

**State of California
AIR RESOURCES BOARD**

EXECUTIVE ORDER G-06-044

Pursuant to the authority vested in the California Air Resources Board (ARB) by Health and Safety Code, Division 26, Part 5, Chapter 2; and pursuant to the authority vested in the undersigned by Health and Safety Code Section 39515 and 39616 and Executive Order G-02-003;

This action relates to Verification under Sections 2700 through 2710 of Title 13 of the California Code of Regulations

PACECO Corporation,
Mitsui Engineering and Shipbuilding Diesel Particulate Filter

The ARB has reviewed PACECO Corporation's request for verification of the Mitsui Engineering and Shipbuilding Diesel Particulate Filter (MES-DPF). Based on an evaluation of the data provided, and pursuant to the terms and conditions specified below, the Executive Officer of the ARB hereby finds that the MES-DPF reduces emissions of diesel particulate matter (PM) consistent with a Level 1 device (greater than or equal to 25 percent reduction) (California Code of Regulations (CCR), Title 13, Sections 2702 (f) and Section 2708). Accordingly, the Executive Officer determines that the system merits verification and, subject to the terms and conditions specified below, classifies the MES-DPF as a Level 1 system, for use with constant speed non-road diesel engines on rubber-tire gantry cranes with a rated power of 225 kW to 450 kW.

This verification is subject to the following terms and conditions:

- The engine must be on a rubber-tire gantry crane, with a rated power of 225 kW to 450 kW.
- The engine on the rubber-tire gantry crane must be model year pre-1996, or certified to Tier 1, 2, or 3 PM off-road engine standards.
- The engine must be in its original certified configuration.
- The engine must not employ exhaust gas recirculation.
- The engine must not have a pre-existing oxidation catalyst.
- The engine must not have a pre-existing diesel particulate filter.
- The engine must be four-stroke.
- The engine can be turbocharged or naturally-aspirated.
- The engine can be mechanically or electronically injected.
- The engine must be certified in California.
- PACECO Corp. must review actual operating conditions (duty cycle, baseline emissions, exhaust temperature profiles, and engine backpressure) prior to retrofitting an engine with the MES-DPF to ensure compatibility.
- The engine should be well maintained and not consume lubricating oil at a rate greater than that specified by the engine manufacturer.
- The other terms and conditions specified below.

Table 1: Conditions for the MES-DPF

Parameter	Value
Application	Rubber-Tire Gantry Cranes
Engine Type	Diesel, with or without turbocharger, constant speed, with a rated power of 225 kW to 450 kW
Minimum Exhaust Temperature for Filter Regeneration	The engine must operate at a load level required to achieve an exhaust temperature of 250°C or greater for at least 50% of the time. Operation at lower temperatures is allowed, but only for the limited duration specified below.
Maximum Consecutive Minutes Operating Below Passive Regeneration Temperature	120 Minutes
Maximum Exhaust Temperature	550 °C
Number of Hours of Operation Before Cleaning or Replacement of Filter Required	2,800 hours (or 1 year), whichever occurs first
Number of Hours of Operation Before Replacement of Catalyst Required	14,000 hours (or 5 years), whichever occurs first
Fuel	California diesel fuel with less than or equal to 15 ppm sulfur or a biodiesel blend provided that the biodiesel portion of the blend complies with ASTM D6571 (15 ppm sulfur), the diesel portion of the blend complies with Title 13 (CCR), sections 2281 and 2282 and the blend contains no more than 20 percent biodiesel by volume.
Verification Level	Level 1 Verification: At least 25% reduction of PM.

The MES-DPF consists of an oxidation catalyst followed by a wire mesh filter and a backpressure monitor.

This Executive Order is valid provided that installation instructions for the MES-DPF do not recommend tuning the engine to specifications different from those of the engine manufacturer.

No changes are permitted to the device unless approved by the ARB. ARB must be notified in writing of any changes to any part of the MES-DPF and these changes must be evaluated and approved by ARB. Failure to report any changes shall invalidate this Executive Order.

Changes made to the design or operating conditions of the MES-DPF, which adversely affect the performance of the engine's pollution control system, shall invalidate this Executive Order.

As of January 1, 2009, this Executive Order will be revoked unless PACECO Corp. provides information which shows that the MES-DPF does not increase emissions of NO₂ by more than 20 percent of the baseline NOx emissions.

Marketing of the MES-DPF using identification other than that shown in this Executive Order or for an application other than that listed in this Executive Order shall be prohibited unless prior approval is obtained from ARB.

As specified in the Diesel Emission Control Strategy Verification Procedure (Title 13 CCR Section 2706 (g)), the ARB assigns each Diesel Emission Control Strategy a family name. The designated family name for the verification as outlined above is:

CA/PAC/2006/PM1/N00/OF/DPF01

Additionally, as stated in the Diesel Emission Control Strategy Verification Procedure, PACECO Corp. is responsible for honoring their warranty (California Code of Regulations (CCR), Title 13, Section 2707) and conducting in-use compliance testing (Section 2709).

In addition, ARB reserves the right in the future to review this Executive Order and verification provided herein to assure that the verified add-on or modified part continues to meet the standards and procedures of CCR, Title 13, Section 2222, et seq and CCR, Title 13, Sections 2700 through 2710.

Systems verified under this Executive Order shall conform to all applicable California emissions regulations. This Executive Order does not release PACECO Corp. from complying with all other applicable regulations.

Violation of any of the above conditions shall be grounds for revocation of this Executive Order.

Executed at Sacramento, California, this 15th day of August, 2006.

Catherine Witherspoon
Executive Officer
by

/s/

Robert Fletcher, Chief
Stationary Source Division