


MDEC 2009
PARTIAL FLOW DIESEL
PARTICULATE FILTERS
-PRACTICAL EXPERIENCES-

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Technology Introduction

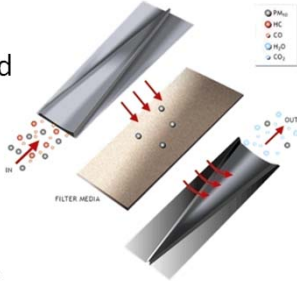
- Currently diesel oxidation catalysts and wall-flow diesel particulate filters are the most commonly utilized technologies for reduction of diesel exhaust emissions.
- Hybrid type devices becoming more popular where a significant amount of DPM reduction is required.
- Called partial diesel particulate filters, partial filters, flow through filters.
- DCL International Inc. product is MINE-X® Flow-Through Filter.

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MINE-X® Flow-Through Filter - Technology -

- Non-blocking diesel particulate matter filter solution.
- Utilizes alternating layers of corrugated metal foil and flat layers of metal fibre fleece brazed together.
- Pressure differential pressure cause exhaust to travel through filter media.
- Coated with precious metal catalyst to suit desired pollutant reductions.



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MINE-X[®] Flow-Through Filter - Technology -



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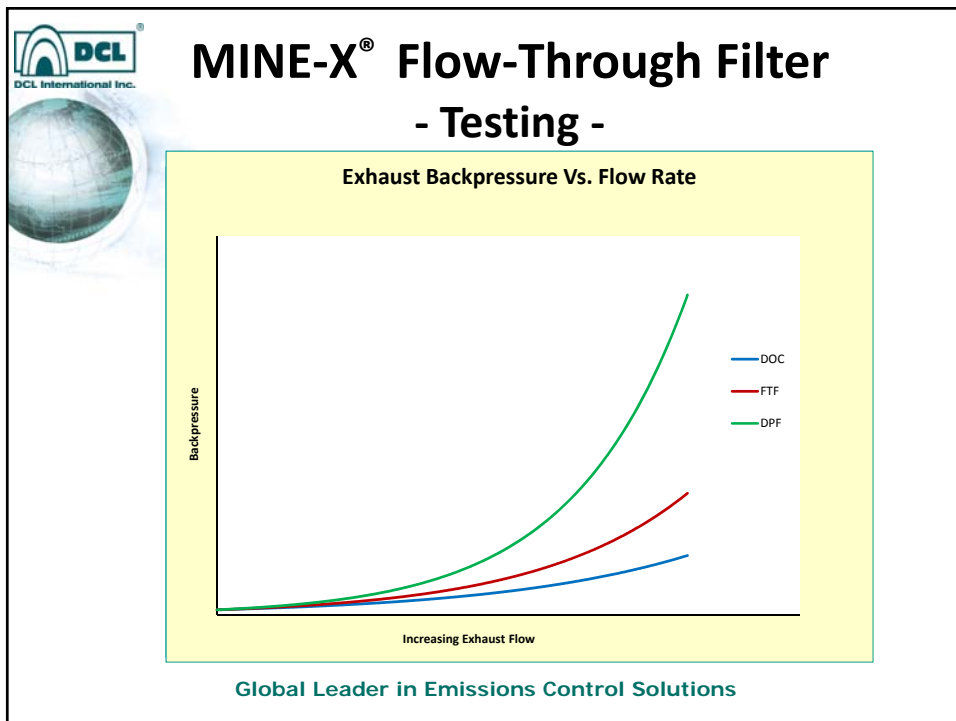
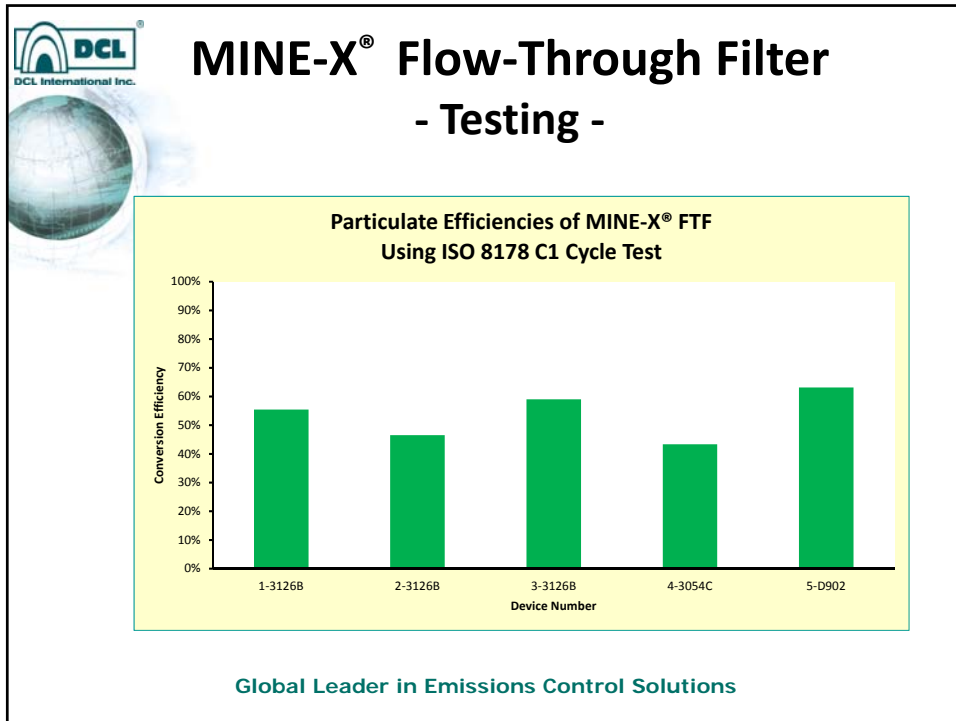


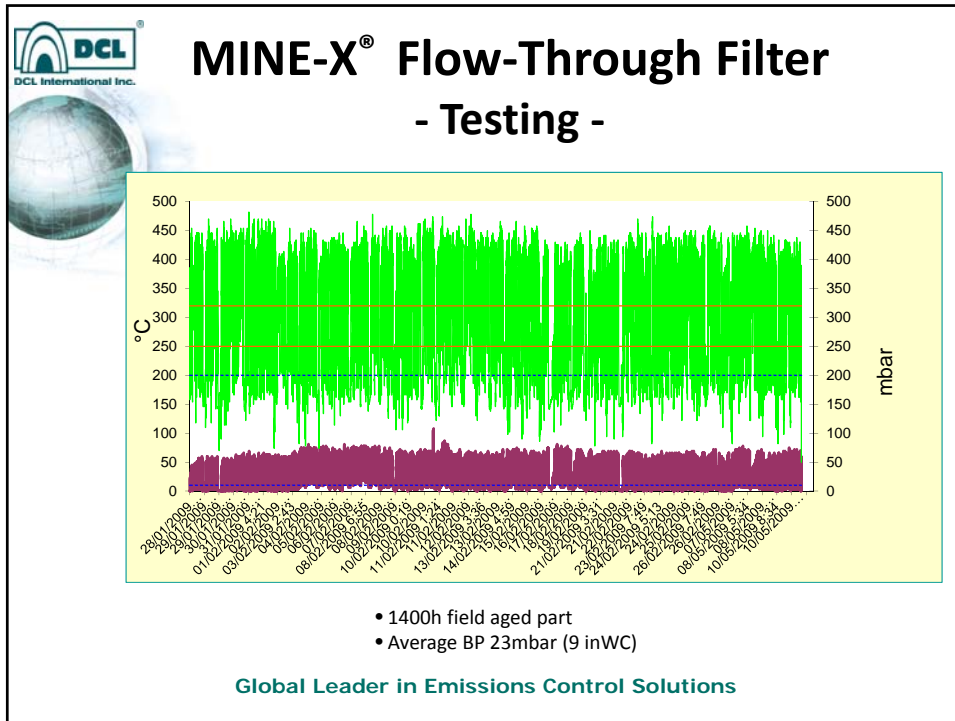
MINE-X[®] Flow-Through Filter - Technology -

- Passively reduces significant amounts of harmful pollutants with minimal NO₂ increase.
- Built-in “bypass” to mitigate back pressure spikes.
- Substrate can be housed into similar designs as used by DOCs.
- Maintenance-free design.



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MINE-X[®] Flow-Through Filter
- Case Study 1 -

DCL International Inc.

- **Problem:** Reduce particulate matter by greater than 20% under certain engine conditions for a mining application.
- **Solution:** MINE-X[®] Flow-Through Filter packaged in a direct replacement muffler.


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MINE-X[®] Flow-Through Filter
- Case Study 1 -

- **Engine Model:** Kubota D902-E2-UV
- **Engine Tier Level:** Tier II
- **Rated Horsepower:** 21.6hp @ 3200rpm
- **Rated Torque:** 41.4ft-lb @ 2600rpm
- **Device Tested:** MINE-X[®] Flow-Through Filter

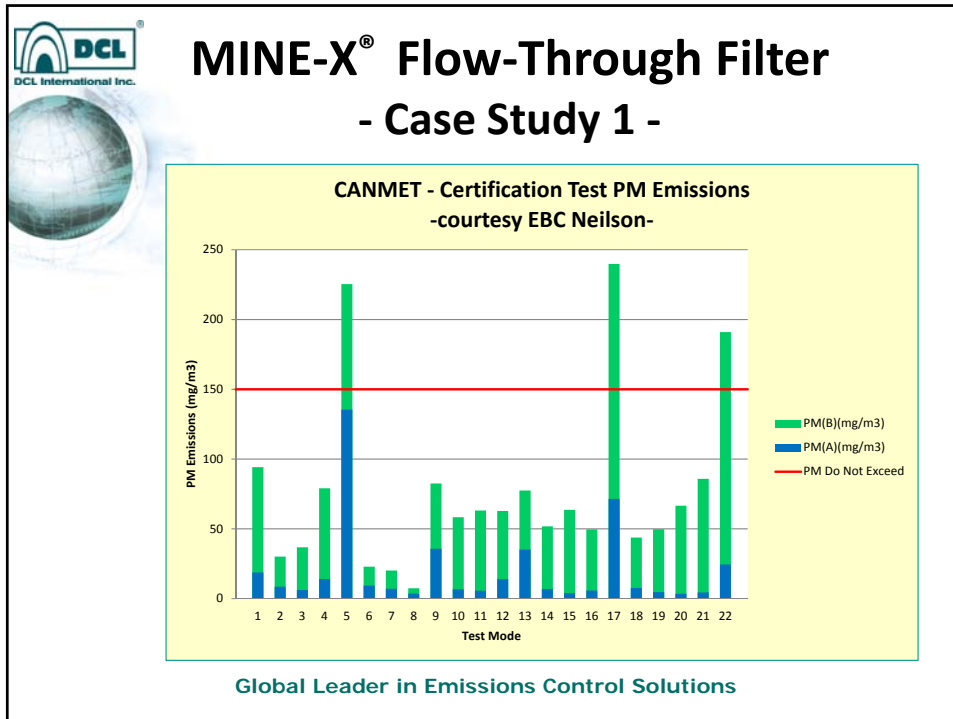

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MINE-X[®] Flow-Through Filter
- Case Study 1 -

- **Testing Facility:** CANMET-MMSL, Ottawa, Ontario, Canada
- **Test Standard:** CSA M424.2-90 (22 mode)
- **Fuel Sulphur Level:** Baseline (350ppm); With Device (ULSD)


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MINE-X[®] Flow-Through Filter - Case Study 2 -

- **Goal:** Reduce particulate matter by greater than 50% and do not increase the NO₂ to baseline NO_x emission ratio by more than 20%.
- **Evaluation:** MINE-X[®] Flow-Through Filter in different variations.


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MINE-X[®] Flow-Through Filter
- Case Study 2 -

- **Engine Model:** Caterpillar 3126B
- **Engine Tier Level:** Tier II
- **Rated Horsepower:** 183hp @ 2200rpm
- **Rated Torque:** 728ft-lb @ 1400rpm

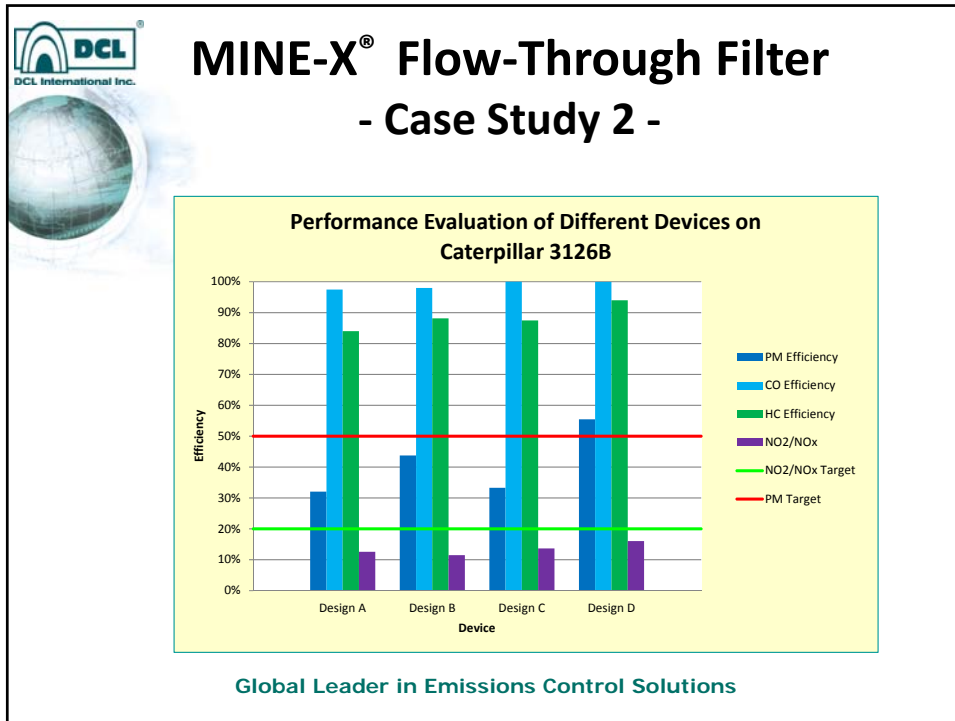
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MINE-X[®] Flow-Through Filter
- Case Study 2 -

- **Test Standard:** ISO 8178 C1 (8 mode)
- **Fuel Sulphur Level:** ULSD
- **Devices Tested:**
 1. MINE-X[®] Flow-Through Filter (Design A)
 2. MINE-X[®] Flow-Through Filter (Design B)
 3. MINE-X[®] Flow-Through Filter (Design C)
 4. MINE-X[®] Flow-Through Filter (Design D)

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Practical Experience/Applications

- Over 500 units in service in mining market.
- Thousands of units in service globally.









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