



Contact us for more information:

900 Forge Avenue, Suite 100
Audubon, PA 19403-2305, USA

Email jmsec@matthey.com

Tel +1 484 320 2121

www.jmsec.com

JM Johnson Matthey
Inspiring science, enhancing life

About Johnson Matthey

Johnson Matthey is a global leader in science that enables a cleaner and healthier world. With over 200-years of sustained commitment to innovation and technological breakthroughs that improve the function, performance and safety of our customer's products. Our science has a global impact in areas such as low emission transport, pharmaceuticals, chemical processing and making the most efficient use of the planet's natural resources. Today more than 13,000 Johnson Matthey professionals collaborate with our network of customers and partners to make a real difference to the world around us. For more information, visit www.matthey.com

Inspiring science, enhancing life



JM

Mining CRT technology for low-NO₂ control

For productive, sustainable mining and healthier underground air



Johnson Matthey
Inspiring science, enhancing life



Mining CRT technology delivers low-NO₂ PM control for improved air quality in underground mines

Diesel-powered machinery and healthy miners are essential to a sustainable mining operation. Miners must be protected from harmful diesel particulate matter (PM) and NO₂ gas emitted by the diesel engines. Johnson Matthey's Mining CRT technology controls PM without increasing NO₂ for cleaner air in underground mines:

- Protects miner health and safety
- Does not impact mine productivity

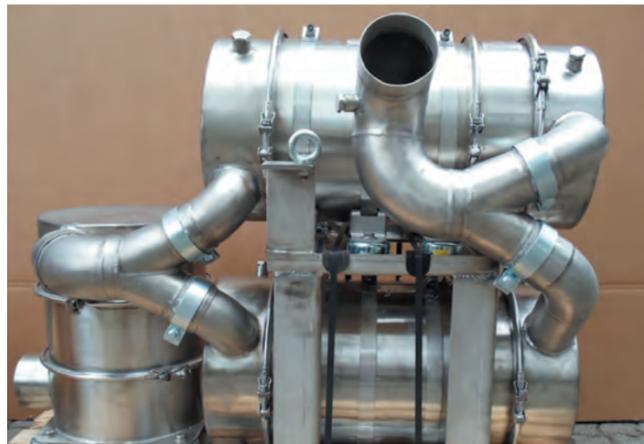
Reliability and performance you can trust

- Rigorously evaluated in underground mines
- Reduces PM up to 99%, maintains tailpipe NO₂ within 20% of baseline level
- Some systems maintain NO₂ at baseline level
- CO and HC conversions > 90%
- Operated more than 4 years/4,000 hours without ash cleaning
- Robust construction specifically for mining machines
- CARB-verified, VERT-verified

What is the Mining CRT?

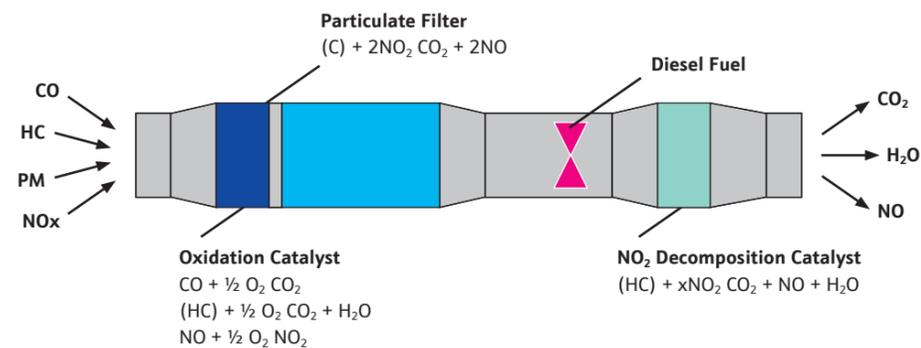
The **Mining CRT** integrates Johnson Matthey's patented **CRT**[®] technology with NO₂ abatement to deliver low-NO₂ PM control. The CRT system combines a diesel oxidation catalyst (DOC) with a diesel particulate filter (DPF) to effectively trap PM from diesel exhaust, while removing CO and HC. The DOC converts part of the engine NO_x to NO₂ which reacts with trapped PM to passively regenerate the filter.

The **Mining CRT** takes it a step further and adds an NO₂ decomposition catalyst to reduce tailpipe NO₂. Diesel fuel reacts with NO₂ over the catalyst, lowering tailpipe NO₂ to levels as low as baseline.



Model A Mining CRT

Mining CRT system schematic



Mining CRT systems

Mining CRT Product Line	Model A	Model B	Model C	Model D	Model E
Active NO ₂ control	Yes	Yes	Yes	No	No
Tailpipe NO ₂ (based on specific test cycle)	Baseline	Baseline	Within 20% of baseline	Within 40% of baseline	Within 60% of baseline
Number of filters	2	1	1	1	1
Configuration	DOC + DPF + NO ₂ decomp	DOC + DPF + NO ₂ decomp	DOC + coated DPF + NO ₂ decomp	DOC + DPF	DOC + coated DPF

Baseline NO₂ measured at turbo

Benefits:

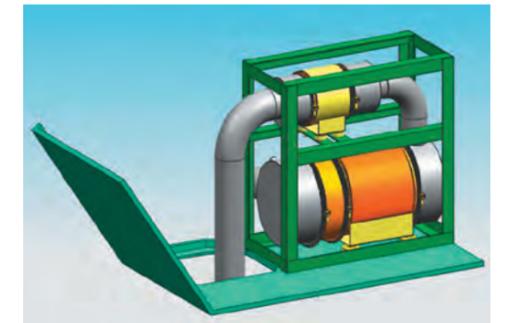
- **Flexibility:** multiple filter sizes, types, and regeneration strategies for most mining equipment
- **Productivity:** modular design facilitates servicing; control system minimizes demands on the operator
- **Installation:** designed to fit within engine compartment
- **Convenience:** extended ash cleaning intervals minimize equipment downtime

Why choose Johnson Matthey?

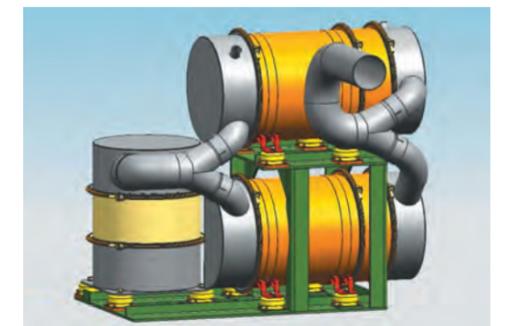
Experience

- Johnson Matthey is the number one global supplier of emission control technology for both on-road and off-road diesel equipment
- Over 200,000 off-road DPF systems sold in North America
- Over 3 million on-road DPF systems in the last ten years in North America alone

Johnson Matthey was first to develop and patent CRT technology. We have been innovating diesel emission control systems for 25 years and no other supplier can match our experience.



Models B and C: DOC, filter and NO₂ decomposition catalyst



Model A: Dual DOC + filter elements for reduced backpressure, plus NO₂ decomposition catalyst