

# CleanAIR ASSURE™ DOC

Diesel Oxidation Catalysts for Electric Power, Industrial, Petroleum, and Marine

## The ASSURE™ Advantage:

- Flow Through Ceramic Catalyst Design
- Works with All Diesel Engines
- Reduces Carbon Monoxide (CO) and Hydrocarbons (HC) by Up to 99%
- Reduces Diesel Particulate Matter by Up to 50%
- Does Not Require Regeneration
- Available as Industrial, Critical and Super-Critical Silencer Designs
- Available in Multiple Custom Configurations

## Applications:

- Electric Power
- Industrial
- Petroleum
- Marine

## The CleanAIR™ Difference:

- Custom Engineering and Design
- Integrated Manufacturing
- Product Optimization for Space Availability
- 304 Stainless-Steel Housing, Corrosion-Resistant
- Double-walled, Fully Insulated Construction
- Durable Product Manufacturing for Operation Under Extreme Conditions

For a price quote call

**WILL RING**

**602-622-5684**

**1-888-CAT-POWER**

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## The CleanAIR ASSURE™ DOC – Oxidation Catalyst for Diesel Engines

The ASSURE™ DOC (diesel oxidation converter) for diesel engines is a flow through catalyst designed to reduce carbon monoxide (CO), hydrocarbons (HC) and diesel particulate matter (PM). The high-performance, durable oxidation catalyst is housed within a 304 stainless steel, corrosion resistant package. This unique catalyst technology is available as a standard ASSURE™ DOC unit or packaged as Industrial, Critical or Super-Critical silencer designs. Available with multiple custom configurations, the ASSURE™ DOC can be retrofitted as a direct muffler or silencer replacement.

Each unit is individually sized to meet engine specifications. This is necessary to keep engine backpressure at a low level. Every effort is made to design the ASSURE™ DOC to fit in the smallest possible package while maintaining engine performance.

## How the ASSURE™ DOC Works

Polluting emissions result from the incomplete combustion of fuel. Oxidation completes the combustion. The ASSURE™ DOC transforms pollutants into harmless gases through oxidation, by combining the pollutants with oxygen in the exhaust. In the case of diesel exhaust, CO, HC and PM, are oxidized into carbon dioxide and water vapor.

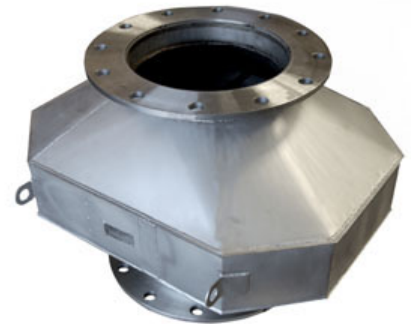
Diesel particulate matter is the most complex and troublesome diesel emission. PM is made up of both solid and liquid material. Although the chemical and physical com-positions of the various particles differ, the basic components of PM are elemental carbon and heavy hydrocarbons. The ASSURE™ DOC reduces the soluble organic fraction of PM, which is a liquid material consisting mostly of hydrocarbons, by oxidizing it into carbon dioxide and water. For higher levels of PM reduction, the CleanAIR PERMIT™ Filter is available.



*The ASSURE™ DOC/Silencer Unit, Critical Grade, utilizing an innovative light-weight design made with corrosion-resistant stainless steel.*



*The ASSURE™ DOC/Silencer Unit – Industrial Grade with 2 diesel oxidation catalysts*



*Custom designed ASSURE™ DOC – Industrial Grade for marine application*

## Emissions Reduction Summary

Control Technology	Fuel	CO	HC	PM
ASSURE™ DOC	ULSD (< 15 ppm S)	Up to 99%	Up to 99%	Up to 50%
	LSD (< 500 ppm S)	Up to 99%	Up to 99%	Up to 30%
	HSD (> 500 ppm S)	Up to 99%	Up to 99%	Up to 20%
	Biodiesel	Up to 99%	Up to 99%	Up to 50%

*Results are fuel dependent and may vary with application.*

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## Exhaust Temperature Requirements

Temperature of the exhaust is one important factor in the design of the ASSURE™ DOC. Fuel sulfur content also plays an important role. Depending upon these factors, the ASSURE™ DOC will reduce emissions at temperatures as low as 180°C (356°F), increasing rapidly as temperature increases. Consult your sales specialist for expected application activity and ideal operating conditions.

## How Fuel Effects the ASSURE™ DOC Performance

For the maximum performance in PM removal efficiency, it is recommended that the ASSURE™ DOC operates in conjunction with ultra low sulfur diesel fuel (ULSD), less than 15 ppm sulfur by weight. As the fuel sulfur content increases, the PM removal efficiency decreases. High sulfur fuel, greater than 500 ppm, will not damage the catalyst. The ASSURE™ DOC is designed to operate on fuel sulfur content as high as 8000 ppm. However, maximum performance is achieved when low sulfur fuels are used.

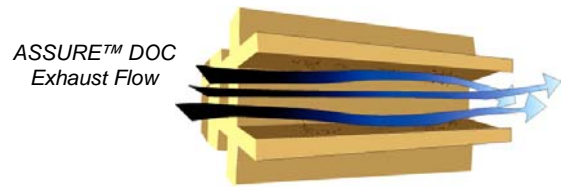
Silencer Type	Typical Attenuation
Industrial Grade	22 – 29 dBA
Critical Grade	27 – 35 dBA
Super Critical Grade	30 – 38 dBA

## HiBACK USB™ Data Logging and Alarm System

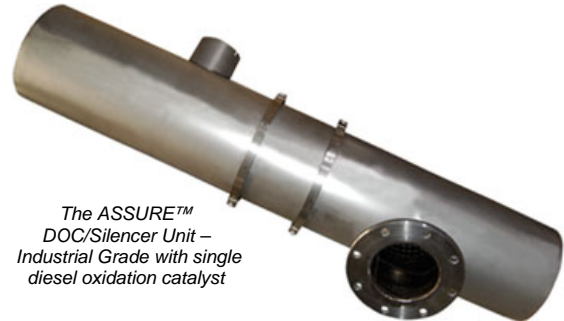
The HiBACK USB™ is a microprocessor-based data logger and alarm system used in conjunction with the CleanAIR PERMIT™ Filter System as both an alarm and a data logger to record time, backpressure and temperature data. The HiBACK USB™ unit can warn the operator of possible problems with excessive backpressure, can track the duty cycle of the engine and allow analysis for operation time, exhaust temperature and backpressure profiles.



Data collected by the HiBACK USB™ can be downloaded to a computer for detailed analysis using optional software. (Optional software sold separately.)



ASSURE™ DOC  
Exhaust Flow



The ASSURE™  
DOC/Silencer Unit –  
Industrial Grade with single  
diesel oxidation catalyst



The ASSURE™ DOC  
Standard Unit



Custom designed ASSURE™  
DOC/Silencer Unit –  
Industrial Grade with two  
diesel oxidation catalysts