



Linda S. Adams  
Secretary for  
Environmental Protection

# Air Resources Board

Mary D. Nichols, Chairman  
9480 Telstar Avenue, Suite 4  
El Monte, California 91731 [www.arb.ca.gov](http://www.arb.ca.gov)



Arnold Schwarzenegger  
Governor

October 08, 2008

Mr. Erich Lucht  
Thermo King Corporation  
Mail Stop 26  
314 West 90<sup>th</sup> Street  
Minneapolis, Minnesota 55420

Reference No.08-661-399

Dear Mr. Lucht:

Using the *Verification Procedure, Warranty and In-Use Compliance Requirements for In-Use Strategies to Control Emissions from Diesel Engines* (Procedure), Air Resources Board (ARB) staff reviewed your application for conditional verification of the Thermo King Electric Regenerative Diesel Particulate Filter (eDPF) for use only with the TriPac auxiliary power units (APU). This conditional verification letter updates and supersedes the first letter (08-661-279), and expands the list of approved engine families to include models that meets the stated power rating limitations.

Based on an evaluation of the data provided, and pursuant to the terms and conditions specified below, ARB hereby finds that the Thermo King eDPF reduces emissions of diesel particulate matter (PM) consistent with a Level 3 device (greater than or equal to an 85 percent reduction). ARB also finds that the Thermo King eDPF satisfactorily completed at least 33 percent of the durability demonstration period for APU applications. Accordingly, ARB determines that the system merits conditional verification and, subject to the terms and conditions specified below, classifies the Thermo King eDPF as a Level 3 system for TriPac APU applications that use diesel engines from the engine families listed in Attachment 1.

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

- The Thermo King eDPF is conditionally verified for a period not to exceed three years from the date of June 24, 2008. For the Thermo King eDPF to be considered for full verification, Thermo King must complete all remaining requirements no later than June 24, 2011, as specified in the letter 08-661-280.
- Conditional verification is equivalent to verification for the purposes of satisfying the requirements of in-use emission control regulations.

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California Environmental Protection Agency

- The verification is restricted to only those engine families and models listed in Attachment 1.
- The engine must be a Yanmar TK270M, model year 2006 through 2009.
- The engine must have a maximum power output rating of less than 11 horsepower.
- The application must be for TriPac APU applications.
- The engine must be four-stroke.
- The engine must not employ exhaust gas recirculation.
- The engine must not have a pre-existing diesel particulate filter from the original equipment manufacturer.
- The engine can be mechanically or electronically controlled.
- The engine can be turbocharged or naturally aspirated.
- The engine must be well maintained and not consume lubricating oil at a rate greater than that specified by the engine manufacturer.
- Lubricating oil, or other oil, must not be mixed with the fuel.
- The product must not be operated with fuel additives, as defined in section 2701 of Title 13, of the California Code of Regulations (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 written approval.
- The other terms and conditions specified below.

It is also ordered and resolved that installation of the Thermo King eDPF, 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 Thermo King eDPF is exempt from the prohibitions in section 27156 of the Vehicle Code for installation on off-road equipment using engines from the families listed in Attachment 1.

This exemption is only valid provided the engines meet the aforementioned conditions.

ARB reserves the right in the future to review this conditional verification letter and the exemption provided herein to assure that the exempted and conditionally verified add-on or modified part continues to meet the standards and procedures of Title 13, sections 2222, et seq and sections 2700 through 2710, of the CCR.

The Thermo King eDPF consists of a diesel particulate filter, a heating element, a backpressure monitor and a remote display module. The major components of the Thermo King eDPF are identified in Attachment 2. A schematic of the approved product and engine labels is shown in Attachment 3.

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No changes are permitted to the device. ARB must be notified, in writing, of any changes to any part of the Thermo King eDPF. Any changes to the device must be evaluated and approved by ARB. Failure to do so shall invalidate this conditional verification.

Changes made to the design or operating conditions of the Thermo King eDPF, as exempted by ARB, which adversely affect the performance of the vehicle's pollution control system, shall invalidate this conditional verification.

Marketing of the Thermo King eDPF using identification other than that shown in this conditional verification letter or for an application other than that listed in this conditional verification letter shall be prohibited unless prior written approval is obtained from ARB.

ARB estimates that the Thermo King eDPF has no significant effect on average fuel economy.

As specified in the Procedure, ARB assigns each diesel emission control strategy a family name. The designated family name for the conditional verification as outlined above is:

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

For clarification purposes, the designated control strategy family name CA/TKC/2008/PM3/N00/OF/DPF01 is the same technology as **CA/TKC/2008/PM3+/N00/OF/DPF01**

Additionally, as stated in the Procedure, Thermo King is responsible for honoring the required warranty (section 2707) and conducting in-use compliance testing (section 2709).

This conditional verification is valid provided that the diesel fuel used in conjunction with the device complies with Title 13, CCR, sections 2281 and 2282, 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 (ASTM) specification D6751 applicable for 15 ppm sulfur content;
- The diesel fuel portion of the blend complies with Title 13, CCR, sections 2281 and 2282;
- The use of biodiesel applies to devices verified to reduce only diesel particulate matter; and

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

Systems conditionally verified in this letter shall conform to all applicable California emissions regulations.

This conditional verification 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 conditional verification.

Thank you for participating in ARB's diesel emission control strategy verification program. If you have any questions or comments, please contact Ms. Shawn Daley, Manager, at (626) 575-6972 or by email to [sdaley@arb.ca.gov](mailto:sdaley@arb.ca.gov).

Sincerely,

/s/

Robert H. Cross, Chief  
Mobile Source Control Division

Attachment 1: ARB-Approved Engine Families for the Thermo King eDPF

Attachment 2: Parts List for the Thermo King eDPF

Attachment 3: Label for the Thermo King eDPF

cc: Ms. Shawn Daley, Manager  
Retrofit Assessment Section