFi

- Rigorously evaluated in underground mines
- Long Life, Low Maintenance operation, No increase in NO₂
- **VERT certified**

DPFi System Components



PIO-CAN Data Monitor/ Logger

**Standard with all JM
CRT® Systems
Easy In-Cabin
Installation**

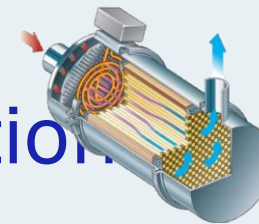


PIO-CAN Filter Monitor / Data
Logger

System Highlights

- 1. Filter monitor:** Back pressure and exhaust gas temperature with alarm, pre alarm and AD-values (for sensor check). Monitoring, RPM, min.-max. alarms and adjustable delay timers. Alarms: optical with alphanumeric messages and buzzer.
- 2. Adjustable alarm relay:** For external signals, i.e. flashing lights or engine shut down function.
- 3. Recording:** Operational and failures including date and time, tamper resistant, print in TXT file format.
- 4. Datalogger:** Maximum of 8 channels with variable configuration. High logging memory: up to 1,248 operation hours.
- 5. Electrical Regeneration:** Control and monitor of the electrical regeneration system DPFi for on-board and off-board units.
- 6. Power supply:** 12-24VDC with zero power consumption in stand-by mode.
- 7. Connectors:** Company Deutsch type connectors.
- 8. More features:**
 - Easy installation
 - Cabling available in other lengths (option)
 - Heavy duty case protection class IP65
 - High quality pressure sensor and thermocouple
 - Remote Monitoring

JM DPFi: On-board regeneration system for low temperature application.



JM DPFi™ diesel particulate filters are used for filtration of PM from diesel engines operated in closed environments such as underground mines.

Regeneration type:	Electric
Regeneration time:	60-90 minutes
External structural material:	Stainless steel

The Benefits

- Works at any exhaust temperature.
- Diesel fuel S content <1000ppm.
- Robust, simple construction for a long working life.
- Service-friendly modular design with quick-release system.
- Electronic filter monitor for greater operational safety
- Flexible mounting options: horizontal or vertical.
- No muffler required as DPFi systems give noise suppression.

Q & A - JM DPFi System

1. What is estimated interval between maintenance (Ash Cleaning) for the DPFi System?

Ans: 1000 hrs minimum runtime before Ash Cleaning is needed

2. Does the DPFi come with a performance guarantee?

Ans: Yes, 1000 hrs of Runtime

3. Does the DPFi system come with a system monitor?

Ans: Yes, Every DPFi system comes with a PIO-CAN Filter Monitor. Features include - Back pressure and exhaust gas temperature monitoring with alarm and datalogging.

DPFi Toyota Land Cruiser fit-up



The DPFi fits up to the existing engine exhaust tail pipe

The entire DPFi and new tailpipe than fit into the Toyota Land Cruiser chassis as shown here

Case Study 1: JM DPFi System on Wheel Loader

Application

Installation Date:	2010
Product:	DPFi 2011SL, electrical regeneration
Application:	Volvo wheel loader L60E
Engine:	Volvo D6D, 103 kW, 5.7L
Location:	Germany



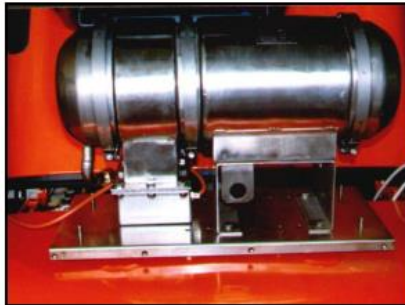
Project Details

- For this application, a DPFi system with electrical regeneration was chosen.
- The wheel loader was operating with low load and did not reach the temperature requirements for a passive DPF system.
- The DPFi collects the soot over the operating time and will then regenerate in 90-120 minutes.
- The filter is regenerated daily at the end of the shift. The operator plugs it in to start the regeneration program and the system shuts down automatically after the program has finished. The machine is then ready to be used for the next shift.

Case Study 2: JM DPFi System on Forklift Truck

Application

Installation Date:	2009
Product:	DPFi 80SL, electrical regeneration
Application:	Toyota 2.5 tons
Engine:	Toyota, 44kW
Location:	Germany



Project Details

- Forklift trucks operating in closed or partly closed areas in Germany need to have a DPF system installed according to the TRGS554 regulation.
- These material handling applications often operate at very low exhaust gas temperature (below 200°C) and cannot be fitted with a continuously regenerating filter system.
- The truck has a monitor that informs the operator when a regeneration is needed.
- The regeneration program runs for 60 minutes and shuts down automatically. After unplugging the connection the forklift and filter are ready to operate the next shift.