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Statement for Quincy Compressor
For January 9, 2019
California Energy Commission Meeting
Regarding Agenda Item 4

Commercial and Industrial Air Compressors
Docket No. 18-AAER-05,
Proposed Rules Amending
Title 20, California Code of Regulations, §§ 1601-1609
Published November 16, 2018

Quincy Compressor submits this written statement in advance of the January 9, 2019 California Energy Commission business meeting to assure that it is heard regarding the above-referenced proposed rules, slated for consideration and possible adoption at the January 9, 2019 meeting.

For the January 9 meeting, either Mr. Chris Knuffman of Quincy Compressor, or Russell Randle, Quincy's outside counsel at Miles & Stockbridge PC, will seek to present a statement via the telephone link. That statement is supported by the attached declaration from Mr. Knuffman, submitted for the record. The substance of the statement appears below.

> Quincy Compressor makes rotary air compressors at its factory in Bay Minette, Alabama, machines subject to the Commission's proposed efficiency rule. Quincy supports adoption of the rule, provided it is amended to allow use of accurate data from prior testing in order to certify compliance with the efficiency rule. Right now such data cannot be used.
>
> Quincy has conducted costly tests of its rotary air compressors using the federal test the proposal would use to certify compliance with the California standard. Since the January 4, 2017 DOE Test Method was published in the Federal Register, but in **primarily in the past 12 months, with high priority in the lab**, in excess of 60 different basic models have so far been tested and have published DOE data on Quincy Compressor's web site. As many as 220 models must be shown to comply, either with testing or with mathematical methods validated with test data. Testing work to date would have cost around $240,000 at third-party lab rates.
>
> Even though Quincy has used the correct test and procedures, adoption of the proposed rule as written would preclude the use of these test results to certify compliance. This is because no laboratory anywhere has been certified by California to conduct this federal test. Under current rules, it appears that no laboratory can be so certified until early

2020. Nor does it appear that certification retroactively validates earlier test results, even though there is no question about the accuracy of the results.

Quincy asks that the Commission direct the issuance of a proposed amendment to fix the problem. Quincy asks that the Commission seek comment on the proposed revised language presented with Atlas Copco's December 21, 2018 comments, language which would allow use of prior DOE Tests or the prior industry test method (ISO1217) on which DOE's method is based. That revision would add language to section 1606 of the rules to authorize such use of accurate prior test data for certification and validation of related mathematical techniques known as Alternative Efficiency Demonstration Methods (AEDMs).

Quincy understands that adoption of such requested language would be subject to a 15-day notice and comment procedural requirement before the Commission can take final action on such relief.

Respectfully submitted,

Chris Knuffman

for

Russell V. Randle
Miles & Stockbridge PC
Counsel for Quincy Compressor

for

Andrew M. Hitchings
Michelle E. Chester
Somach, Simmons & Dunn
Counsel for Quincy Compressor

Attachment: Declaration of Chris Knuffman

BEFORE THE
CALIFORNIA ENERGY COMMISSION

In re:

Commercial and Industrial Air Compressors
Docket No. 18-AAER-05,
Proposed Rules Amending
Title 20, California Code of Regulations, §§ 1601-1609
Published November 16, 2018

Submitted in support of comments to be offered at January 9, 2019 Business Meeting

Declaration of Chris Knuffman

Chris Knuffman declares as follows:

1. I make this declaration in order to support comments by Quincy Compressor to be presented at the January 9, 2019 business meeting concerning the air compressor efficiency rules proposed by the California Energy Commission on November 16, 2018 ("November 16 Proposal."). My statements are made to the best of my present knowledge, information, and belief.
2. The November 16 Proposal is reportedly modeled to be as close as possible to the terms of the U.S. Department of Energy's (DOE) December 5, 2016 Final Rule for rotary air compressor energy efficiency, a rule later withdrawn by DOE before publication in the Federal Register. The November 16 Proposal is reportedly based on DOE's lengthy final rule notice ("Final Rule Package") and on the corresponding DOE Technical Support Document (TSD).
3. I have met on two occasions with Commission staff and also participated in a webinar with Commission staff concerning some of these issues. I presented comments in person at the January 3, 2019 hearing as well as submitting a December 31, 2018 written comment for Quincy Compressor.
4. In my January 2 meeting with Commission staff I specifically advised them that Quincy Compressor has been conducting many tests using the January 4, 2017 DOE Test Method. At that meeting, I explained Quincy Compressor's serious concerns that the results of this costly testing would be invalidated by the proposed rule's language, forcing costly and duplicative testing if Quincy is to continue to offer its efficient rotary compressor models in the California market. There is no valid engineering reason to ignore the prior test data for the purposes of certifying compliance with the efficiency standard contained in the November 16, 2018 proposed rule which is one of the subjects of the January 9, 2019 meeting of the Commission.
5. Section I of this Declaration explains my twenty-six years of experience with the design, manufacture, sale, and service of rotary air compressors in the United States. This experience includes:
    a. Over seven years work with the industry's trade association, the Compressed Air & Gas Institute (CAGI). I was a member of the CAGI Board of Directors for Quincy Compressor and was voting representative from May 2015 until May 2018; and
    b. Over two decades of work to make rotary air compressors more energy efficient.

6. Section II of this Declaration explains that adoption of the proposed rule without changes to authorize the use of prior lab testing for energy efficiency will likely result in Quincy Compressor having to conduct hundreds of thousands of dollars of duplicative testing without any improvement in accuracy or reliability of the data. Failure to adjust the rule to accommodate prior valid lab data is also likely to lead rotary air compressor manufacturers to withdraw a large number of highly efficient rotary compressors previously offered for sale in the California market, since the duplicative testing costs are unwarranted by the low sales volume for many such models in California.

I. Qualifications.

7. I graduated from Bradley University in 1992 with a Bachelor of Science in Industrial Engineering degree.
8. I went to work for Quincy Compressor in January 1993, twenty-six years ago. I have worked continuously in the air compressor industry since then.
9. My duties for Quincy Compressor have included over sixteen years of manufacturing engineering, two years of new product development, and over five years as product marketing manager for large rotary compressors, including those which would be regulated by the November 16 proposed efficiency rules. I am currently the Business Line Manager for Reciprocating compressors.
10. My most recent duties have included coordinating my company's efforts to initiate testing of Quincy's rotary air compressors in Quincy's Bay Minette, Alabama laboratory. These tests have used the U.S. Department of Energy's test method adopted by DOE on January 4, 2017. 82 Fed. Reg. 1052 (Jan 4, 2017). In excess of sixty different rotary compressor basic models sold by Quincy Compressor have so far been tested by the Quincy Compressor using this test method.
11. During my time in the air compressor industry, I have worked directly with hundreds of rotary air compressor customers and distributors including rotary air compressor customers located in California. I have assisted them by tailoring air compressor products to meet many different industries' needs for reliable compressed air to operate various tools and processes. I have also worked with many customers in designing, installing, maintaining, and repairing industrial and commercial compressed air systems.
12. Quincy Compressor has been a long-time member of the Compressed Air and Gas Institute (CAGI), https://www.cagi.org/membership/members/quincy-compressor.aspx, the trade association for the manufacturers of air compressors and other, related equipment in the United States.
13. I have served as Quincy Compressor's board of directors representative to CAGI from May 2015 until May 2018. I have served on multiple technical committees and sections for CAGI since becoming involved with CAGI in 2012, including the Rotary Positive Compressor Section and Engineering Committee, Reciprocating Compressor Section and System Assessment Section.
14. During my work with CAGI and in the air compressor industry, I have worked extensively with the consensus industry standard for acceptance testing of rotary air compressors. That standard, now known as ISO1217: 2009, as amended in 2016, measures various parameters used to determine the energy efficiency of rotary air compressors. The test is used throughout the air compressor industry in order to determine if a rotary air compressor in fact meets customer specifications.

15. During my work for Quincy Compressor, I participated in the DOE June 2016 hearing regarding the proposed DOE Test Method for rotary air compressor efficiency testing. I assisted in preparing comments for Atlas Copco, Quincy Compressor's parent company, regarding the DOE Test Method. I met in person with DOE personnel in Washington in January 2017, and June 2018 to discuss the formulation, application, and interpretation of the DOE rotary compressor test rule adopted January 4, 2017.

II. California's Disqualification of Existing DOE Test Method Data for Compliance Certification

A. ISO1217 and DOE Test Method.

16. The DOE Test Method is explicitly based on the consensus air compressor industry test standard for customer acceptance: ISO1217: 2009 as amended in 2016. The changes DOE made in the DOE Test Method are intended to improve the reliability and repeatability of test results.
17. Testing with the DOE Test Method measures exactly the same parameters that the ISO1217 test method measures. In both the DOE Test Method and in ISO1217, after gathering the data, a mathematical calculation is then conducted to determine the isentropic efficiency of the tested model of rotary air compressor.
18. The compliance with efficiency standards by the tested model of rotary air compressor is determined by comparing the results to the efficiency standard promulgated by the November 16 proposal. That standard is the same as the DOE efficiency standard posted December 5, 2016 but not yet published in the Federal Register.
19. The differences between ISO1217 and the DOE Test Method concern the time intervals used to take data from the operating machine, with the DOE Test Method requiring more data points at specific time intervals, something requiring automated sampling and special software. Additionally, the test equipment must yield more precise measurements, and the source of electricity must be more rigorously controlled to prevent voltage fluctuations.
20. Quincy Compressor's comparative testing of its rotary compressor models with both test methods suggests that the differences in accuracy between ISO1217 testing and the DOE Test Method are minimal, as explained below
21. The DOE Test Method requires that two units of each model be tested.
22. Quincy Compressor, as a member of CAGI, has access to an independent testing laboratory, Intertek. I am informed that the 2019 cost of such laboratory testing is about $4,000 per model using the DOE Test Method.

B. Quincy Compressor's Testing of Rotary Air Compressor Models with DOE Test Method.

23. Quincy Compressor already tests each completed rotary air compressor unit it makes in Bay Minette, Alabama manufacturing plant before shipment to the customer. This test is conducted at the conclusion of production, using the ISO1217 Test Method. This is a step in Quincy Compressor's quality control and quality assurance procedures.
24. Despite the minimal differences in accuracy and some statements by DOE that ISO1217 data would be usable to certify compliance with the DOE efficiency standard, Quincy Compressor has undertaken the costly effort to test its rotary air compressor models with the DOE Test

Method, starting in 2017. This testing is conducted, not on the production line, but in the Quincy Compressor test laboratory in Bay Minette, Alabama.

25. The equipment and software used in the laboratory complies with the DOE Test Method. This equipment is more delicate than the equipment used on the production line, where more rugged equipment is appropriate.
26. Acquisition of the additional equipment and software for the Bay Minette, Alabama laboratory to use the DOE Test Method cost Quincy Compressor in excess of $50,000. Substantial additional costs were incurred to train laboratory personnel, calibrate equipment, and develop internal Quality Control/Quality Assurance/Quality Control (QA/QC) protocols for the DOE Test Method.
27. To date, in excess of 60 different rotary air compressor models have been tested by Quincy Compressor in its Bay Minette, Alabama laboratory. At the quoted Intertek rates, this effort would have cost Quincy Compressor around $240,000, not counting Quincy Compressor's additional costs for shipping and for accompanying personnel.

C. California Proposed Rule and Disqualification of Valid DOE Test Method Data for Compliance Certification

28. The November 16 Proposal requires that before a basic rotary air compressor model can be offered for sale in California, that model must be certified to meet the new energy efficiency standard, relying upon the DOE Test Method.
29. The November 16 Proposal, like the DOE test rule, also allows for the use of an Alternative Efficiency Demonstration Method (AEDM), a mathematical projection of efficiency. That AEDM, however, must be validated using test data gathered using the DOE Test, 10 C.F.R. Section 429.70(h). It is unclear whether such validation testing under the November 16 proposal would have to have been conducted by a California certified laboratory, and whether past test data can be used for validation purposes.
30. The November 16 Proposal incorporated by reference some of the DOE Test Rule adopted January 4, 2017, but omitted one key provision, 10 C.F.R. Section 431.343. The omitted provision would appear essential for the Commission to have an enforceable test rule, because that section in fact incorporates the ISO1217 testing provisions to be actually applied. This deficiency in the November 16 proposal was brought to the Commission's attention at the January 3, 2017 hearing by two of the witnesses.
31. According to the Modern Appliance Efficiency Database System (MAEDBS), ***there are currently no laboratories anywhere*** certified by the State to conduct any air compressor efficiency test, whether that test is the one set forth in the DOE test rule, or any other compressor test, such as ISO1217:2009, as amended in 2016.
    https://cacertappliances.energy.ca.gov/Pages/CompanyInfo/CompanyList.aspx
32. I am informed that the Commission will allow efficiency testing done by manufacturers to be accepted provided that the manufacturer's laboratory has obtained state certification. Quincy Compressor's testing laboratory in Bay Minette, Alabama has not yet been certified by the State of California to conduct the required air compressor efficiency testing. It appears that there is no means by which Quincy Compressor can even apply for its laboratory to be certified until at least early November 2019, for calendar 2020.
33. According to the MAEDBS website, certifications of third-party laboratories are prospective: "Test lab applications for the next certification year become available on November 1st each year." https://cacertappliances.energy.ca.gov/Login.aspx. This MAEDBS website language also suggests that laboratories could not apply to be certified until November 1, 2019, for

testing to be conducted starting in calendar 2020. I am informed that the MAEDBS does not currently provide any way to submit such an application for this test method.

34. Given this MAEDBS regulatory language, it appears that only data generated by a certified test laboratory AFTER the laboratory has been certified by the State of California can be used to register a product for sale on the MAEDBS, either directly or through use of AEDMs validated with such test data.

D. California's Invalidation of Past Test Data for Compliance Certification Will Have Severe- and Completely Avoidable – Adverse Economic Impacts on Quincy Compressor and Other Rotary Air Compressor Manufacturers and May Foster Energy *Inefficiency* through Mismatch of Remaining Equipment.

35. If no prior DOE Test data can be used, it appears the November 16 Proposal will require ***re-testing*** of at least sixty different models of Quincy Compressor's rotary air compressor models, an effort which would cost at least $240,000 in a commercial laboratory.

36. Quincy continues to have ***additional DOE testing*** required both for basic models and for testing needed to be able to validate AEDMs for its additional rotary air compressor models.

37. Quincy has nearly 220 basic rotary compressor models covered by this regulation, each of which will need to be tested or modeled with a validated AEDM.

38. Additionally, if laboratories cannot be certified until the next calendar year, and pre-certification data cannot be used, then none of the test data generated by Quincy Compressor in calendar 2019 will be usable either.

39. Similarly, if no prior DOE Test data can be used, it appears that no manufacturer can begin to avail itself of alternative efficiency demonstration methods (AEDMs) until new testing has been conducted by a certified laboratory so that the AEDM can be validated. Thus, that process appears delayed at least until early in calendar 2020 and probably later, given the need to conduct multiple tests.

40. There is no indication in the November 16 Proposal that laboratory certification delays and laboratory capacity for such efficiency testing were considered or addressed.

41. Forcing manufacturers to wait until calendar 2020 to certify laboratories and thus to begin the required testing will create significant laboratory capacity problems, problems internal to Quincy Compressor and other manufacturers, as well as for any third-party laboratory seeking such certification. I am informed that no third-party laboratory has yet been certified by California to conduct the DOE Test Method, nor apparently is there any way for such a laboratory to do so until calendar 2020.

42. Based on my knowledge of the rotary air compressor industry, I believe other manufacturers will also face very substantial problems with laboratory capacity and the disqualification of potentially millions of dollars of test results, even though there is no valid engineering or technical reason to question the accuracy of the data.

43. If no prior DOE Test Rule data and if no ISO1217 past data can be used, then manufacturers will face very high testing costs in order to sell any of their rotary air compressor models in the State of California.

44. If all of the approximately 220 of Quincy Compressor's basic rotary air compressor models have to be tested – or re-tested - using the DOE requirement of two units tested per basic model (at Intertek's rates roughly $4,000 per basic model) in order to certify compliance, the testing costs would exceed $ 880,000. These costs would be in addition to the substantial costs (around $250,000 at third-party lab rates) already incurred to obtain valid DOE test data, data the November 16 proposal would refuse to allow to be used to certify compliance.

45. For a large number of the affected models, Quincy has no California sales in any given year, particularly for less common air flow or pressure specifications. Nonetheless, under the November 16 proposal, every model offered for sale would have to certified, based on testing conducted by a laboratory certified by the State of California. I believe other rotary air compressor manufacturers will face similar problems.
46. Refusing to allow the use of prior DOE Test results and prior ISO1217 test results will have a significant adverse impact on manufacturers offering rotary air compressors for sale in California.
47. If the Commission insists that past testing data cannot be used to certify compliance, and cannot be used to validate AEDMS, but instead must be generated anew by certified laboratories, I estimate that a large percentage of efficient rotary air compressor models, machines which would actually comply with the efficiency standard, will simply be withdrawn from California sales since sales volumes are too low to warrant the additional testing or validation expense the November 16 proposal insists upon creating.
48. The withdrawal of many rotary air compressor models that comply with efficiency standards from the California market will obviously do nothing to improve energy efficiency.
49. The likely California customer response to a sharp reduction of efficient rotary air compressors is to choose either used machines (not subject to regulation) or to choose machines that are poorly matched in size.
50. This predictable substitution effect is likely to resulting in significant – and completely avoidable – energy ***inefficiency*** since older or poorly sized equipment will not operate as efficiently as equipment correctly matched to the duty cycle and application desired.

I certify under penalty of perjury under the laws of the State of California that the foregoing is true and correct:

Chris Knuffman

Bay Minette, Alabama January 7, 2019