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Ingersoll Rand Comments on CEC Notice of Proposed Action, Commercial and Industrial Air Compressors

Additional submitted attachment is included below.

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December 28, 2018

Mr. Alejandro Galdamez
California Energy Commission
Docket Unit, MS-4
1516 Ninth Street
Sacramento, CA 95814-5512

Re: Docket No. 18-AAER-05 – Notice of Proposed Action, Appliance Efficiency Regulations for Commercial and Industrial Air Compressors

Dear Mr. Galdamez:

Thank you for the opportunity to comment on the California Energy Commission (CEC) Notice of Proposed Action, Appliance Efficiency Regulations for Commercial and Industrial Air Compressors, published on November 16, 2018 (Notice of Proposed Action).

Ingersoll Rand (NYSE:IR) advances the quality of life by creating and sustaining safe, comfortable and efficient environments. Our people and our family of brands - including Club Car, Ingersoll Rand, Thermo King and Trane - work together to enhance the quality and comfort of air in homes and buildings; transport and protect food and perishables; and increase industrial productivity and efficiency. Our company is helping to solve some of the world's most pressing challenges including the demand for energy resources and its impact on the environment. In 2014, Ingersoll Rand announced a roadmap to increase energy efficiency and reduce environmental impact from our operations and product portfolio to result in 20.85 million metric tons of CO_2e avoidance globally by 2020. Ingersoll Rand was an original signatory to the "We Are Still In" declaration confirming our commitment to stand by plans that align with the targets set by the Paris Agreement regarding reducing carbon emissions to avert the worst effects of climate change. As such, we are eager to work with the state of California as it seeks to meet its 2030 goals of doubling energy efficiency savings and reducing overall emissions by 40 percent of 1990 levels.

Ingersoll Rand supports implementation of the U.S. Department of Energy (DOE) Pre-publication *Federal Register* Final Rule Pertaining to Energy Conservation Standards for Commercial and Industrial Compressors, issued on December 5, 2016 (EERE-2013-BT-STD-0040). We were one of many stakeholders who provided input to DOE during the open rulemaking process, some of which was incorporated into the Final Rule. If finalized in California's Appliance Efficiency Regulations, CEC's Notice of Proposed Action would establish requirements for Commercial and Industrial Air Compressors equivalent to those contained in the DOE Pre-publication *Federal Register* Final Rule. Ingersoll Rand supports the finalization of this Notice of Proposed Action without modification, but notes that there are clarifications regarding enforcement of the regulations that the air compressor industry had sought from DOE and remain relevant questions for the CEC.

Implementation of this Notice of Proposed Action will benefit the air compressor industry in two key ways:

Alignment with Investments and Market Readiness

Ingersoll Rand is committed to continued investment in energy efficiency improvements for our air compressor portfolio to provide market-leading products, and we expect that other manufacturers have the same goals. Implementation of the appliance efficiency regulations as proposed in the Notice of Proposed Action will create regulatory certainty in the California market consistent with our expectations regarding the DOE Final Rule.

Consistency in Declarations of Product Performance

Implementation of the Notice of Proposed Action will also mean enforcement of the DOE Test Procedures Regarding Commercial and Industrial Air Compressors in California. Ingersoll Rand expects that enforcement of the Test Procedures will ensure consistent, verified representations of air compressor energy performance in the State. We also note that adoption of the DOE Alternative Energy Determination Methods (AEDM) for product certification by the CEC for the use of representing air compressor performance will significantly decrease manufacturer testing burden.

Clarifications Sought Regarding Enforcement of the Appliance Efficiency Regulations for Commercial and Industrial Air Compressors

In the DOE Pre-publication *Federal Register* Final Rule, Section III(G)(1)(C) states:

DOE understands that manufacturers of compressors may have historical test data that were developed based on ISO 1217:2009(E). If historical test data is based on the same methodology being adopted in this final rule, then manufacturers may use this data for the purposes of representing any metrics subject to the representations requirements.

This acknowledgment is critical, as it allows manufacturers to rely on existing test data in order to establish ratings based on historical data, so long as it is representative of the values expected should the equipment be tested under the new Test Procedures. In order to comply with appliance efficiency regulations within a reasonable amount of time, we must be able to rely on existing test data prior to the enforcement of the Test Procedures. The time and resources that would be required for the industry to re-test all of its equipment would place a significant burden on manufacturers, and it is not possible to complete this process by January 1, 2022. Ingersoll Rand requests that CEC make the same clarification as Section III(G)(1)(C) in the DOE Pre-publication *Federal Register* Final Rule regarding enforcement of the appliance efficiency regulations in California.

Additionally, the Compressed Air & Gas Institute (CAGI), the trade association representing air compressor manufacturers of which Ingersoll Rand is a member, has made several interpretations regarding the certification of products using the DOE Test Procedures for Commercial and Industrial Air Compressors. These interpretations were communicated in a letter from CAGI to DOE dated August 9, 2017 (appended to these comments for reference), and summarized below:

1. AEDM Tolerance: In §429.70(h)(2)(ii)(a), the 5% tolerance applies for validation of the AEDM, when comparing the physical test results of the basic models upon which the AEDM is based and the output of the AEDM. Ingersoll Rand interprets this to mean that a verification test on a single basic model would be acceptable so long as value is not more than 5% lower than the value calculated using the AEDM. We also interpret this to be applicable for custom products based on a basic model, for which a rating is derived using an AEDM, but only has a sample size of 1.
2. ISO Tolerances: The DOE test procedure is based on ISO 1217 and the tolerances in the standard are applicable. In §431.343, Materials incorporated by reference, Section (b)(1)(vi) states the following: "*Annex C (normative), Simplified acceptance test for electrically driven packaged displacement compressors (excluding C.1.2, C.2.1, C.3, C.4.2.2, C.4.3.1, and C.4.5)*." Annex C, C.1.1 includes Table C.1, Maximum deviations from specified values during an acceptance test, and Table C.2, Maximum deviations permissible at test. Ingersoll Rand interprets this to mean that allowable test tolerances as listed in ISO1217 Table C.1 may be used when conducting a single test on individual basic models. For low volume sample sizes, Ingersoll Rand assumes that the principles of Appendix B to Subpart C of Part 429, with regard to the determination of LCL (lower control limit) based on the true mean, standard deviation and standard error shall apply.
3. Specialty Equipment: For custom or specialty equipment, Ingersoll Rand assumes that if a customer requests modification to a basic model, this custom product may be rated by following the AEDM procedures for the basic model, and testing of the modified model is not required. Such modifications may add additional energy-consuming components that are necessary to operate the package in a specialized application, which cannot be disabled or removed in a test. The basic model, upon which the modified unit is based, would be tested and the data made available to the general public.
4. Discharge Pressure: Appendix A.III.B.2.2 provides instructions regarding the determination of the maximum discharge pressure, including that a manufacturer's instructions regarding the maximum discharge pressure are to be followed regardless of the capability of the machine. For example, if a manufacturer instructs that a compressor maximum discharge pressure is 115 psig, Ingersoll Rand assumes that 115 psig shall be used to test the equipment regardless of the actual maximum discharge pressure that the compressor may be capable of achieving.

CAGI has not received a response from DOE regarding these interpretations, and Ingersoll Rand requests that CEC confirm that these interpretations are accurate as it relates to enforcement of the Appliance Efficiency Regulations for Commercial and Industrial Air Compressors in California.

We appreciate the opportunity to provide comments on this Notice of Proposed Action, Appliance Efficiency Regulations for Commercial and Industrial Air Compressors. If you wish to discuss these comments any further, please do not hesitate to contact me.

Sincerely,

Steve Eaton
New Product Development Manager

August 9, 2017

John.Cymbalsky@EE.Doe.Gov

Mr. John Cymbalsky
U.S. Department of Energy
1000 Independence Ave. SW
Washington, D.C. 20585
Subject: Request for Affirmation of Interpretation, Test Procedures for Compressors

Dear Mr. Cymbalsky:

Members and working groups of the Compressed Air & Gas Institute (CAGI) have been analyzing the proposed test procedures for compressors for some time. We believe we understand the regulation; however, we request affirmation of our understanding of the following points:

1. AEDM Tolerance: In 429.70(h)(2)(ii)(a) the 5% tolerance only applies for validation of the AEDM, when comparing the physical test results of the basic models upon which the AEDM is based and the output of the AEDM.

   Some have interpreted the rule to permit a 5% tolerance on all tests.

2. ISO Tolerances: The DOE test procedure is based on ISO 1217 and the tolerances in 1217 are applicable.

   In §431.343, Materials incorporated by reference, the regulation, in (b)(1)(vi) states the following: "Annex C (normative), Simplified acceptance test for electrically driven packaged displacement compressors (excluding C.1.2, C.2.1, C.3, C.4.2.2, C.4.3.1, and C.4.5)." Annex C, C.1.1 includes Table C.1, Maximum deviations from specified values during an acceptance test, and Table C.2, Maximum deviations permissible at test.

   We believe it is critical that the tolerances outlined in the ISO 1217 standard be included in the regulation, and we believe it is the intent of DOE to include those tolerances.

3. Specialty Equipment: If a customer requests modification to a basic model, and the manufacturer does not provide efficiency data to the general public for this modified model, testing of the modified model is not required. The basic model, upon which the

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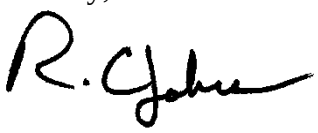
modified unit is based, would be tested with the data being available to the general public.

4. Maximum Discharge Test Pressure. Appendix A.III.B.2.2 provides instructions regarding determination of the maximum discharge pressure. A manufacturer's instructions regarding the maximum discharge pressure are to be followed when testing according to this requirement regardless of the capability of the machine. For example, if a manufacturer instructs that a compressor maximum discharge pressure is 115 psig, that is the pressure that will be tested regardless of the actual maximum discharge pressure that the compressor may be capable of achieving.

We appreciate your consideration of these comments. If you have any questions, please contact me.

Sincerely,



R. Christopher Johnson
Compressed Air and Gas Institute

RCJ/jls
cagi