

**State of California  
AIR RESOURCES BOARD**

**EXECUTIVE ORDER DE-12-006-01**

Pursuant to the authority vested in the 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* Sections 39515 and 39516 and Executive Order G-14-012;

Relating to Exemptions under Section 38395 of the *Vehicle Code* and Verification under Sections 2700 through 2711 of Title 13 of the *California Code of Regulations (CCR)*:

Thermo King Corporation  
Electric Regenerative Diesel Particulate Filter (eDPF)

ARB has reviewed Thermo King Corporation's (Thermo King) request for verification of the eDPF system. Based on an evaluation of the data provided, and pursuant to the terms and conditions specified below, the Executive Officer of ARB hereby finds that the eDPF system reduces emissions of diesel particulate matter (PM) consistent with a Level 3 device (greater than or equal to 85 percent reductions) (Title 13 CCR, Sections 2702 (f) and 2708) and is compliant with the 2009 nitrogen dioxide emissions limit. Accordingly, the Executive Officer determines that the system merits verification and, subject to the terms and conditions specified below, classifies the eDPF system as a Level 3 Plus system for TriPac auxiliary power units (APU) that use certain off-road diesel engines. Engines for which the eDPF system is verified, the verified parts list, the verified labels, swapping and re-designation information, and other product information can be found here:

<http://www.arb.ca.gov/diesel/verdev/companies/thermoking/edpf.htm>

The aforementioned verification is subject to the following terms and conditions:

- The engine must be installed in a TriPac APU and have an engine family name listed on the website above.
- The engine must be manufactured by Yanmar and have the model name TK270M.
- The engine must be certified to a PM emissions level of 0.2 grams per kilowatt-hour or less.
- The engine must be rated to 10 horsepower or less.
- The engine must not have exhaust gas recirculation.
- The engine must have a four-stroke combustion cycle.

- The engine must not be certified with a diesel particulate filter.
- The engine must not be certified with a diesel oxidation catalyst.
- The engine must be mechanically governed.
- The engine must be naturally aspirated.
- The engine must be well maintained and not consume lubricating oil at a rate greater than that specified by the engine manufacturer.
- Lube oil, or other oil, must not be mixed with the fuel.
- The system must not be operated with fuel additives, as defined in Section 2701 of Title 13, CCR, unless explicitly verified for use with the fuel additive(s).
- The product must not be used with any other systems or engine modifications without ARB and manufacturer approval.
- The other terms and conditions specified below.

IT IS ALSO ORDERED AND RESOLVED: That installation of the eDPF system, manufactured by Thermo King Corporation, 314 West 90<sup>th</sup> Street, Minneapolis, Minnesota 55420, has been found not to reduce the effectiveness of the applicable vehicle pollution control system, and therefore, the eDPF system is exempt from the prohibitions in Sections 38390 and 38391 of the *Vehicle Code* for installation on APUs that meet the terms and conditions of this Executive Order. This exemption is only valid provided the engines meet the aforementioned conditions.

The eDPF system must be installed as designed, and the following major components must be installed in the following order in the exhaust system: one backpressure sensor tube, one electric heater section, and one wall-flow diesel particulate filter. The system must be equipped with an electronic control system that monitors backpressure and notifies the operator in a clearly visible manner, while the vehicle is in use, when the backpressure limits have been reached. The major components of the eDPF system are identified in the parts list. The parts list and schematics of the approved product and engine labels are available on the website shown above.

This Executive Order is valid provided that installation instructions for the eDPF system do not recommend tuning the Axillary Power Unit (APU) engine to specifications different from those of the APU engine manufacturer.

No changes are permitted to the device. ARB must be notified in writing of any changes to any part of the eDPF system. Any changes to the device must be evaluated and approved in writing by ARB. Failure to do so shall invalidate this Executive Order.

Changes made to the design or operating conditions of the eDPF system, as exempted by ARB, which adversely affect the performance of the APU's pollution control system shall invalidate this Executive Order.

Thermo King must ensure that the installation of the eDPF system conforms to all applicable industrial safety requirements.

Marketing of the eDPF system 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 written approval is obtained from ARB.

Identification must include both device and engine labels consistent with the requirements of Title 13, CCR, Section 2706, and the label information on the website shown above. Changes or modifications to the label or label placement are prohibited without prior written approval from ARB.

This Executive Order does not apply to any eDPF system installed on an APU prior to sale or lease to an ultimate purchaser.

As specified in Section 2706(j) (Title 13, CCR) of the *Verification Procedure, Warranty, and In-Use Compliance Requirements for In-Use Strategies to Control Emissions from Diesel Engines* (Procedure), ARB assigns each Diesel Emission Control Strategy a family name. The designated family name for the verification as outlined above is:

**CA/TKC/2008/PM3+/N00/OF/DPF01**

Thermo King, their distributors, or installers shall review the actual operating conditions prior to retrofitting an engine with eDPF system to ensure compliance with the terms and conditions of this Executive Order.

As stated in the Procedure, Thermo King is responsible for recordkeeping requirements (Section 2702), honoring the required warranty (Section 2707), and conducting in-use compliance testing (Section 2709).

Proper engine maintenance is critical for the proper functioning of the diesel emission control strategy. The owner and/or operator of the APU on which the diesel emission control strategy is installed is strongly advised to adhere to all good engine maintenance practices. Failure to document proper engine maintenance, including keeping records of the engine's oil consumption, may be grounds for denial of a warranty claim.

Use of system parts or replacement parts not authorized by Thermo King may be grounds for denial of a warranty claim.

This Executive Order is valid provided that the diesel fuel used in conjunction with the system complies with Title 13, CCR, Sections 2281 and 2282, or U.S. EPA diesel fuel compliant with standards set forth in Title 40, *Code of Federal Regulations* (CFR), Part

80, for the applications covered by this Executive Order, and if biodiesel is used, the biodiesel blend shall be 20 percent or less subject to the following conditions:

- The biodiesel portion of the blend complies with the American Society for Testing and Materials specification D6751 applicable for 15 parts per million sulfur content.
- The diesel fuel portion of the blend complies with Title 13, CCR, Sections 2281 and 2282 or U.S. EPA diesel fuel compliant with standards set forth in 40 CFR Part 80 for the applications covered by this Executive Order.

Other alternative diesel fuels such as, but not limited to, ethanol diesel blends and water emulsified diesel fuel are excluded from this Executive Order.

The eDPF system must not be located over any occupied space (e.g., driver or passenger compartments), or installed in a way which would result in noncompliance with any applicable safety standards including but not limited to Federal Motor Carrier Safety Administration, Subpart G, Miscellaneous Parts and Accessories, Section 393.83 Exhaust Systems, and any other location deemed unacceptable by Thermo King.

The terms and conditions of this verification must be satisfied regardless of where the system is sold in order for the system to be considered verified.

Systems sold as verified, or which carry an ARB-approved label, must satisfy all the terms and conditions of this verification.

A copy of this Executive Order must be provided to the ultimate purchaser at the time of sale.

In addition to the foregoing, ARB reserves the right in the future to review this Executive Order and the exemption and verification provided herein to assure that the exempted and 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 2711.

The terms and conditions of this Executive Order must be satisfied regardless of where the system is sold in order for the system to be considered verified.

Systems sold as verified, or which carry the ARB-approved label, must satisfy all the terms and conditions of this Executive Order.

Systems verified under this Executive Order shall conform to all applicable California emissions regulations.

This Executive Order does not release Thermo King from complying with all other applicable regulations.

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

This Executive Order hereby supersedes Executive Order DE-12-006 (dated Aug 06, 2012).

Executed at El Monte, California, and effective this day of 22 February 2016.

A handwritten signature in cursive script, appearing to read "Annette Hebert".

Annette Hebert, Chief  
Emissions Compliance, Automotive Regulations and Science Division

