State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER DE-09-007-02

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 section 39515 and 39516 and Executive Order G-02-003;

Relating to Exemptions under section 27156 of the Vehicle Code, and Verification under sections 2700 through 2710 of Title 13 of the California Code of Regulations (CCR)

SK Energy Co., Ltd.
Econix DPF-A Diesel Particulate Filter System

The California Air Resources Board has reviewed SK Energy's request for verification of Econix DPF-A. 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 Econix DPF-A 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 section 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 Econix DPF-A as a Level 3 plus system for heavy-duty on-road vehicles using engines from the engine families listed in Attachment 1.

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

- The engine must be originally manufactured from model year 1994 through 2006 and have an engine family name listed in Attachment 1.
- The engine must be used by an on-road motor vehicle with a manufacturer's Gross Vehicle Weight Rating of over 14,000 pounds.
- The engine must be certified for on-road applications.
- The engine must have a minimum displacement of 5.9 liters and maximum displacement of 13 liters.
- Only one filter may be installed per engine.
- The engine must be in its original certified configuration.
- The engine must have a PM certification level of at most 0.1 g/bhp-hr, and greater than 0.01 g/bhp-hr.
- The engine must have rated power of at least 150 horsepower but not more than 400 horsepower.
- The engine must not be certified as having exhaust gas recirculation.
- The engine must not have a pre-existing oxidation catalyst from the original equipment manufacturer unless the following conditions are met:

    - The original equipment diesel oxidation catalyst is left in place and not removed.
    - The Econix DPF-A system is installed downstream of the diesel oxidation catalyst.
    - The backpressure sensor is installed upstream of the diesel oxidation catalyst.
- The engine must not have a pre-existing diesel particulate filter from the original equipment manufacturer.
- The engine must be four-stroke.
- The engine can be turbocharged or naturally aspirated.
- The engine can be mechanically or electronically controlled.
- The end user must monitor and keep accurate records of the engine's oil consumption rate for the duration of time that the system is installed. These records must be readily available to ARB or the system manufacturer upon request.
- 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 engine must be operated on fuel that has a sulfur content of no more than 15 parts per million (ppm) by weight.
- Econix DPF-A must not be operated with fuel additives, as defined in Section 2701 of Title 13, of the CCR, unless explicitly verified for use with fuel additive(s).
- Econix DPF-A 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 Econix DPF-A, manufactured by SK Energy Co., Ltd., 99, Seorin-dong, Jongro-gu, Seoul 110-110, Korea, has been found not to reduce the effectiveness of the applicable vehicle pollution control system, and therefore, Econix DPF-A is exempt from the prohibitions in section 27156 of the Vehicle Code for installation on heavy-duty on-road vehicles using engines from the engine families listed in Attachment 1.

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

The Econix DPF-A system consists of a non-catalyzed metal fiber mesh filter, a diesel fuel burner, an electronic control system, and a backpressure monitor. The major components of the Econix DPF-A system are identified in Attachment 2. Schematics of the approved product and engine labels are shown in Attachment 3.

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

SK Energy must ensure that the installation of Econix DPF-A conforms to all applicable industrial safety requirements.

Prior to sale of an Econix DPF-A system, SK Energy must provide each prospective owner/purchaser of Econix DPF-A with a written estimate of the number of hours of vehicle operation that will typically elapse before regeneration is required. SK Energy must also provide, in writing, the length of time of a typical regeneration event.

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

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

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

This Executive Order shall not apply to any Econix DPF-A advertised, offered for sale, sold with, or installed on a motor vehicle prior to or concurrent with transfer to an ultimate purchaser.

The Executive Order must be provided to the ultimate purchaser at the time of sale.

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

CA/SKE/2009/PM3+/N00/ON/DPF01

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

The use of alternative diesel fuels such as, but not limited to, biodiesel, ethanol diesel blends and water emulsified diesel fuel are prohibited from use with the Econix DPF-A.

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 Title 13 CCR, Section 2222, et seq and Title 13 CCR, Sections 2700 through 2710.

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

This Executive Order does not release SK Energy Co., Ltd. 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-09-007 (dated May 15, 2009) and Executive order DE-09-007-01 (dated October 7, 2009).

Executed at El Monte, California, and effective this 30th day of December 2009.

Ronald Hart for RHCross

Robert H. Cross, Chief
Mobile Source Control Division

Attachment 1: ARB Approved Engine Families for SK Energy Econix DPF-A
Attachment 2: Parts List for the Verified SK Energy Econix DPF-A
Attachment 3: Labels for the Verified SK Energy Econix DPF-A