



Emissions Monitoring System

PRIME MOVERS

5 EMD 20-645F4B diesel engines
Power 3150 kW
Fuel Diesel
Maximum Exhaust Flow 21,500
ft³/min = 59,500 lbs/hr*
Exhaust Temperature 560 °F*

EMISSIONS SYSTEM

DCL QUICK-LID™ Model DC69.5A-22 Oxidation Catalytic Converter with 200 cpsi catalyst element, 304 stainless steel, C-Channel design.

Heat Blanket - QUICK-LID™ Model DC69.5A-22

Fiberglass insulation rated up to 1200°F/648°C, silicone outer cover, Stainless steel construction.

GCS Continuous Parameter Emissions System (CPMS)

GCS Continuous Emissions Monitoring System includes a Dynalco catalyst monitor, temperature probes, pressure transducers, and cables.



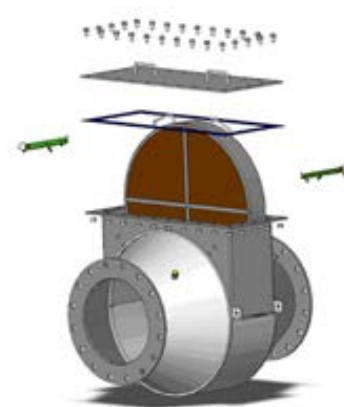
PROJECT OVERVIEW

GCS installed DCL QUICK-LID® Catalytic Converters and Continuous Parameter Monitoring Systems (CPMS) on five (5) EMD 20 cylinder engines. These emissions controls are required to bring the utility's engines into compliance with the current RICE/NESHAP regulations. Part of an emergency generator system, these EMD engines must be available at a moment's notice to provide backup power in case the main utility is brought down due to natural or man-made disaster.

DCL QUICK-LID™ Model DC69.5A-22 Oxidation Catalyst

Designed for engines >700 hp (528 kW). DCL QUICK-LID® Catalytic Converters effectively reduce engine exhaust emissions, including NO_x, CO, hydrocarbons, formaldehydes and particulates.

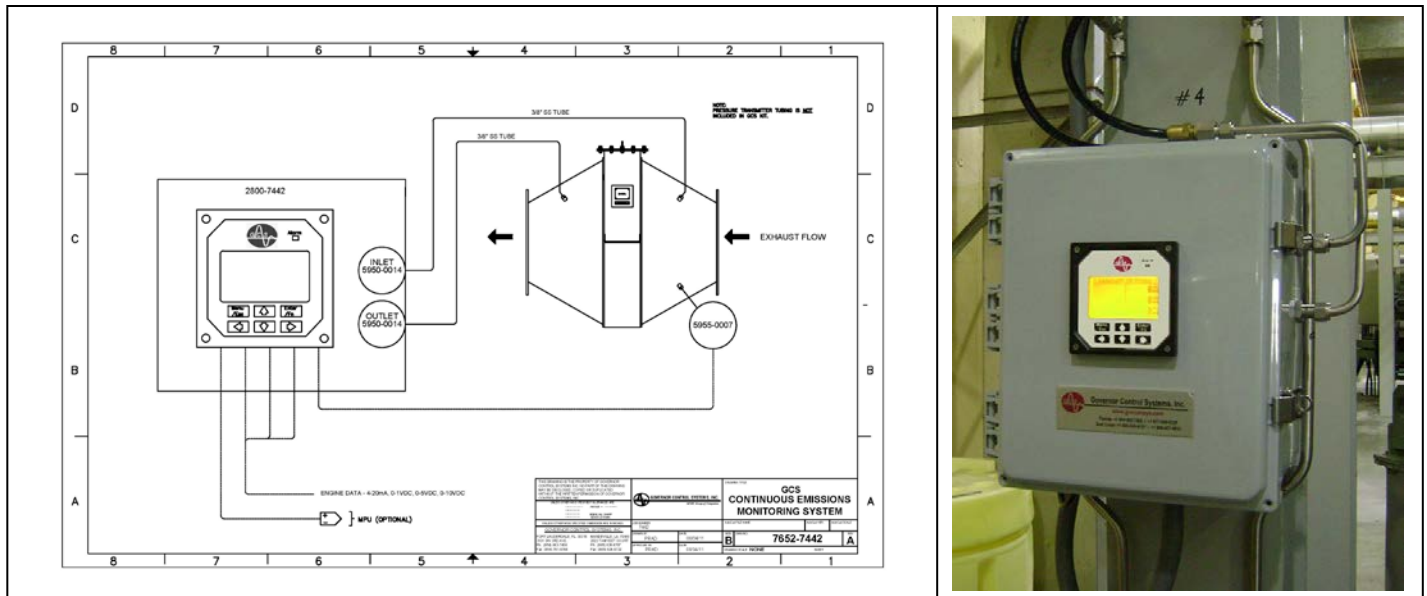
QUICK-LID® catalytic converters are the industry standard for reliable, long life operation.



MEETING RICE-NESHAP REQUIREMENTS**(Reciprocating Internal Combustion Engines National Environmental Standards for Hazardous Air Particles)****Engine Testing Results: Before and After**

- EPA requires that the CO corrected @ 15% O₂ in Exhaust be <23 PPM
 - Before DCL catalyst installation reading was 69.24 PPM
 - After installation reading is 9.79 PPM.
- EPA requires $\geq 70\%$ reduction in Carbon Monoxide (CO) from base line tests.
 - After installation CO reduction was observed at 86.1%.

The DCL **QUICK-LID™ Catalyst** passed with outstanding results, guaranteed for one (1) year or 8,000 running hours.

GCS CONTINUOUS EMISSIONS MONITORING SYSTEM (CPMS)

EPA requires that each Catalyst have a CPMS (Continuous Parameter Monitoring System) that monitors the inlet temperature and differential pressure of the catalyst. Catalyst inlet temperature must be maintained between 750°F and 1250°F. Compliance is based on 4-hour rolling averages (measured every 15 minutes). Pressure drop across the catalyst must not change by more than 2 inches water column at 100% load $\pm 10\%$ from the pressure drop measured during the initial performance test (measured once per month).

GCS Continuous Emissions Monitor (CPMS) specifies a pre-wired NEMA enclosure, pressure transmitters and specified thermocoupling. This kit is fully configurable and capable of monitoring up to three additional variables. Historic data may be stored or viewed real time through Modbus RS 485 or USB communication.

GCS offers comprehensive control and monitoring system service, spares and support for engine and turbine systems. From controls upgrades and integration to turnkey project management, we service a broad range of marine, power generation and industrial projects.

GCS is a member of the MSHS Group. Learn more at www.govconsys.com.

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