State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER DE-09-004-03

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-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)

Johnson Matthey, Incorporated
Advanced Catalyzed Continuously Regenerating Technology (A_{dv}CCRT™) System

ARB has reviewed Johnson Matthey's request for verification of the A_{dv}CCRT™ 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 A_{dv}CCRT™ system reduces emissions of diesel particulate matter (PM) consistent with a Level 3 Plus device (greater than or equal to an 85 percent reduction and meets the 2009 nitrogen dioxide (NO_2) emissions limit) (Title 13, CCR, Sections 2702 (f) and 2708). Accordingly, the Executive Officer determines that the system merits verification and, subject to the terms and conditions specified below, classifies the A_{dv}CCRT™ as a Level 3 Plus system for heavy-duty on-road vehicles using heavy-duty engines from the engine families listed in Attachment 1.

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

- The engine must be model year 2002 through 2006 and have an engine family name listed in Attachment 1. Some engines within an approved engine family may not meet the horsepower requirements. The engine must meet all the terms and specifications of this Executive Order and belong to the engine family listed in Attachment 1.

- The engine must be certified for on-road applications.

- The engine must be certified to a PM emission level of at most 0.1 grams per brake horsepower hour (g/bhp-hr), and greater than 0.01 g/bhp-hr.

- The engine must be certified to either an oxides of nitrogen (NOx) or NOx plus non-methane hydrocarbons emission level of at most 2.8 g/bhp-hr and at least 2.0 g/bhp-hr.

- 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 rated to no more than 500 horsepower and at least 150 horsepower.

- The engine must have a displacement of no more than 15 liters and at least 5.9 liters.

- The engine may or may not have exhaust gas recirculation.

- The engine must not have a pre-existing original equipment manufacturer (OEM) diesel particulate filter (DPF).

- The engine may or may not have a pre-existing OEM oxidation catalyst.

- The engine must remain in its original certified configuration, except that if an OEM oxidation catalyst is present, it may be removed if the A_{dv}CCRT™ system is installed. Should the A_{dv}CCRT™ system be removed, the OEM oxidation catalyst must be re-installed, returning the engine to its original certified configuration.

- The engine must have a four-stroke combustion cycle.

- The engine must be turbocharged.

- The engine must be electronically controlled.

- The engine must be operated on fuel that has a sulfur content of no more than 15 parts per million by weight.

- The engine must not be operated on fuel that contains more than 5 percent by volume biodiesel.

- The application must have a duty cycle with an average temperature profile greater than 240 degrees Celsius for 40 percent of the operating cycle.

- 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 product must not be operated with a fuel additive, as defined in Title 13, CCR, Section 2701, unless explicitly verified for use with the fuel additive.

- The product must not be used with any other systems or engine modifications without ARB and manufacturer approval.

- No component of the system may be swapped to another engine or vehicle.
- The system may not be re-designated to another engine or vehicle.
- The other terms and conditions are specified below.

IT IS ALSO ORDERED AND RESOLVED: That installation of the A_{dv}CCRT™ system, manufactured by Johnson Matthey, Incorporated, of 380 Lapp Road, Malvern, Pennsylvania 19355, has been found not to reduce the effectiveness of the applicable vehicle pollution control system, and therefore, the A_{dv}CCRT™ system is exempt from the prohibitions in Section 27156 of the Vehicle Code for installation on heavy-duty on-road vehicles using engines listed in Attachment 1.

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

The A_{dv}CCRT™ system must be installed as designed and consists of a diesel oxidation catalyst, a catalyzed cordierite wall-flow DPF, a fuel injection system, a mixer section, a hydrocarbon based NO_2 decomposition system, and a backpressure monitor. The backpressure monitor must include a display in the cabin that notifies the operator when the backpressure limit has been reached. The notification must occur and be clearly visible to the operator while the vehicle or equipment is in use. The major components of the A_{dv}CCRT™ system are identified in Attachment 2. Schematics of the approved product and engine labels are shown in Attachment 3.

This Executive Order is valid provided that installation instructions for the A_{dv}CCRT™ system do not recommend tuning the vehicle to specifications different from those of the vehicle manufacturer.

Changes made to the design or operating conditions of the A_{dv}CCRT™ system, as exempted by ARB, which adversely affect the performance of the vehicle's pollution control system shall invalidate this Executive Order.

No changes are permitted to the device. ARB must be notified, in writing, of any changes to any part of the A_{dv}CCRT™ system. Any changes to the device must be evaluated and approved in writing by ARB. Failure to do so shall invalidate this Executive Order.

Johnson Matthey, Incorporated, must ensure that the installation of the A_{dv}CCRT™ system conforms to all applicable industrial safety requirements.

Marketing of the A_{dv}CCRT™ system using identification other than that shown in this Executive Order or for an application other than that listed in this Executive Order is 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 Attachment 3 of this Executive Order.

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 A_{dv}CCRT™ system advertised, offered for sale, sold with, or installed on a motor vehicle prior to or concurrent with transfer to an ultimate purchaser.

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

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

As stated in the Procedure, Johnson Matthey, Incorporated, is responsible for complying with recordkeeping requirements (Section 2702), honoring the required warranty (Section 2707), and conducting in-use compliance testing (Section 2709).

This Executive Order 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 5 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; and

- The diesel fuel portion of the blend complies with Title 13, CCR, Sections 2281 and 2282.

Proper engine maintenance is critical for the proper functioning of the diesel emission control strategy. The owner and/or operator of the vehicle 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.

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 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 Johnson Matthey 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 supersedes Executive Order DE-09-004-02 dated May 13, 2010, Executive Order DE-09-004-01 dated October 23, 2009, and Executive Order DE-09-004 dated April 9, 2009, for this diesel emission control strategy.

Executed at El Monte, California, and effective this 6th day of October 2010.

Robert H. Cross, Chief
Mobile Source Control Division

Attachment 1: Table 1: ARB Approved Engine Families for the A_{dv}CCRT™ System
Table 2: ARB-Approved Federal Engine Families for the Johnson Matthey A_{dv}CCRT™

Attachment 2: Johnson Matthey Basic A_{dv}CCRT™ System Part's List

Attachment 3: Labels for the A_{dv}CCRT™ System