



## MCRT Implementation

October 3, 2023

In partnership with



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# Implementation of MCRT

- Initial MCRT design
- Transition from dual leg to single leg system
- Performance
  - Maintenance cost savings
  - Emission Gas performance
  - Back Pressure performance
  - DPM Soot reduction
- Implemented across U.S. and Canada

# Dual Leg MCRT on R1700 Scoop



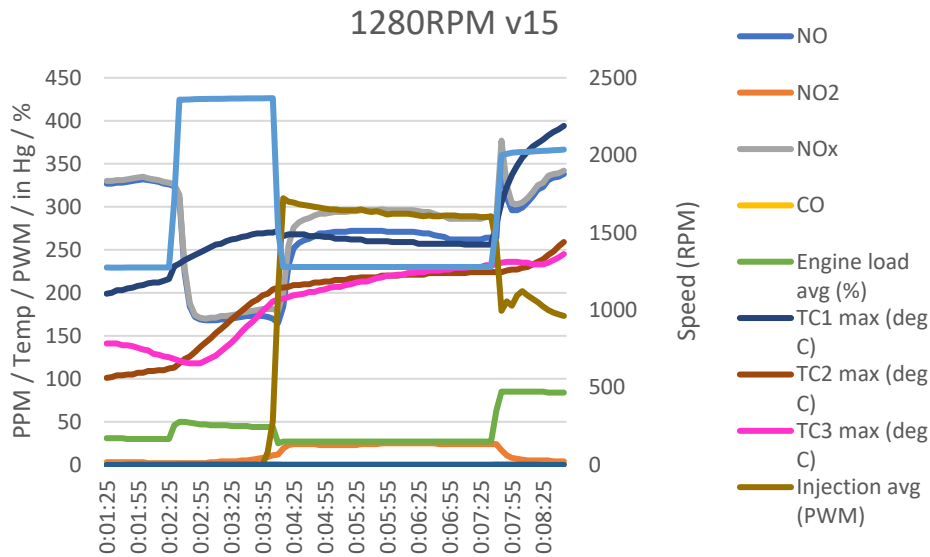
Initially, the MCRT was a horizontal dual leg filter design, which required the removal of the spare fuel tank on the CAT R1700G.

# MCRT on Epiroc ST2D (2021)



Size A vertical dual leg filter MCRT was installed on an Epiroc ST2D January 2021. Development led to a reconfiguration of the system to be a single leg filter design.

# MCRT on Epiroc ST2D (2021)



Final calibration: NO2 < 25PPM and CO < 2 PPM during testing

Exh. Temp (deg C) / Load (%)	172 C / 44 %	185 C / 27%	217 C / 84%
NO2 (PPM) max	11	24	4
CO (PPM) max	0	0	1

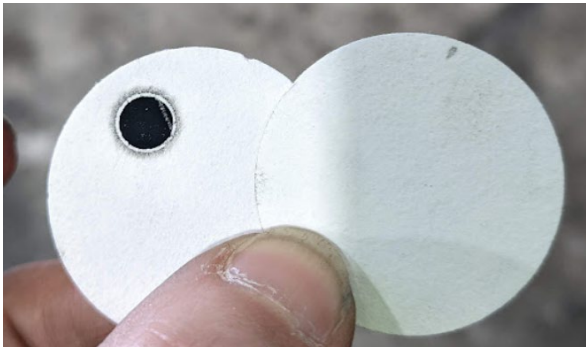




# MCRT on CAT R1700G in B.C. Mine (February, 2022)

Passive DPF prior to MCRT was requiring cleaning at ~ 250 hours

MCRT – only one DPF cleaning during routine maintenance in 6,130 hours

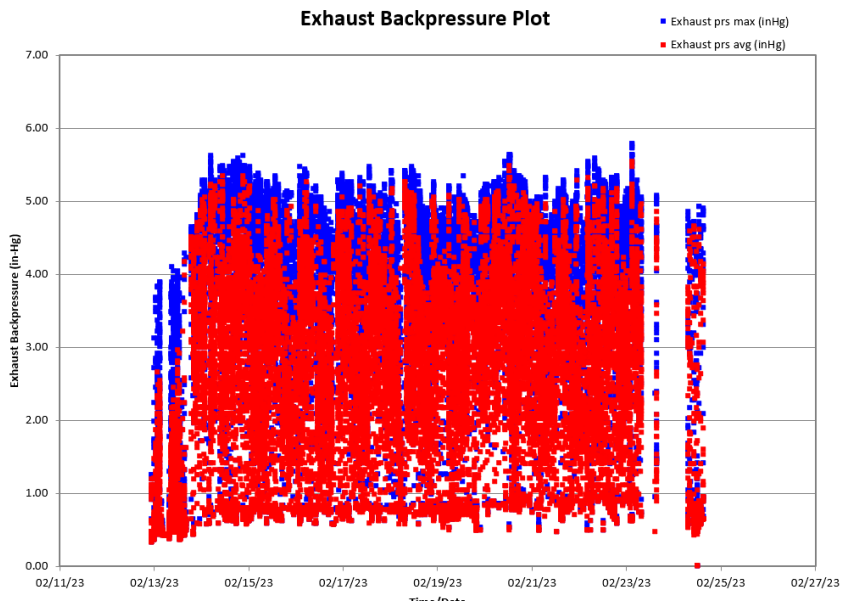


Soot test Pre vs. Post MCRT



Date Install	Hours since cleaning	CO (PPM)	NO2 (PPM)	Avg Back Pressure (in Hg)
9-Feb-22	3,824	0	41	4

# MCRT Back Pressure



The Back Pressure monitoring is used to alert an operator that the filter either needs to regenerate or needs to be cleaned.

This customer tells operators to drive up the ramp if the back pressure starts to get high (yellow alarm light). This generates enough heat to ensure a thorough regeneration.

# MCRT in U.S. Salt Mine (December, 2021 & April, 2022)



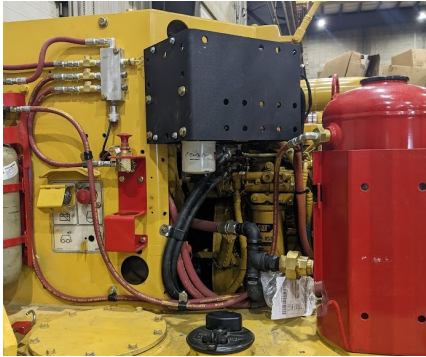
Two MCRTs installed on DUX haul trucks with Detroit Diesel Series 60 engines.

Voice Of Customer:

- “Finally, no more black smoke”
- “So quiet I don’t go home with a headache anymore!”



# MCRT on CAT R1700G in Alberta (December, 2022)



3,144 hours since installation without needing DPF cleaning.  
Average Back Pressure of 4 in Hg.

# MCRT in U.S. Mine (January, 2023)



```
*****  
* ECOM - EN3 *  
*****  
Serial no. EN3- 653  
Last calibrat. 21.01.22
```

```
-----  
Date      Time  
31.01.22  03:49:22
```

```
-----  
Gas analysis
```

```
-----  
Fuel type  
Diesel 011
```

```
-----  
T.Air      53.2 °F  
T.Gas      536.0 °F  
T.Sensor   52.3 °F  
O2         11.98 %  
CO         2   ppm  
NO         458 ppm  
NO2        15 ppm  
NOx        473 ppm  
CO2        6.62 %
```

*Mule 08*



Soot Dot = 0

# MCRT for U.S. Contractor (March, 2023)



Installation of the MCRT in a CAT R1700G is quick and easy. The installation basket utilizes the existing holes in the frame to align the MCRT into proper position.

Even though the MCRT does not require frequent maintenance, it is important that installation and removal for DPF Cleaning be quick and easy. With the use of a hoist and socket gun, a DPF can be swapped in about 30 minutes.

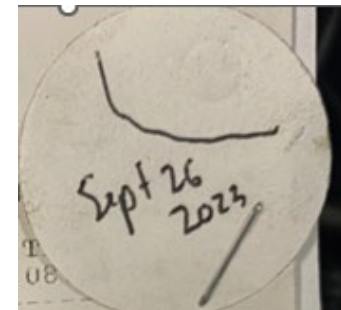


# Single Leg MCRT in Ontario (July, 2023)



Installed a single leg MCRT at a repeat customer in an underground mine in Sudbury.

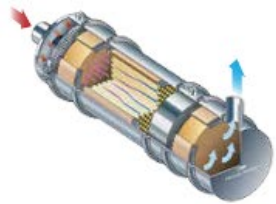
450 hours since installation and the soot, gasses, and back pressure all looking good.



O2	8.5	8
CO	0	PPM
NO	452	PPM
NO2	21	PPM
Temp	47.3	DD

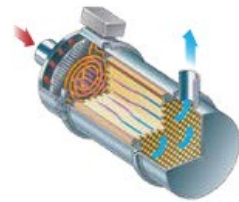
# General Product Page

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Least service needed.  
Lowest NO<sub>2</sub>.  
Longest uptime.



**ELECTRICAL DPF**

Electrical Filter Regeneration.  
Perfect for low-temperature  
applications



**PASSIVE DPF**

Catalyzed wall-flow filters for  
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# Thank You!

