

**JM**

# Johnson Matthey active diesel particulate filter

Always keep the power on and the air clean

**Johnson Matthey**  
Inspiring science, enhancing life



# Johnson Matthey's CRT(+)<sup>®</sup> active diesel particulate filter is now CARB verified

## Active systems

The ActivCRT<sup>®</sup> is the CARB verified version of the CRT(+) system and consists of our passive filter technology with a load bank for reliable filter operation when there is insufficient load for passive regeneration. The ActivCRT systems deliver unparalleled benefits:

- **SootAlert™** integrated with load bank controller monitors backpressure to automatically adjust engine load for filter regeneration
- **Lowest capital cost** compared to other active systems
- **Low operating cost** – fuel is only consumed during infrequent filter regeneration. Helps avoid cost of spoiled fuel because of lack of engine load usage over time
- **Allows exercising of the engine** at higher loads, which is recommended by engine manufacturers

## Wall-flow in a ActivCRT

Exhaust flows through many filter channels resulting in highly effective trapping of PM regardless of regeneration state.



## Active filter benefits

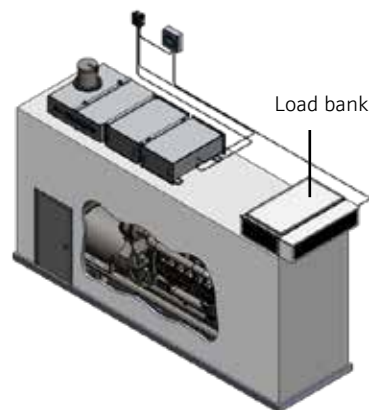
Reduces diesel particulate by up to 99%. Also eliminates diesel odors and reduces carbon monoxide and hydrocarbon emissions. Low capital cost and lower operating cost.

- **SCOUT™** – This operation mode optimizes filter regeneration with minimal operational costs and assured filter availability
- **Mounting** – The ActivCRT filter/load bank combinations can be mounted in several configurations as depicted below

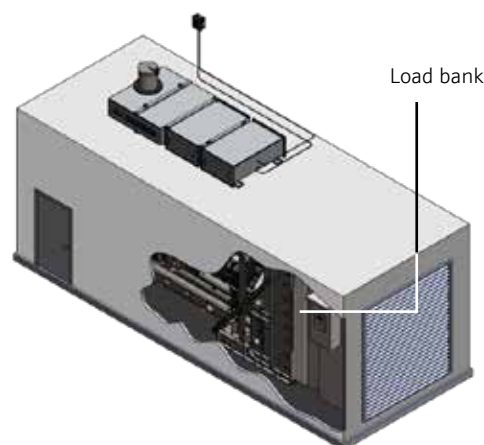


Three 2500 kW generators utilizing active CRTs with roof mounted load banks for standby power at a hospital.

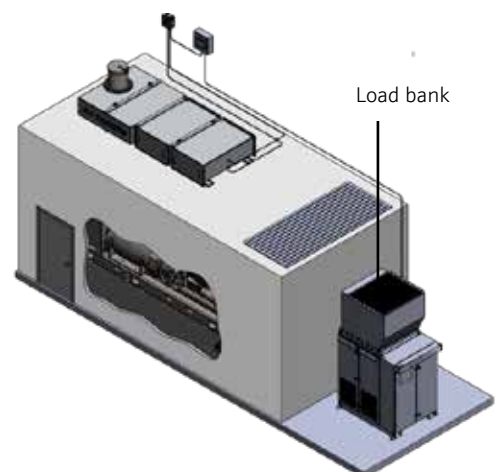
Roof mounted



Radiator mounted



Remote mounted



## Unparalleled Experience

Johnson Matthey has supplied over 3 million diesel particulate filters over the last 10 years for on-highway applications, and over 200 thousand on off-highway equipment in that time.

- **Johnson Matthey** was the first to develop and patent the passive diesel particulate technology
- **Over 1000 CRT systems** have been installed on 40 kW to 4 MW stand-by diesel generators used for emergency power at facilities such as hospitals, schools and data centers in California alone

## SootAlert Monitor

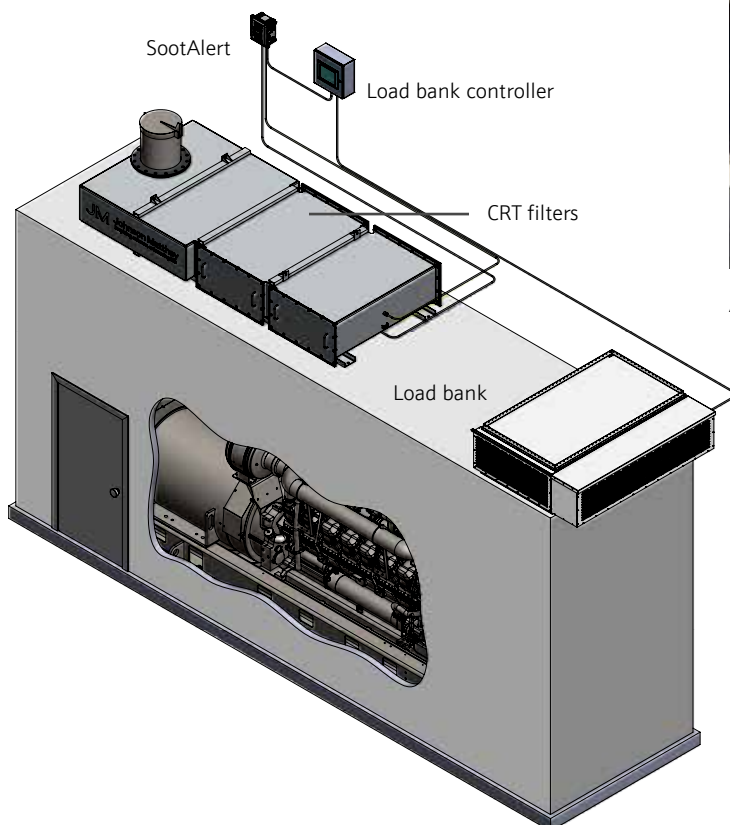
Patented monitor/data logger integrates regeneration when needed and monitors/displays backpressure/temperature.

### Features:

- 5 years data storage
- Easy HMI interface
- Remote monitoring
- 110 VAC or 24 VDC
- Alerts operator when
  - Regen Required Soon
  - Regen Required Now
  - Regen Complete



## Schematic of ActivCRT diesel particulate filter



Active CRT on a 400 kW genset using 200 kW radiator-mounted load bank.

## SootAlert Monitor is standard for all ActivCRT systems

- Remote monitoring of single or multiple gensets
- Easy access to historical data and filter status
- Remote data retrieval through internet/network connection
- Continuously stores critical data: exhaust temperature, engine backpressure and alarms

The JM exclusive and patent pending SCOUT mode is always working to:

- Minimize the use of the load bank during the entire life of the generator
- Conserve fuel to only the minimum amount needed
- Prevent the DPF from becoming excessively fouled



## ActivCRT systems are the most cost-effective

Johnson Matthey's active system capital and operating costs are substantially lower when compared to competing active DPF technologies.

KW rating	Supplier	Capital cost	Operating cost	Payback period
3,000	JM	~ \$130k	\$1,260	56 years
	Competitor	~ \$175k	\$450	
1,000	JM	~ \$60k	\$420	111 years
	Competitor	~ \$90k	\$150	
3,000 (shared load bank, 4 generators)	JM	~ \$416k	\$5,040	89 years
	Competitor	~ \$700k	\$1,800	

## ActivCRT® active filters vs other active DPF technology

<b>System</b>	<b>Johnson Matthey active systems</b>	<b>Competing system</b>	<b>Comment</b>
Design	Oxidation Catalyst (DOC) & Wall Flow Ceramic Filter	Electrically Heated Metallic fiber filter and electro-mechanical solenoids	JM has no electrical or mechanical components associated with emission removal
Removal of VOC	Yes	OxiCat must be added	JM ActivCRT has added benefit of removing hazardous VOC – via DOC
Aligned with engine	Yes	No	Consistent with OEM recommendations to extend engine life and test power reliability
Total Cost of Ownership – 20 years	Lower	Higher	Total Cost of Ownership including purchase price and fuel
Service Frequency	Infrequent – typically once a year or less	Frequent	No moving parts to clean or service
Maintenance for stand by operation	None / Minimal	Potential failure due to moving and electrical components	JM ActivCRT does not rely on moving parts
Value engineering	Single load bank shared between multiple gensets	Regeneration technology required on every single genset	Remote load banks shared by multiple ActivCRT's reduces the total cost of ownership



### **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 with operations in over 30 countries 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](http://www.matthey.com)

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