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Johnson Matthey Catalysts

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Statement
Of
Johnson Matthey Stationary Emissions Control LLC
On The
State of California
CALIFORNIA AIR RESOURCES BOARD
Notice of Public Availability of Modified Text
PUBLIC HEARING TO CONSIDER AMENDMENTS TO THE VERIFICATION PROCEDURE, WARRANTY, AND IN-USE COMPLIANCE REQUIREMENTS FOR IN-USE STRATEGIES TO CONTROL EMISSIONS FROM DIESEL ENGINES

DRAFT PROPOSED 15-DAY MODIFICATIONS COMMENTS

California Code of Regulations, Title 13, Division 3

Chapter 14. Verification Procedure, Warranty, and In-Use Compliance Requirements for In-Use Strategies to Control Emissions from Diesel Engines

§ 2703. Emission Testing Requirements

PROPOSED NEW REGULATION:

Page 20, (c) Diesel Emission Control Strategy Requirements and Pre-conditioning.

(1) The diesel emission control strategy must be appropriately sized for the emissions test engine(s) based on the sizing information provided in the application and must be approved by the Executive Officer. If the sizing methodology or the test unit and engine combination indicated in the test plan approval letter changes during testing or during the application review process, the application will be re-evaluated and a new test plan approval letter, which may include additional testing, must be issued by the Executive Officer before any further testing commences. Any testing conducted prior to the sizing change may be rejected at the Executive Officer's discretion.

(2) If a diesel emission control strategy includes both single and multiple filter designs, the sizing of both designs is subject to the requirements and conditions in section 2703(c)(1). Both single and multiple configurations require complete emissions and durability testing (see section 2704) unless:

(A) The multiple-filter design has only one filter per exhaust manifold,

(B) The multiple filter design involves multiple filters housed within one can. Additional testing requirements for this configuration are at the discretion of the Executive Officer.

(C) The applicant demonstrates to the satisfaction of the Executive Officer that full testing of one configuration is worst case and therefore sufficient to support verification of the other configuration.

(3) The engine or vehicle installed with a diesel emission control strategy must be operated for a break-in period of between 25 and 125 hours before emission testing. Note that special pre-conditioning requirements may apply. See section 2706(a)(4) for details.

JOHNSON MATTHEY COMMENTS:

(c) (1) - This requirement should only apply to new verifications.

(c) (2) (A) (B) – It is impractical to test large engines for multiple configurations due to the high cost of engine rental and fuel usage involved.

§ 2704. Durability Testing Requirements

PROPOSED NEW REGULATION:

Page 21, (a) The applicant must demonstrate, to the satisfaction of the Executive Officer, the durability of the applicant's diesel emission control strategy through an actual field or laboratory-based demonstration combined with chassis or engine dynamometer-based emission tests.

(1) A laboratory-based durability demonstration is not acceptable as the primary durability data used to support verification with an emission control group that includes on-road, off-road, or APU applications. The applicant may request that the Executive Officer consider a laboratory based durability demonstration as secondary supporting data. In evaluating such a request, the Executive Officer may consider all relevant information including, but not limited to, the degree to which the proposed laboratory-based demonstration simulates real-world conditions and subjects the diesel emission control strategy to operating conditions that are either favorable or unfavorable for proper operation based on its design.

JOHNSON MATTHEY COMMENTS:

This requirement should only apply to new verifications.

PROPOSED NEW REGULATION:

Page 22, (5) If a diesel emission control strategy includes both single and multiple filter designs, the sizing of both designs is subject to the requirements and conditions in section 2703(c)(1). Both single and multiple configurations 23 require complete emissions and durability testing (see section 2704) unless:

(A) The multiple-filter design has only one filter per exhaust manifold,

(B) The multiple filter design involves multiple filters housed within one can. Additional testing requirements for this configuration are at the discretion of the Executive Officer.

(C) The applicant demonstrates to the satisfaction of the Executive Officer that full testing of one configuration is worst case and therefore sufficient to support verification of the other configuration.

JOHNSON MATTHEY COMMENTS:

It is impractical to test large engines for multiple configurations due to the high cost of engine rental and fuel usage involved.

PROPOSED NEW REGULATION:

Page 23, (B) The multiple filter design involves multiple filters housed within one can. Additional testing requirements for this configuration are at the discretion of the Executive Officer.

JOHNSON MATTHEY COMMENTS:

The term can should be clarified to also include housing.

PROPOSED NEW REGULATION:

Page 27, (k)(l) Conditional Verification for Off-road and Stationary Applications. If the Executive Officer determines that the diesel emission control strategy is technologically sound and appropriate for the intended application, he may grant a conditional verification for off-road and stationary applications upon completion of 33 percent of the minimum durability period. In making this determination, the Executive Officer may consider all relevant information including, but not limited to, the following: the design of the diesel emission control strategy, filter and catalyst substrates used, similarity of the strategy under consideration to verified strategies, the intended application of the diesel emission control strategy, other relevant testing data, and field experience. Where conditional verification is granted, full verification must be obtained by completing the durability testing and all other remaining requirements. For stationary, marine, RTG crane, and TRU applications, These requirements must be completed within a year after receiving conditional verification. For off-road applications, the requirements must be completed within two years after receiving conditional verification. For the aforementioned time periods, conditional verification is equivalent to verification for the purposes of satisfying the requirements of in-use emission control regulations except as otherwise provided in section 2709. For all applications, failure to complete the requirements within the specified time may result in revocation of the conditional verification and the recall provisions of section 2709 of this Procedure. Strategies that include the use of alternative diesel fuels or fuel additives are not eligible for conditional verification.

JOHNSON MATTHEY COMMENTS:

For stationary applications, these requirements should be completed within two years after receiving conditional approval. One year is insufficient due to limited hours of operation of the equipment.

§ 2706. Other Requirements.

PROPOSED NEW REGULATION:

Page 33, (f) Operational Data Monitoring and Storage Requirements.

(3) Vehicles or equipment that can be operated from multiple locations by end-users must include a secondary notification system on the vehicle or equipment to alert the operator of a high backpressure condition.

JOHNSON MATTHEY COMMENTS:

For stationary generator engines, the overwhelming majority of which are for emergency use, operating engines from multiple locations is rare. We recommend that stationary engines be excluded. The addition of a second alert would require the incorporation of the "Johnson Matthey Remote Display Module (P/N 9363)" as part of our CRTdm kit, adding significant cost. In addition, the requirement"Non-resettable by the operator" is not defined, and could require expensive hardware modifications.

PROPOSED NEW REGULATION:

Page 33, (f) Operational Data Monitoring and Storage Requirements.

(3)(A) The final, maximum high backpressure notification must be nonresettable by the operator and must meet the following requirements:

1. If the notification is triggered, it must remain on until a qualified technician can examine the engine and filter to determine the cause of the high backpressure condition.
2. If the notification is triggered and the engine is subsequently turned off, it must immediately resume when the engine is turned back on.

3. If the notification is triggered and the notification system subsequently either loses power or otherwise becomes nonfunctional, the notification must immediately resume when the system becomes operational.

JOHNSON MATTEHY COMMENTS:

This requirement should not apply to in-use VDECS as the cost to replace the current CRTdm would be extremely costly. In addition, requirements 2 and 3 should be excluded completely as this would result in the CRTdm being non-functional.

PROPOSEDE NEW REGULATION:

Page 34, (f) Operational Data Monitoring and Storage Requirements.

(6) An applicant must submit to the Executive Officer at the time of application all software and hardware that are required to interface with the diesel emission control strategy and download and view all recorded data. All such software and hardware associated with a diesel emission control strategy that is already verified must be submitted to the Executive Officer by the applicant no later than six months following the effective date of this part of the regulation.

JOHNSON MATTHEY COMMENTS:

The software is proprietary to Johnson Matthey, and must be protected by confidentiality agreements.

PROPOSED NEW REGULATION:

Page 37, (n) Installation Manual.

The installation manual must include sufficient detail to enable the installer to properly install the diesel emission control strategy such that the installation is free from defects in workmanship, materials, or operation which could cause any of the components of the diesel emission control strategy to fail and allow the installer to warrant the installation pursuant to section 2707(a)(2)(A).

(1) The installation manual must include the criteria that will be used by the applicant to authorize a person or company to install their verified diesel emission control strategy.

(2) The installation manual must also include the criteria that will be used by the applicant to revoke a person or company's authorization to install their diesel emission control strategy.

JOHNSON MATTHEY COMMENTS:

Johnson Matthey does not install VDECS for stationary generators, therefore we can only provide criteria that is limited to the function and operation of the VDECS. It is inappropriate for us to authorize or revoke installers, unlike for mobile applications. In the stationary sector the installers are typically contracted / hired by engine dealers / OEMs, by engine packagers, or by end users, but are not in a contractual business relationship with Johnson Matthey Stationary Emissions Control LLC. However, we can make our O&M manual, which contain the criteria, available to them.

PROPOSED NEW REGULATION:

Page 38, (t)Pre-Installation Compatibility Assessment. The applicant, ~~distributor~~, or <u>authorized</u> installer (i.e., the party conducting the pre-installation compatibility assessment) must be able to demonstrate, to the satisfaction of the Executive Officer, that a candidate engine being considered for retrofit is compatible with the verified diesel emission control strategy by ensuring that each candidate engine meets all the terms and conditions of the Executive Order prior to installation.

(1) Each applicant must establish specific criteria to determine the suitability of a candidate engine prior to installation and provide this information to their authorized installers. This must include but is not limited to: a smoke opacity limit, oil consumption limits, fuel inspection requirements, visual inspections, and other assessment criteria that may be used to determine

that the candidate engine is appropriate for use with the diesel emission control strategy and that the candidate engine is in a proper state of maintenance and operating within the engine manufacturers specifications. Candidate engines that do not meet the suitability criteria or that have a smoke opacity measured in accordance with Society of Automotive Engineers J1667 test procedures that exceeds the limit established by the applicant must not be retrofit with the diesel emission control strategy.

(A) The applicant must select and define specific criteria (e.g., oil consumption limits, fuel inspection requirements, visual inspection requirements, ensure adherence to all the terms of the verification Executive Order, etc.) that can be used by the installer to ensure that the candidate engine is appropriate for use with the diesel emission control strategy.

(B) The applicant must select a smoke opacity limit measured in accordance with Society of Automotive Engineers J1667 test procedures that serves to prevent installation of a diesel emission control strategy on an engine that is not appropriate for use with the diesel emission control strategy.

(C) For a diesel emission control strategy that is already verified, the holder of the verification must establish and implement specific criteria, including a smoke opacity limit, which may be used to determine the suitability of a candidate engine no later than ix months following the effective date of this part of the regulation.

(D) For engines that operate at a constant-speed or are otherwise designed such that they are unable to follow Society of Automotive Engineers J1667 test procedures, the applicant must propose an alternate criterion instead of a smoke opacity level to determine the suitability of a candidate engine prior to installation.

~~(1)~~(2) For diesel emission control strategies that have exhaust gas temperature requirements for successful operation, the applicant, distributor, or authorized installer (i.e., the party conducting the preinstallation compatibility assessment) must measure and record the exhaust gas temperature for each candidate engine to determine if the temperature requirements are satisfied. These measurements must represent the most challenging duty cycle (i.e., pattern of use) of the candidate engine with respect to the temperature requirements. Notwithstanding, the applicant is responsible for ensuring that the candidate engine is properly assessed. In lieu of logging data for each candidate engine, only the applicant may choose to data-log a representative number of candidate engines, provided the following requirements are met:

JOHNSON MATTHEY COMMENTS:

The cost to comply with this new regulation for in-use VDECS is extremely high. We suggest that this be limited to only new VDECS sold. As stated above for stationary generators, Johnson Matthey has no relationship with the installers, therefore, we cannot be responsible for the on-site assessment. In addition, we are not engine experts and thus do not have sufficient knowledge of engine operation. We suggest that the regulation require the end user to operate and maintain the engine according to the engine manufacturer's specification.

PROPOSED NEW REGULATION:

Page 42, (u) Requirements for Installers of Diesel Emissions Control Strategies

(1) Any party that installs a diesel emission control strategy must be authorized and trained by the party that holds the verification for the diesel emission control strategy.

(2) Any party that installs a diesel emission control strategy must comply with the pre-installation assessment requirements in section 2706(t).

(3) All installations must strictly adhere to the requirements of the party that holds the verification for the diesel emissions control strategy and must not relocate the original equipment manufacturers exhaust system:

(A)Over any occupied space (e.g., driver or passenger compartments); or

(B)That would result in any noncompliance with any applicable safety standards such as but not limited to Federal Motor Carrier Safety Administration, Subpart G, Miscellaneous parts and accessories, section 393.83 Exhaust systems; or

(C)Any other location deemed unacceptable by the applicant.

(4) Any party that installs a diesel emission control strategy must offer a warranty pursuant to section 2707(a)(2).

JOHNSON MATTHEY COMMENTS:

As stated above, Johnson Matthey Stationary Emissions Contrl LLC does not have a business relationship with the installers. We can provide general guidance in the form of our manuals, but are not in the business of training or authorizing installers.

PROPOSED NEW REGULATION:

Page 42, (v) Training Requirements. The applicant is responsible for developing training to ensure end-users can safely operate and maintain their diesel emission control strategy. This training must include, at a minimum: a review of the pre-installation compatibility assessment criteria results, the effects of engine maintenance on the strategy's performance, identification of all warning and/or fault alarms and appropriate end-user responses, and cleaning and maintenance information for the strategy. The applicant or their authorized installer is responsible for ensuring that this training is presented to the end user before the vehicle, equipment, or engine is put back into service following the installation of the strategy and must be available to the end-user on an on-going basis (e.g., online training materials).

JOHNSON MATTHEY COMMENTS:

Training materials will be made available, but it is up to the end users to utilize the materials. We cannot therefore "ensure" that end users operate their strategies in a safe manner, nor can we "ensure that this training is presented" .We can make the training materials available to the end users, but it is up to them to access, review, digest, and implement the information in the materials.

PROPOSED NEW REGULATION:

Page 42-43, (w) Safety Considerations. The applicant must give consideration to safety and catastrophic failure in the design of the diesel emission control strategy. The Executive Officer addresses safety as follows:

(1)The applicant must provide an analysis of all potential safety and catastrophic failure issues associated with the use of the diesel emission control strategy including an analysis of all potential failure modes. This analysis must include, but is not limited to, the effects of: uncontrolled regeneration, improper maintenance, unfavorable operating conditions, use of inappropriate fuel, high exhaust temperatures, substrate failure, and sensor failures. For any potential safety or catastrophic failure issues identified, the applicant must provide a detailed description of the safety risk mitigation strategies that it employs.

(2) The Executive Officer may require additional safety testing and design modifications to the diesel emission control strategy both before and after verification of the diesel emission control strategy. In making these determinations, the Executive Officer may consider all relevant information including, but not limited to, the safety and catastrophic failure analysis provided by the applicant, system design, properties of the materials used by the

diesel emission control strategy, field experience, and warranty report data. The Executive Officer may require that safety testing be conducted by an independent test facility that has appropriate safety testing experience.

(3) If the Executive Officer determines that an applicant has not made a satisfactory demonstration of the safety of its diesel emission control strategy, the Executive Officer may deny the applicant's request for verification or revoke an existing verification.

JOHNSON MATTHEY COMMENTS:

The applicant can only supply this information for the VDECS, but not for the site or the installation. The

PROPOSED NEW REGULATION:

Page 43, (x) Technical service bulletins, pre-installation compatibility assessment criteria, other service related information, or any other documentation that effects the proper operation and maintenance of the diesel emission control strategy provided to end-users, authorized installers, or distributors must be submitted concurrently to ARB. Submission of such information does not relieve applicants from the design modification requirements of section 2702(j) nor does it constitute ARB approval.

JOHNSON MATTHEY COMMENTS:

With regards to pre-installation compatibility, the applicant has established VDECS compatibility with the engine by applying the VDECS specific criteria in assembling the Verified Engine Families list, which is approved by the Executive Officer. This Verified Engine Families list can be made available to installers and end users by incorporation in our O&M manual.

§ 2707 Warranty requirements

PROPOSED NEW REGULATION:

2 (C) The installation warranty coverage provided by installers must meet
the same requirements as the warranty coverage provided by the applicant as established in subsection (a)(1) (C)-(E) and the same exclusions apply.

JOHNSON MATTHEY COMMENT:

This section should be modified to read – The warranty coverage <u>period</u> must meet the same requirements as the warranty coverage <u>period</u> provided by the applicant. An installation warranty would not, for example, include performance guarantees that are provided by the applicant, since the installer would not be able to make such a guarantee.]

PROPOSED NEW REGULATION:

B (1) Warranty Coverage

This coverage also applies to any parts replacements, sizing changes, or adjustments that are required to appropriately match the diesel emission control system to the engine on which it is installed.

JOHNSON MATTHEY COMMENT:

This section should exclude parts replacements that are in violation of the warranty of the applicant, or otherwise due to mis-use of the system, and explicitly excludes any catalyst replacements or adjustments due to poisoning, fouling, or masking. No adjustments shall be required under any warranty due to aging of the engine which alter operating conditions of the engine, or any changes to use of the engine due to changes in duty cycle or engine maintenance or operational issues which affect the verified system (VDECS). To submit a claim under this section after the emission control system has been successfully commissioned and accepted by the end user, the end user must provide

documentation that the engine operating conditions, performance, and emissions have not changed. The way this new sentence is written could be misconstrued to imply that the applicant is required make modification to the engine – this clause can only apply to modifications to the diesel emission control system, not to the engine.