



[6450-01-P]

DEPARTMENT OF ENERGY

[Case Number 2019-001; EERE-2019-BT-WAV-0004]

Energy Conservation Program: Notice of Petition for Waiver of ECR International, Inc. from the Department of Energy Furnace Fan Test Procedure and Grant of Interim Waiver

AGENCY: Office of Energy Efficiency and Renewable Energy, Department of Energy.

ACTION: Notice of petition for waiver and grant of an interim waiver; request for comments.

SUMMARY: This notice announces receipt of and publishes a petition for waiver and interim waiver from ECR International, Inc. (“ECR”), which seeks a waiver for specified furnace fan basic models, which are belt-driven, single-speed, and designed for use in “heat-only” applications, from the U.S. Department of Energy (“DOE”) test procedure used for determining the energy consumption of furnace fans. DOE also gives notice of an Interim Waiver Order that requires ECR to test and rate the specified furnace fan basic models in accordance with the alternate test procedure set forth in the Interim Waiver Order. DOE solicits comments, data, and information concerning ECR’s petition and its suggested alternate test procedure, as well as the alternate test procedure specified in the interim waiver granted by DOE, to inform DOE’s final decision on ECR’s waiver request.

DATES: The Interim Waiver Order is applicable [INSERT DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]. Written comments and information are requested and will be accepted on or before [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*].

ADDRESSES: Interested persons are encouraged to submit comments using the Federal eRulemaking Portal at <https://www.regulations.gov>. Follow the instructions for submitting comments. Alternatively, interested persons may submit comments, identified by case number

“2019-001” and/or Docket number “EERE-2019-BT-WAV-0004,” by any of the following methods:

- *Federal eRulemaking Portal:* <https://www.regulations.gov>. Follow the instructions for submitting comments.
- *E-mail:* ECR2019WAV0004@ee.doe.gov. Include Case No. 2019-001 and/or Docket number EERE-2019-BT-WAV-0004 in the subject line of the message.
- *Postal Mail:* Appliance and Equipment Standards Program, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Office, Mailstop EE-5B, Petition for Waiver Case No. 2019-001/ Docket number EERE-2019-BT-WAV-0004, 1000 Independence Avenue, SW., Washington, DC 20585-0121. If possible, please submit all items on a compact disc (“CD”), in which case it is not necessary to include printed copies.
- *Hand Delivery/Courier:* Appliance and Equipment Standards Program, U.S. Department of Energy, Building Technologies Office, 950 L’Enfant Plaza, SW., 6th floor, Washington, DC, 20024. Telephone (202) 287-1445. If possible, please submit all items on a “CD,” in which case it is not necessary to include printed copies.

No telefacsimilies (“faxes”) will be accepted. For detailed instructions on submitting comments and additional information on this process, see the “**SUPPLEMENTARY INFORMATION**” section of this document.

Docket: The docket, which includes *Federal Register* notices, comments, and other supporting documents/materials, is available for review at <https://www.regulations.gov>. All documents in the docket are listed in the <https://www.regulations.gov> index. However, some documents listed in the index, such as those containing information that is exempt from public disclosure, may not be publicly available.

The docket webpage can be found at <https://www.regulations.gov/docket?D=EERE-2019-BT-WAV-0004>. The docket webpage contains instruction on how to access all documents,

including public comments, in the docket. See the “**SUPPLEMENTARY INFORMATION**” section for information on how to submit comments through <https://www.regulations.gov>.

FOR FURTHER INFORMATION CONTACT: Ms. Lucy deButts, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Office, Mailstop EE-5B, 1000 Independence Avenue, SW., Washington, DC 20585-0121. Telephone: (202) 287-1604. E-mail: AS_Waiver_Request@ee.doe.gov.

Mr. Eric Stas, U.S. Department of Energy, Office of the General Counsel, GC-33, 1000 Independence Avenue SW., Washington, DC 20585. Telephone: (202) 586-5827. Email: Eric.Stas@hq.doe.gov.

SUPPLEMENTARY INFORMATION: DOE is publishing ECR’s petition for waiver in its entirety, pursuant to 10 CFR 430.27(b)(1)(iv), absent any information for which ECR requested treatment as confidential business information. DOE invites all interested parties to submit in writing by **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, comments and information on all aspects of the petition, including the suggested alternate test procedure and the alternate test procedure specified in the Interim Waiver Order. Pursuant to 10 CFR 430.27(d), any person submitting written comments to DOE must also send a copy of such comments to the petitioner. The contact information for the petitioner is Ronald J Passafaro, karlm@ecrinternational.com, ECR International, Inc., 2201 Dwyer Avenue, Utica, NY 13501.

Submitting comments via <https://www.regulations.gov>. The <https://www.regulations.gov> webpage will require you to provide your name and contact information. Your contact information will be viewable to DOE Building Technologies staff only. Your contact information will not be publicly viewable except for your first and last names, organization name (if any), and submitter representative name (if any). If your comment is not processed properly because of technical difficulties, DOE will use this information to contact you. If DOE cannot

read your comment due to technical difficulties and cannot contact you for clarification, DOE may not be able to consider your comment.

However, your contact information will be publicly viewable if you include it in the comment or in any documents attached to your comment. Any information that you do not want to be publicly viewable should not be included in your comment, nor in any document attached to your comment. If this instruction is followed, persons viewing comments will see only first and last names, organization names, correspondence containing comments, and any documents submitted with the comments.

Do not submit to <https://www.regulations.gov> information for which disclosure is restricted by statute, such as trade secrets and commercial or financial information (hereinafter referred to as Confidential Business Information (“CBI”). Comments submitted through <https://www.regulations.gov> cannot be claimed as CBI. Comments received through the website will waive any CBI claims for the information submitted. For information on submitting CBI, see the Confidential Business Information section.

DOE processes submissions made through <https://www.regulations.gov> before posting. Normally, comments will be posted within a few days of being submitted. However, if large volumes of comments are being processed simultaneously, your comment may not be viewable for up to several weeks. Please keep the comment tracking number that <https://www.regulations.gov> provides after you have successfully uploaded your comment.

Submitting comments via email, hand delivery/courier, or postal mail. Comments and documents submitted via email, hand delivery/courier, or postal mail also will be posted to <https://www.regulations.gov>. If you do not want your personal contact information to be publicly viewable, do not include it in your comment or any accompanying documents. Instead, provide your contact information in a cover letter. Include your first and last names, email address, telephone number, and optional mailing address. The cover letter will not be publicly viewable as long as it does not include any comments.

Include contact information each time you submit comments, data, documents, and other information to DOE. If you submit via postal mail or hand delivery, please provide all items on a CD, if feasible, in which case it is not necessary to submit printed copies. No telefacsimilies (faxes) will be accepted.

Comments, data, and other information submitted to DOE electronically should be provided in PDF (preferred), Microsoft Word or Excel, WordPerfect, or text (ASCII) file format. Provide documents that are not secured, written in English, and free of any defects or viruses. Documents should not contain special characters or any form of encryption, and, if possible, they should carry the electronic signature of the author.

Campaign form letters. Please submit campaign form letters by the originating organization in batches of between 50 to 500 form letters per PDF or as one form letter with a list of supporters' names compiled into one or more PDFs. This reduces comment processing and posting time.

Confidential Business Information. Pursuant to 10 CFR 1004.11, any person submitting information that he or she believes to be confidential and exempt by law from public disclosure should submit via email, postal mail, or hand delivery two well-marked copies: one copy of the document marked "confidential" including all the information believed to be confidential, and one copy of the document marked "non-confidential" with the information believed to be confidential deleted. Submit these documents via email or on a CD, if feasible. DOE will make its own determination about the confidential status of the information and treat it according to its determination.

Signing Authority

This document of the Department of Energy was signed on July 17, 2020, by Alexander N. Fitzsimmons, Deputy Assistant Secretary for Energy Efficiency, Energy Efficiency and Renewable Energy, pursuant to delegated authority from the Secretary of Energy. That document with the original signature and date is maintained by DOE. For administrative purposes only,

and in compliance with requirements of the Office of the Federal Register, the undersigned DOE Federal Register Liaison Officer has been authorized to sign and submit the document in electronic format for publication, as an official document of the Department of Energy. This administrative process in no way alters the legal effect of this document upon publication in the *Federal Register*.

Signed in Washington, DC, on July 20, 2020.

Treana V. Garrett
Federal Register Liaison Officer,
U.S. Department of Energy

Case No. 2019-001

Interim Waiver Order

I. Background and Authority

The Energy Policy and Conservation Act, as amended (“EPCA”),¹ authorizes the U.S. Department of Energy (“DOE”) to regulate the energy efficiency of a number of consumer products and certain industrial equipment. (42 U.S.C. 6291–6317) Title III, Part B² of EPCA, Public Law 94-163 (42 U.S.C. 6291-6309, as codified), established the Energy Conservation Program for Consumer Products Other Than Automobiles and sets forth a variety of provisions designed to improve energy efficiency for certain types of consumer products. These products include furnace fans, the subject of this Interim Waiver Order. (42 U.S.C. 6292(f)(4)(D))

Under EPCA, the energy conservation program consists essentially of four parts: (1) testing; (2) labeling; (3) Federal energy conservation standards; and (4) certification and enforcement procedures. Relevant provisions of EPCA include definitions (42 U.S.C. 6291), test procedures (42 U.S.C. 6293), labeling provisions (42 U.S.C. 6294), energy conservation standards (42 U.S.C. 6295), and the authority to require information and reports from manufacturers (42 U.S.C. 6296).

The Federal testing requirements consist of test procedures that manufacturers of covered products must use as the basis for: (1) certifying to DOE that their products comply with the applicable energy conservation standards adopted pursuant to EPCA (42 U.S.C. 6295(s)); and (2) making representations about the efficiency of that product (42 U.S.C. 6293(c)). Similarly, DOE must use these test procedures to determine whether the product complies with relevant standards promulgated under EPCA. (42 U.S.C. 6295(s))

¹ All references to EPCA in this document refer to the statute as amended through America’s Water Infrastructure Act of 2018, Public Law 115-270 (Oct. 23, 2018).

² For editorial reasons, upon codification in the U.S. Code, Part B was redesignated as Part A.

Under 42 U.S.C. 6293, EPCA sets forth the criteria and procedures DOE is required to follow when prescribing or amending test procedures for covered products. EPCA requires that any test procedures prescribed or amended under this section must be reasonably designed to produce test results which reflect the energy efficiency, energy use, or estimated annual operating cost of a covered product during a representative average use cycle or period of use and requires that test procedures not be unduly burdensome to conduct. (42 U.S.C. 6293(b)(3)) The test procedure for furnace fans is contained in the Code of Federal Regulations (“CFR”) at 10 CFR part 430, subpart B, appendix AA, “Uniform Test Method for Measuring the Energy Consumption of Furnace Fans” (“Appendix AA”).

Under 10 CFR 430.27, any interested person may submit a petition for waiver from DOE’s test procedure requirements. DOE will grant a waiver from the test procedure requirements if DOE determines either that the basic model for which the waiver was requested contains a design characteristic that prevents testing of the basic model according to the prescribed test procedures, or that the prescribed test procedures evaluate the basic model in a manner so unrepresentative of its true energy consumption characteristics as to provide materially inaccurate comparative data. 10 CFR 430.27(f)(2). A petitioner must include in its petition any alternate test procedures known to the petitioner to evaluate the performance of the product type in a manner representative of the energy consumption characteristics of the basic model. 10 CFR 430.27(b)(1)(iii). DOE may grant the waiver subject to conditions, including adherence to alternate test procedures. 10 CFR 430.27(f)(2).

As soon as practicable after the granting of any waiver, DOE will publish in the *Federal Register* a notice of proposed rulemaking to amend its regulations so as to eliminate any need for the continuation of such waiver. 10 CFR 430.27(l). As soon thereafter as practicable, DOE will publish in the *Federal Register* a final rule to that effect. *Id.*

The waiver process also provides that DOE may grant an interim waiver if it appears likely that the underlying petition for waiver will be granted and/or if DOE determines that it

would be desirable for public policy reasons to grant immediate relief pending a determination on the underlying petition for waiver. 10 CFR 430.27(e)(2). Within one year of issuance of an interim waiver, DOE will either: (i) publish in the *Federal Register* a determination on the petition for waiver; or (ii) publish in the *Federal Register* a new or amended test procedure that addresses the issues presented in the waiver. 10 CFR 430.27(h)(1). When DOE amends the test procedure to address the issues presented in a waiver, the waiver will automatically terminate on the date on which use of that test procedure is required to demonstrate compliance. 10 CFR 430.27(h)(2).

II. ECR International, Inc.’s Petition for Waiver and Interim Waiver

On February 20, 2019, ECR filed a petition for waiver and interim waiver from the test procedure applicable to furnace fans set forth in Appendix AA.³

In that filing, ECR asserts that the furnace fan models specified in its petition, which are belt-driven, single-speed, and designed for “heating-only” applications, have design characteristics that prevent testing of the basic model according to the test procedure prescribed in Appendix AA. ECR claims these basic models are factory-equipped for operation at an external static pressure (“ESP”) of 0.20” w.c. and cannot operate within the ESP range of 0.65”-0.70” w.c. required in Appendix AA. ECR states that the higher ESP required for the test reduces airflow, which in turn increases the temperature rise to the high temperature limit, which results in the unit shutting off before the test can be completed. ECR provided laboratory test data during the course of follow-up communications on May 24, 2019, June 3, 2019, August 5, 2019, and November 11, 2019, showing that the basic models for which a waiver is requested

³ The specific basic models for which the petition applies are furnace fans basic models BCLB90S2, BCLB100S2, BCLB120S2, BCLB130S2, BCLB145S2, BFLB90-2, BFLB100-2, BFLB120-2, BFLB130NX2, BFLB145NX2, BMLB60B2, BMLB80B2, and BMLB90B2. The petition is available at <https://www.regulations.gov/docket?D=EERE-2019-BT-WAV-0004>.

shut off at various ESPs ranging from 0.30”-0.60” w.c., depending on the particular basic model, with the units shutting down at an average ESP of 0.47” w.c.

ECR further asserts that the test procedure does not sufficiently account for the lower ESPs encountered by heating-only systems that only have one airflow-control setting, as compared to combined heating/cooling systems. ECR states that combined heating/cooling systems operate at higher ESP than heat-only systems due to the installation of an evaporator coil, and typically require different blower speeds for heating operation and cooling operation. ECR provided information on the operating conditions for two field installations of belt-driven, single-speed furnaces that are intended for heating-only operation, showing field ESP readings that are lower than the ESP required by Appendix AA.

Based on the assertions in ECR’s petition, DOE understands that absent an interim waiver, the furnace fan models for which ECR is seeking a waiver contain a design characteristic that prevents them from being tested due their inability to operate at the ESP requirement specified in the DOE test procedure at Appendix AA.

III. Requested Alternate Test Procedure

EPCA requires that manufacturers use DOE test procedures when making representations about the energy consumption and energy consumption costs of products covered by the statute. (42 U.S.C. 6293(c)) Consistency is important when manufacturers make representations about the energy efficiency of their furnace fans, including when demonstrating compliance with applicable DOE energy conservation standards. Pursuant to its regulations applicable to waivers and interim waivers from applicable test procedures at 10 CFR 430.27, and after consideration of public comments on the petition, DOE may establish in a subsequent Decision and Order an alternate test procedure for the ECR basic models addressed by the interim waiver.

ECR seeks to use an alternate test procedure to test and rate specific furnace fan basic models. Specifically, ECR requests that the specified models be tested under the current

Appendix AA, with the following modifications: (1) in section 8.6.1, the ESP requirement is instead the factory-equipped ESP, increased by 0.08" w.c. to accommodate the fact that furnaces are tested for Fan Energy Rating ("FER") without the air filter under Appendix AA; (2) sections 8.6.2, *Constant circulation airflow-control setting measurements*, and 8.6.3, *Heating airflow-control setting measurements* are not required; and (3) calculations in section 10.1, *Fan Energy Rating (FER)*, are modified to account for the absence of a separate constant circulation airflow-control setting and heating airflow-control setting.

IV. Interim Waiver Order

DOE has reviewed ECR's application for an interim waiver, the alternate test procedure requested by ECR, and the related data that ECR provided in support of its petition. DOE also reviewed data and analyses collected and conducted in support of the final rule establishing the furnace fan test procedure. Specifically, DOE reviewed the May 15, 2012 notice of proposed rulemaking ("NOPR") (77 FR 28674), the April 2, 2013 supplemental notice of proposed rulemaking ("SNOPR") (78 FR 19606), and the January 3, 2014 final rule (79 FR 500). In establishing the current test procedure for furnace fans, DOE examined field ESP data from numerous studies and found that typical field ESP often exceeds the ESP for which furnace fans are designed and factory-equipped. 79 FR 500, 506 (Jan. 3, 2014). In the NOPR, based on review of available studies looking at field operating conditions, DOE initially determined that for "heating-only" furnaces, an ESP of 0.50" w.c. would provide test results representative of an average use cycle. 77 FR 28674, 28686 (May 15, 2012). This is consistent with the range of ESP conditions under which the specified furnace fans are capable of operating (*i.e.*, 0.2" – 0.6" w.c.). Although DOE proposed these testing requirements for "heating-only" furnace fans, DOE ultimately did not adopt separate conditions. As explained in the SNOPR, DOE was unable to identify "heating-only" models on the market at that time and removed that designation at the suggestion of stakeholders. 78 FR 19606, 19608 (April 2, 2013). Further, DOE was unaware of

the issues encountered by the specified furnace fans in the ECR petition (and as subsequently demonstrated through submission of test data).

Based on DOE's prior analyses of "heating-only" furnace fans and the data submitted by ECR, DOE is now requiring that the basic models specified in the Interim Waiver Order be initially tested at 0.50"-0.55" w.c., rather than the 0.28" w.c. suggested by ECR (which is the factory-equipped ESP of 0.20" w.c. for the basic models for which a waiver has been requested, increased by 0.08" w.c. to account for the use of an air filter in the field). However, given the difficulty that a number of the specified ECR basic models may have in operating at the ESP level, the alternate test procedure further specifies that if the unit under test shuts down prior to completion of the test, the ESP range is incrementally reduced by 0.05" w.c., and the test is to be re-run. This process is repeated until a range is reached at which the test can be conducted to its conclusion, with a minimum allowable ESP range of 0.30-0.35" w.c., which corresponds to the lowest ESP at which shut-off occurred in the ECR data.

The rationale for using an ESP range of 0.50"-0.55" w.c., or the highest ESP that the model is capable of operating at during testing, rather than that suggested by ECR, is that the field data previously analyzed by DOE shows that 0.50" w.c. is representative of field conditions for heating-only furnaces. The ESP value specified in the Interim Waiver Order is lower than that required by the furnace fans test procedure at section 8.6.1.2 of Appendix AA (*i.e.*, 0.65"-0.70"). The reduced ESP specified in the Interim Waiver Order addresses the lack of an evaporator coil in the airflow path for heating-only systems, which would reduce the ESP in the system. Thus, the 0.50" ESP represents the resistance imposed by ductwork alone (*i.e.*, without an additional evaporator coil). While ECR suggests that a 0.28" w.c. ESP is representative for heating-only furnaces, DOE does not have reason to believe the ductwork in these systems would be significantly different than that found in DOE's previous study of field data. Because the goal of the test procedure is to produce test results that measure energy efficiency during a

representative average use cycle, and because the test ESP can significantly affect the result, DOE tentatively concludes that testing at an ESP of 0.50" w.c. (or as close as possible) is more appropriate than the 0.28" w.c. suggested by ECR, which based on DOE's review of field data, would not be representative of an average use cycle. Furthermore, testing at an ESP of 0.50" w.c. would not add any additional testing as compared to the current test procedure. If it is necessary to incrementally reduce the ESP, the procedure to do so is straightforward involving symmetrically restricting the outlet of the test duct (which may be done using cardboard), and can be done relatively quickly (compared to the overall test duration). Therefore, the test procedure as required by the Interim Waiver Order is not overly burdensome. As a result, DOE has initially determined that the alternate test procedure provides test conditions that are representative of the subject furnace fans' energy use during an average use cycle while ensuring that they can be tested.

The alternate test procedure does not waive the requirements of section 8.6.3 of Appendix AA because, as DOE discussed in the furnace fans test procedure final rule published on January 3, 2014, that section is not applicable to the basic models specified in the Interim Waiver Order (*i.e.*, models with only one airflow control setting). 79 FR 500, 514. In the furnace fans test procedure final rule, DOE stated that for single-stage units, E_{Max} , which is calculated in section 8.6.3 of Appendix AA, and E_{Heat} , which is calculated in section 8.6.1.2, are equivalent because the maximum airflow-control setting and the heating airflow-control setting in which measurements are specified to be made are the same, and consequently, the same value is used for both variables in the FER equation. *Id.* As such, there is no need to separately perform that calculation in section 8.6.3 of Appendix AA. In addition, section 10.1 of Appendix AA states that for furnace fans for which the maximum airflow-control setting is a default heating airflow-control setting, Q_{Heat} (the airflow in the heating airflow control setting) is equal to Q_{Max} (the airflow in the maximum airflow control setting). Based on the discussion in the furnace fans test procedure final rule and calculations in section 10.1, it is sufficiently clear that

the test in section 8.6.3 of Appendix AA would not need to be performed, and, therefore, a waiver is not required regarding sections 8.6.3 or 10.1 of Appendix AA.

Regarding the testing in section 8.6.2 of Appendix AA, DOE notes that the testing required under that section is different than that required under section 8.6.1.2 (and section 8.6.3) of Appendix AA, in that the burner would be firing only in testing performed under the latter. Because the burner must be firing during the section 8.6.1.2 testing and must be off during the section 8.6.2 testing, it is possible that the resulting measurements would be different. As a result, section 8.6.2 of Appendix AA is required to be conducted, and results of the testing must be used in the calculation of FER.

Based on DOE's review and the preceding discussion, the alternate test procedure as specified in the Interim Waiver Order appears to allow for the accurate measurement of the energy consumption of the specified basic models, while alleviating the testing problems associated with ECR's testing of these basic models. Consequently, DOE has determined that ECR's petition for waiver likely will be granted in part. Furthermore, DOE has determined that it is desirable for public policy reasons to grant ECR immediate relief pending a determination of the petition for waiver.

For the reasons stated, it is **ORDERED** that:

- (1) ECR must test and rate the following furnace fan basic models with the alternate test procedure set forth in paragraph (2):

| Brand Name | Basic Model Number |
|------------|--------------------|
| Airco | BCLB90S2 |
| Airco | BCLB100S2 |
| Airco | BCLB120S2 |
| Airco | BCLB130S2 |
| Airco | BCLB145S2 |
| Airco | BFLB90-2 |
| Airco | BFLB100-2 |

| | |
|-------|------------|
| Airco | BFLB120-2 |
| Airco | BFLB130NX2 |
| Airco | BFLB145NX2 |
| Airco | BMLB60B2 |
| Airco | BMLB80B2 |
| Airco | BMLB90B2 |
| Olsen | BCLB90S2 |
| Olsen | BCLB100S2 |
| Olsen | BCLB120S2 |
| Olsen | BCLB130S2 |
| Olsen | BCLB145S2 |
| Olsen | BFLB90-2 |
| Olsen | BFLB100-2 |
| Olsen | BFLB120-2 |
| Olsen | BFLB130NX2 |
| Olsen | BFLB145NX2 |
| Olsen | BMLB60B2 |
| Olsen | BMLB80B2 |
| Olsen | BMLB90B2 |

(2) The alternate test procedure for the ECR basic models identified in paragraph (1) of this Interim Waiver Order is the test procedure for furnace fans prescribed by DOE at 10 CFR part 430, subpart B, appendix AA (“Appendix AA”), except that the external static pressure (“ESP”) is adjusted in section 8.6.1.2 of Appendix AA as described below. All other requirements of Appendix AA and DOE’s relevant regulations remain applicable. The change to section 8.6.1.2 reads as follows:

8.6.1.2. *Furnace fans for which the maximum airflow-control setting is a default heating airflow-control setting.* Adjust the main burner or electric heating element controls to the default heat setting designated for the maximum airflow-control setting. Burner adjustments shall be made as specified by section 8.4.1 of ASHRAE 103-2007 (incorporated by reference, see §430.3). Adjust the furnace fan controls to the maximum airflow-control setting. Adjust the external static pressure to within the range of 0.50”-0.55” w.c. by symmetrically restricting the

outlet of the test duct. Maintain these settings until steady-state conditions are attained as specified in sections 8.3, 8.4, and 8.5 of this appendix and the temperature rise (ΔT_{Max}) is at least 18 °F. If at the external static pressure range of 0.50”-0.55” w.c. the unit-under-test automatically shuts off before the conclusion of a valid test, reduce external static pressure by an increment of 0.05” w.c. (*i.e.*, to a range of 0.45”-0.50” w.c) by symmetrically restricting the outlet of the test duct and re-run the test. If at the reduced external static pressure range the unit-under-test automatically shuts off before the conclusion of a valid test, repeat the incremental reduction of the ESP range by 0.5” w.c. until an ESP range is achieved at which a valid test is completed. The minimum allowable external static pressure range is 0.30”-0.35” w.c. Once the external static pressure is set, do not adjust the test duct for the remainder of the test. Measure furnace fan electrical input power (E_{Max}), fuel or electric resistance heat kit input energy ($Q_{IN, Max}$), external static pressure (ESP_{Max}), steady-state efficiency for this setting ($Eff_{ySS, Max}$) as specified in sections 11.2 and 11.3 of ASHRAE 103-2007, outlet air temperature ($T_{Max, Out}$), and temperature rise (ΔT_{Max}).

(3) *Representations.* ECR may not make representations about the energy consumption of the basic models referenced in paragraph (1) for compliance, marketing, or other purposes unless the basic models have been tested in accordance with the provisions in the alternate test procedure set forth above and such representations fairly disclose the results of such testing.

(4) This Interim Waiver Order shall remain in effect according to the provisions of 10 CFR 430.27.

(5) This Interim Waiver Order is issued on the condition that the statements, representations, and information provided by ECR are valid, and on the condition that ECR makes no representation on any public-facing materials, including websites, marketing materials, product

spec sheets, labels, nameplates, *etc.*, that these basic models are designed to be installed in systems that provide both heating and cooling. If ECR makes any modifications to the controls or configurations of a basic model subject to this Interim Waiver Order, such modifications will render the waiver invalid with respect to that basic model, and the current Federal test procedure will apply. In such an instance, however, ECR may submit a new application for a test procedure waiver. DOE may rescind or modify this waiver at any time if it determines the factual basis underlying the petition for waiver is incorrect, or the results from the alternate test procedure are unrepresentative of the basic models' true energy consumption characteristics. 10 CFR 430.27(k)(1). Likewise, ECR may request that DOE rescind or modify the interim waiver if ECR discovers an error in the information provided to DOE as part of its petition, determines that the interim waiver is no longer needed, or for other appropriate reasons. 10 CFR 430.27(k)(2).

(6) Issuance of this Interim Waiver Order does not release ECR from the various requirements set forth at 10 CFR part 429.

DOE makes decisions on waivers and interim waivers for only those basic models specifically set out in the petition, not future models that may be manufactured by the petitioner. ECR may submit a new or amended petition for waiver and request for grant of interim waiver, as appropriate, for additional basic models of furnace fans. Alternatively, if appropriate, ECR may request that DOE extend the scope of a waiver or an interim waiver to include additional basic models employing the same technology as the basic model(s) set forth in the original petition consistent with 10 CFR 430.27(g).

Signed in Washington, DC, on July 17, 2020.

Alexander N. Fitzsimmons
Deputy Assistant Secretary
for Energy Efficiency
Energy Efficiency and Renewable Energy

February 20, 2019

U.S. Department of Energy
Building Technologies Program
Test Procedure Waiver
1000 Independence Avenue SW., Mailstop EE-5B
Washington, DC 20585-0121

Attention: Antonio Bouza, John Cymbalsky

Re: Petition for Waiver and Application for Interim Waiver – ECR International, Inc. Belt Drive Single Speed Oil Fired Warm Air Furnaces

Dear Mr. Bouza and Mr. Cymbalsky

ECR International, Inc. (“ECR”) respectfully submits this petition for waiver and application for interim waiver of the Department of Energy (“DOE”) test procedures defined in 10 CFR 430, Subpart B, Appendix AA, claiming that the basic models for which the waiver is requested contain a design characteristic that prevents testing of the basic model according to the prescribed test procedure.

Company Background

ECR, with headquarters in Utica, New York, is a full-service provider of American engineered and manufactured boilers, water heaters, hydronic and forced air products at its facilities in Utica and Dunkirk, NY. ECR and its predecessor companies have been in New York State since 1928 and employ a full-time workforce of [REDACTED]. As a full-service provider of American engineered-and-manufactured hydronic and forced air products, ECR is recognized for its innovation, quality, performance and reliability, and is the only North American company to make and market all these products under one corporate roof. Our products are sold under multiple brands including Airco, Argo, Dunkirk, Enviromaster, Green Mountain, Olsen, Pennco, RetroAire, and Utica.

The Affected Products

The affected line of products subject to this petition and application, belt drive single speed oil fired warm air furnaces serving the Airco and Olsen brand, are listed herein at Appendix A. The company’s warm air oil furnace product line is AHRI certified under the Residential Furnace (RFRN) program.

The belt drive furnaces use the same cabinets, burners and heat exchangers as the corresponding direct drive furnaces. The difference is the belt drive furnaces are factory equipped with single speed blower motors using belt drive to connect to the blower wheel. They are factory equipped to deliver 0.2” w.c. external static pressure (ESP) in the supply duct. The direct drive furnaces use multiple speed or variable

speed blower motors and the blower wheel is directly connected to the motor shaft. The direct drive furnaces are factory equipped to deliver 0.5” w.c. ESP to the supply duct.

The belt drive models with single speed blower are intended for use in heating only systems, i.e. without an evaporator coil for air conditioning. The direct drive models with multiple or variable speed blowers are intended for use in combined heating/cooling systems. These combined heating/cooling systems operate at higher static pressures due to the field installation of an evaporator coil in the supply plenum, and typically require different blower speeds for heating operation and cooling operation. As such, the belt drive furnaces only operate during the heating season and thus in reality, no matter the motor efficiency measurement, use less energy than those furnaces designed to run their motors potentially all 12-months.

Overview

The test procedure currently being applied to the affected line of belt drive single speed furnaces is inapplicable to belt drive single speed furnaces. The test procedure does not recognize furnaces such as belt drive single speed furnaces that only have one airflow-control setting. The test procedure does not recognize an installation type or an external static pressure test point that is applicable to belt drive single speed furnaces that are factory equipped to run at 0.2” w.c. ESP. The test procedure does not allow such belt drive single speed furnaces to be tested in accordance with the test procedure.

Analysis

1. Section 2.2. of the test procedure defines *Airflow-control settings* as programmed or wired control system configurations that control a fan to achieve discrete, differing ranges of airflow – often designated for performing a specific function (e.g. cooling, heating, or constant circulation) – without manual adjustment other than interaction with a user-operable control such as a thermostat that meets the manufacturer specifications.

By this definition, belt drive furnaces with single speed blower motor only have one airflow-control setting. To change blower speeds with a belt drive furnace with single speed blower motor, one must manually change out the blower pulley, and/or manually adjust the motor pulley, and/or manually change to a different blower motor. However manual adjustment is not allowed by the definition.

2. Section 8.6.1.2. of the test procedure covers *Furnace fans for which the maximum airflow-control setting is a default heating airflow-control setting*. Since belt drive furnaces with single speed blower motor only have one airflow-control setting, clearly the maximum airflow-control setting, and the default heating airflow-control setting are both the only airflow-control setting, and section 8.6.1.2. applies.

3. Section 8.6.1.2. further states “Adjust the external static pressure to within the range shown in Table 1 by symmetrically restricting the outlet of the test duct.” and also states “Maintain these settings until steady-state conditions are attained as specified in section 8.3, 8.4, and 8.5 of this appendix...”.

Table 1 is shown here:

TABLE 1 – REQUIRED MINIMUM EXTERNAL STATIC PRESSURE IN THE MAXIMUM AIRFLOW-CONTROL SETTING BY INSTALLATION TYPE

| Installation Type | ESP (in. w.c.) |
|--|-----------------------|
| Units with an internal, factory installed evaporator coil | 0.50-0.55 |
| Units designed to be paired with an evaporator coil, but without one installed | 0.65-0.70 |
| Mobile home | 0.30-0.35 |

The affected belt drive furnaces with single speed blower motor are clearly not covered by the first or the third installation type in the Table. Since it is physically possible to install an evaporator coil on a belt drive furnace, that leaves us with the second installation type. But even though it is possible, it is not intended to install an evaporator coil on a belt drive furnace. The belt drive furnace only has one blower speed and is factory equipped to provide only 0.2” w.c. external static pressure at the required heating airflow. The belt drive furnaces are intended to be used in heating only systems.

If you attempt to test the belt drive single speed warm air furnace per 8.6.1.2. at the default heating-airflow control setting, which is only designed and certified to provide 0.2” w.c. ESP, and then symmetrically restrict the outlet of the test duct to obtain 0.65-0.70” w.c. ESP as the test requires, the airflow will be drastically reduced due to the higher static pressure. The temperature rise will increase to the point that the furnace will shut off on high limit. It is impossible to maintain these settings until steady state conditions are attained.

One could change pulleys and motors to achieve an airflow control setting that would allow the furnace to run at 0.65-0.70” w.c. ESP. But that would require manual adjustment which is not allowed by section 2.2 of the test procedure. It would also require aftermarket component parts that are not provided with the furnace. Further you would then be testing at an airflow-control setting that is not the default heating airflow-control setting. It’s just a random airflow-control setting that allows the test to proceed but is not representative of an actual airflow-control setting that is likely to be used and is not representative of the factory equipped airflow control setting as provided by the furnace manufacturer.

Summary

The basic models for which the waiver is requested obviously contain a design characteristic that prevents testing of the basic model according to the prescribed test procedure. That design characteristic is based upon applying the product to a “heat-only” application as opposed to the prescribed test procedure being developed to rate models that are designed to heat and cool.

Alternate Test Procedure

The test procedure could be revised to accommodate belt drive single speed furnaces by:

- 1) Recognizing that belt drive single speed furnaces have only one airflow-control setting, i.e. the default heating airflow-control setting which is also the maximum airflow-control setting.
- 2) Revising section 8.6.1.2. and Table 1 to specify that belt drive single speed furnaces be tested at their

factory equipped ESP, increased by 0.08" w.c. to accommodate the fact that furnaces are tested for FER without the air filter. As an example, if the factory equipped ESP is 0.20" w.c., then the furnace without air filter should be tested at 0.28" w.c. ESP.

- 3) Using 8.6.1.2. as revised in step 2 above to measure E_{Max}.
- 4) Recognizing that section 8.6.2. *Constant circulation airflow-control setting measurements* and 8.6.3. *Heating airflow-control setting measurements* do not apply to belt drive single speed furnaces.
- 5) Calculating Q_{Max} as defined section 10 of the test procedure.

Thus, when applying the FER equation to belt drive single speed furnaces, the equation reduces as follows:

Per section 10.1 of the test procedure:

$$FER = \frac{(CH \times E_{Max}) + (HH \times E_{Heat}) + (CCH \times E_{Circ})}{(CH + 830 + CCH) \times Q_{Max}} \times 1000 \quad (Eq. 1)$$

Since belt drive single speed furnaces have only one airflow-control setting, E_{Max} = E_{Heat} = E_{Circ}

For single stage furnaces, per Table IV.2, HH = 830

So, for single stage belt drive single speed warm air furnaces, the equation reduces to:

$$FER = \frac{(CH + 830 + CCH) \times E_{Max}}{(CH + 830 + CCH) \times Q_{Max}} \times 1000 \quad (Eq. 2)$$

Therefore:

$$FER = \frac{E_{Max}}{Q_{Max}} \times 1000 \quad (Eq. 3)$$

Interim Waiver

ECR requests that DOE provide immediate relief by grant of an interim waiver, for the following reasons.

1. The petition for waiver is likely to be granted. ECR has demonstrated that the basic models for which the waiver is being requested contain design characteristics that prevent testing of the basic model according to the prescribed test procedures. This meets one of the fundamental criteria for granting of a waiver.
2. Substantial economic harm and competitive disadvantage will result absent a favorable determination on this application. ECR fulfills a unique need in the market which is to provide a preferred solution for homes that require heat only solutions. Further, these homes consume far less energy than those that run their furnace motors up to as much as 12-months to accommodate air conditioning. Confidentially, ECR's [REDACTED] [REDACTED] % of total furnace sales has an optional belt drive motor configuration. Of all this model's sales, [REDACTED] % are belt drive demonstrating [REDACTED] popularity [REDACTED] products.

Other Manufacturers Incorporating Similar Design Characteristics

ECR is aware of only one other manufacturer of residential belt drive single speed oil fired warm air furnaces, Newmac Manufacturing, Inc. with offices in Nova Scotia, Canada and Ontario, Canada. It is ECR's understanding that Newmac models NLF, NMR and NH3 are currently available with belt drive. An online brochure also indicates models NL2 and NL3 are available with belt drive, but that brochure is dated 2009. We do not know if it is still current.

Conclusion

ECR requests that DOE grant both the petition for waiver and application for interim waiver from the existing test procedures as defined in 10 CFR 430 Subpart B, Appendix AA, and that the alternative testing procedures discussed above be adopted and approved as a representative test procedure for belt drive single speed oil fired warm air furnaces.

ECR would be pleased to discuss this waiver request with DOE and shall provide additional information as needed to DOE.

Sincerely,

ECR INTERNATIONAL, INC.

/S/

Ronald J. Passafaro

President and Chief Executive Officer

Appendix A

The following basic model numbers sold under the Airco and Olsen brand names comprise the belt drive single speed warm air oil fired furnaces that are the scope of this Petition for Waiver and Application for Interim Waiver

BCLB90S2

BCLB100S2

BCLB120S2

BCLB130S2

BCLB145S2

BFLB90-2

BFLB100-2

BFLB120-2

BFLB130NX2

BFLB145NX2

BMLB60B2

BMLB80B2

BMLB90B2

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