Proposed Rules

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This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

DEPARTMENT OF ENERGY

Office of Energy Efficiency and Renewable Energy

10 CFR Part 430

Energy Conservation Program for Consumer Products: Department of Energy Refrigerator and Refrigerator-Freezer Test Procedure

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

ACTION: Notice of inquiry.

SUMMARY: Today's document publishes a letter from Edward Schulak Equities, Inc. (ESE), requesting the Department of Energy (Department or DOE) to modify the refrigerator and refrigerator-freezer test procedure to allow testing the ''Energy Efficient Domestic Refrigeration System'' patented by ESE. The Department is soliciting comments, data, and information respecting the request.

DATES: The Department will accept comments, data, and information not later than August 21, 1995.

ADDRESSES: Written comments and statements shall be sent to: Department of Energy, Office of Energy Efficiency and Renewable Energy, Case No. FRIG–001, Mail Stop EE–431, Room 1J–018, Forrestal Building, 1000 Independence Avenue, SW., Washington, DC 20585, (202) 586–7574.

FOR FURTHER INFORMATION CONTACT:

Michael G. Raymond, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Mail Station EE–431, Forrestal Building, 1000 Independence Avenue, SW., Washington, DC 20585, (202) 586–9611.

Eugene Margolis, Esq., U.S. Department of Energy, Office of General Counsel, Mail Station GC–72, Forrestal Building, 1000 Independence Avenue, SW., Washington, DC 20585, (202) 586–9507.

SUPPLEMENTARY INFORMATION: The Energy Conservation Program for Consumer Products (other than automobiles) was established pursuant to the Energy Policy and Conservation Act (EPCA), Public Law 94–163, 89 Stat. 917, as amended by the National Energy Conservation Policy Act (NECPA), Public Law 95–619, 92 Stat. 3266, the National Appliance Energy Conservation Act of 1987 (NICE), Public Law 100–12, the National Appliance Energy Conservation Amendments of 1988 (NICE 1988), Public Law 100–357, and the Energy Policy Act of 1992 (EPACT), Public Law 102–486, 106 Stat. 2776, which requires the Department to prescribe standardized test procedures to measure the energy consumption of certain consumer products, including refrigerators and refrigerator-freezers. The intent of the test procedures is to provide a comparable measure of energy consumption that will assist consumers in making purchasing decisions. The refrigerator and refrigerator-freezer test procedures appear at 10 CFR Part 430, Subpart B, Appendix A1.

The Department amended the prescribed test procedures by adding 10 CFR 430.27 on September 26, 1980, creating the waiver process. 45 FR 64108. The waiver process allows the Assistant Secretary to temporarily waive test procedures for a particular basic model when a petitioner shows that the basic model contains one or more design characteristics which prevent testing according to the prescribed test procedures, or when the prescribed test procedures may evaluate the basic model in a manner so unrepresentative of its true energy consumption as to provide materially inaccurate comparative data.

On March 14, 1995, ESE submitted a letter regarding the refrigerator test procedures. This letter was submitted as a ''Petition for Waiver'', but also stated that ''ESE recognizes that the Waiver process may not be the appropriate forum, and we would like this request to be considered in whatever forum DOE would consider appropriate * * *'' ESE has patented a device which operates by cooling the ambient air around the condenser coil. The device is a box placed around the coils, connected via small tubes to the outside of the house. The system also includes a movable barrier for selectively controlling the transfer of air to the box. The purpose of the invention is to reduce the energy consumption of the refrigerator. ESE's application seeks a ''waiver'' from the Department test procedure, because the energy consumption of a refrigerator equipped to allow the ingress of cool outside air over the condenser coils is not addressed. ESE has not submitted a modified test procedure to be used for rating its refrigerator modification. ESE states that the existing Department test procedure needs to be modified to allow the introduction of cool air to the refrigerator condenser coil. This refrigerator modification (specifically, the addition of tubes conveying outdoor air to the refrigerator) may cause increased infiltration of outdoor air to the building, which would affect the energy consumption of the building containing the refrigerator as well as the refrigerator itself.

The Department agrees that the current test procedure does not account for the total energy savings of the ESE refrigerator modification. Clearly, this invention would require modification to the test procedure, but, for two reasons, the ''Petition for Waiver'' process is not appropriate.

First, waivers to the test procedure are applicable when ''basic models'' have design features that require exceptional treatment and are applicable only to the model in question. No models are currently manufactured incorporating this invention, nor is the invention being produced for retrofitting on refrigerators.

Second, if the invention were put to use, the nature of the invention might require a fundamental change to the refrigerator test procedure because of the interaction of the invention with the building energy consumption.

The Department is publishing the letter from ESE, and, to facilitate understanding of the invention, a digest (Attachment A), which the Department has extracted from the patent. The patent is United States Patent Number 5,291,749, Energy Efficient Domestic Refrigeration System, granted to Edward R. Schulak, 567 Aspen, Birmingham, Michigan 48009, on March 8, 1994. The Department has identified several issues where comments are specifically requested. These issues are as follows, including, but not limited to:

- The effects of the invention on building energy consumption;
- Manufacturability of the invention;
- Retrofitting the invention into existing dwellings;

• Method of testing the invention to determine energy savings.

The Department solicits comments, data, and information respecting the letter.

By publishing this letter and requesting comments, the Department is not expressing a view as to the technical feasibility or economic justification of this mechanism as an energy saving device to be used with refrigerators and refrigerator-freezers.

Issued in Washington, DC, on July 13, 1995.

Christine A. Ervin,

Assistant Secretary, Energy Efficiency and Renewable Energy.

Edward Schulak Equities, Inc.

Christine Ervin, Assistant Secretary for Energy Efficiency and Renewable Energy.

March 14, 1995.

Mr. Michael J. McCabe, Director, Office of Codes and Standards, U.S. Department of Energy, 1000 Independence Ave., SW., Washington, DC 20585.

Ladies and Gentlemen: 1. *Petition for Waiver*—In accordance with 10 CFR, Part 430.27 this is a Petition for Waiver from the test procedure set forth in 10 CFR, Part 430, Subpart B, Appendix A–1, adopted August 10, 1982 and revised January 1, 1993 and for the use of an alternate test procedure described in paragraph 4 below. (Edward Schulak Equities, Inc. ''ESE'' recognizes that the Waiver process may not be the appropriate forum and we would like this request to be considered in whatever forum the Department of Energy ''DOE'' would consider appropriate, such as a Petition for Rule Making.) ESE has been granted U.S. Patent No. 5291749 which documents a unique technological breakthrough for which the required Appendix A–1 test procedure referenced above will not produce energy consumption results which correctly represent the enhanced energy savings possible and thereby the performance of this refrigerator.

2. *Background Information*—ESE was granted U.S. Patent No. 5291749 Titled: Energy Efficient Refrigeration System which documents a method of saving energy through increased efficiency in any commercially available refrigerator model. The company is familiar with DOE test procedures (specifically 10 CFR Part 430) and the FTC Energyguide labeling requirements. Further, the company engaged ETL Testing Laboratories ''ETL'' to independently confirm the validity of the energy savings possible with the above referenced patent, and to confirm the ineffectiveness of the existing DOE testing procedures to accurately produce energy consumption results with the above referenced patent (a copy of the ETL Reports No. 536692A, 538479B & 539826 are included as Exhibits A, B & C). In our opinion, the applicable DOE test procedure, which was designed for self contained units, has no provision to test a unit which transfers energy from cool external air into the unit's refrigeration cycle and thereby reducing the unit's overall energy consumption. The introduction of external cool air blown across the refrigerators condenser and compressor can be adapted to any rear or bottom mounted condenser model and has demonstrated (as confirmed by ETL) energy savings in excess of 25% of total power consumed by the unit.

3. *Specific Test Procedure Problems*—With the test conditions and procedures currently prescribed by DOE, energy consumption of a refrigerator equipped to allow the ingress of cool air over the condenser/compressor would not be addressed. The existing test procedures were written strictly for self contained models. A test procedure to standardize the energy savings achieved on models equipped to receive external cool air is currently not allowed and therefore the energy savings cannot be officially measured and documented.

As a result the dollar savings achieved through this technology can not be listed on the FTC Energyguide label and buyers can not be informed of the savings possible by purchasing a refrigerator engineered to utilize cool external air. It should be noted that there is already different test procedures established for measuring the energy consumption of unvented home heating equipment (Part 430, Subpart B, Appendix G) from that of vented home heating equipment (Part 430, Subpart B, Appendix O). With this new technological breakthrough there is now reason to consider a similar vented and unvented test procedure for refrigerators and freezers.

4. *Alternate Test Procedures*—At the present time ESE does not have a proposed alternate test method for refrigerator/freezer utilizing this technology. However, the work commissioned by ESE and completed by ETL provides a basis for developing a simple test procedure for refrigerator/freezers adapted to accept external cool air as proposed by ESE. The trials at ETL suggest that no existing DOE test conditions or procedures need be modified or deleted, but a provision needs to be added to allow the introduction of external air at specific temperature (°f) and airspeed (cfm) across the unit's condenser/compressor. The existing DOE test formulas and procedures would be unaltered. While the cool air would be introduced into and out of the unit, the unit is tested in full accordance with the existing 10 CFR, Part 430. For clarity, no test procedure need be altered or changed, but simply the conditions be expanded to allow cool air to be introduced in a consistent, repeatable manner to ensure that both the energy saved is measured in a consistent manner and that the savings can correspondingly be listed on the FTC Energyguide label.

5. *Public Policy Considerations*—Since innovation is an essential part of the Congressionally mandated energy conservation programs, it is in the public interest for DOE to facilitate introduction of new product technology like alternative air ducting which have the potential for saving energy by reducing the number of compressor cycles needed to keep a refrigerator/freezer cool.

6. *Manufacturers*—No existing appliance manufacturer in the United States market manufactures a model adapted to accept external cool air. In the discussions we have had with manufacturers and their consultants, they have clearly indicated that there is no advantage for them to utilize energy saving technology if it does qualify for the DOE Energuide Label. Manufacturers will not consider incorporating this new technology because the associated energy savings can not be quantified under the currently existing DOE Test conditions and procedures. Without an appropriate alternate test procedure, the savings can not be officially sanctioned and therefore are not allowed to be listed on an FTC Energyguide label. The adaptation that allows external cool air to flow over the condenser and compressor could apply to any existing model sold presently in the United States.

If additional information is required, please contact me at (810) 644–1500.

Respectively,

Edward Schulak,

President.

Enclosures:

Exhibit A—ETL Report No. 536692A
Exhibit B—ETL Report No. 5291749
Exhibit C—ETL Report No. 538479B

Attachment A

''* * * the present invention provides an energy transfer system for a household refrigeration appliance. The energy transfer system includes a compartment for enclosing the condenser, which is associated with the refrigerator, and a set of conduits for enabling the transfer of outside air into, through, and out of the compartment. The system also includes a movable barrier for selectively controlling the transfer of air through the compartment. In one form of the present invention, the system also includes a thermostatically actuated fan for forcing outside air into, through, and out of the compartment in response to a predetermined temperature.

''The set of conduits preferably includes a first conduit for enabling the transfer of outside air to the compartment, and a second conduit for enabling the transfer of air from the compartment to the outside environment. Each of these conduits are disposed such that they extend through an external wall of said household. To facilitate the convection flow of air, the outlet of one conduit is connected to the compartment at a location which is lower than an inlet connection of the other conduit.

''Referring to Figure 1, a perspective view of a household refrigeration appliance (10), in accordance with the present invention, is shown. More specifically, the household refrigeration appliance depicted in Figure 1 is a domestic refrigerator which has been retro-fitted with the energy transfer system (12), in accordance with the present invention. However, it should be understood that the principals [sic] of the present inventions are equally applicable to a domestic refrigerator, which has been constructed at the originating factory to include a built-in energy transfer system.

''As shown in Figure 1, the refrigerator (10) generally includes at least one door (14) across its front and a serpentine tube

condenser (16) mounted across its back. As is well known in the field, the condenser (16) is connected to the discharge end of a pump to compress a refrigerant fluid , such as freon, from a gaseous phase to a liquid phase. This process creates heat which must be removed in order for the refrigeration cycle to work.

''With this household refrigerator arrangement, the heat produced at the condenser (16) is simply released into the area of the home which surrounds the refrigerator. However, in accordance with the present invention, a compartment (24) is used to enclose the condenser (16). As shown in Figure 1, the compartment (24) may be comprised of a five-sided molded fiberglass shell, which is mounted to the exterior side of the refrigerator (10) where the condenser (16) is located. In this regard, the compartment (24) includes a flange (26) which extends around its periphery to enable the compartment to be secured to the refrigerator (10) over the condenser (16), such as with a plurality of spaced screws. However, it should be understood that the compartment may be comprised of other suitable materials, and may take other suitable shapes in the appropriate application. For example, with a factory built-in energy transfer system, the compartment (24) may be formed integrally with a side of the refrigerator (10), such that the consumer need not discern that the compartment is included as part of the refrigerator body. Additionally, the compartment (24) may be constructed such that it includes an insulative layer in order to more fully control the transfer of heat from the condenser (16).

''The energy transfer system (12) also includes one or more passageways for enabling the transfer of heat out of the compartment (24), and for selectively utilizing outside air in this process. Thus, for example, as shown in Figures 1 and 2, the energy transfer system (12) includes a first conduit (28), which enables cool air from outside of the home to enter the compartment (24), and a second conduit (30), which enables air from inside the compartment to be released outside of the home. In this regard, both of these figures show an exterior wall (32) of the household wall, and the conduits (28) and (30), constructed such that they are able to extend through this exterior wall. The conduits (28) and (30) may be made of any suitable material which is appropriate for this purpose (e.g., sheet metal or flexible insulated duct), and the conduits may be connected to the compartment in a variety of ways.

''It should also be noted that the first conduit (28) is connected to the compartment (24) at a location which is lower than that where the second conduit (30) is connected to the compartment. This arrangement is used to facilitate outside air from through the first conduit (28) into the compartment, through the compartment, and out of the second conduit (30), by heat convection. While the conduits (28, 30) are shown to be relatively straight pipes or tubes, it should be understood that other suitable shapes may be employed, depending upon such considerations as the available space and the distance between the refrigerator (10) and the exterior wall (32).

''Figures 1 and 2 also show the provision of a fan (34), which may be used to force the flow of outside air into, through, and out of the compartment (24). While the fan (34) is shown to be connected to the compartment (24) in a way which is separate from the connection of the conduits (28, 30) to the compartment, it is preferred that the fan be connected in-line with the conduit (28), either within the conduit or adjacent to its outlet into the compartment. Additionally, it is preferred that the fan (34) be a thermostatically actuated fan, so that its use may be carefully controlled to achieve the most energy efficient benefit.

''Additionally, as shown in Figures 1 and 2, the energy transfer system (12) also includes a movable barrier or wall, in one or both of the conduits (28, 30) to control the flow of air through the compartment (24). In one form of the present invention, this movable barrier is comprised of a butterfly valve (36), which may be used to prevent or enable the flow of outside air into the compartment via a butterfly valve disposed in one or both of the conduits (28, 30). For example, in the case of butterfly valve (36) disposed in the second conduit (30), the flow of outside air through the first conduit (28) could provide sufficient force to open the butterfly valve, and thereby, permit the escape of air from the compartment (24) through the second conduit.

''From the above, it should be understood that the energy transfer system (12) conveys energy in the form of cool outside air to the condenser (16), in order to reduce the energy of the refrigeration process.

''Thus, in accordance with the present invention, the fan (34) may be actuated when the outside air temperature drops to a predetermined threshold level (e.g., 37°C), as the energy efficiency achieved will be greater than the energy consumed by the fan. Alternatively, it should be appreciated that the refrigerator (10) may already include a fan which may be used to divert some air flow into the compartment (24) from the outside. The energy transfer system (12) may also include a thermostatically actuated valve, such as the valve which would enable ambient air from inside the household (e.g., 20°C.) to enter the compartment (24) when the outside air temperature is above a particular threshold level (e.g., 37°C). In this way, the compartment (24) will always be provided with a sufficient supply of air flow to cool the condenser (16).''

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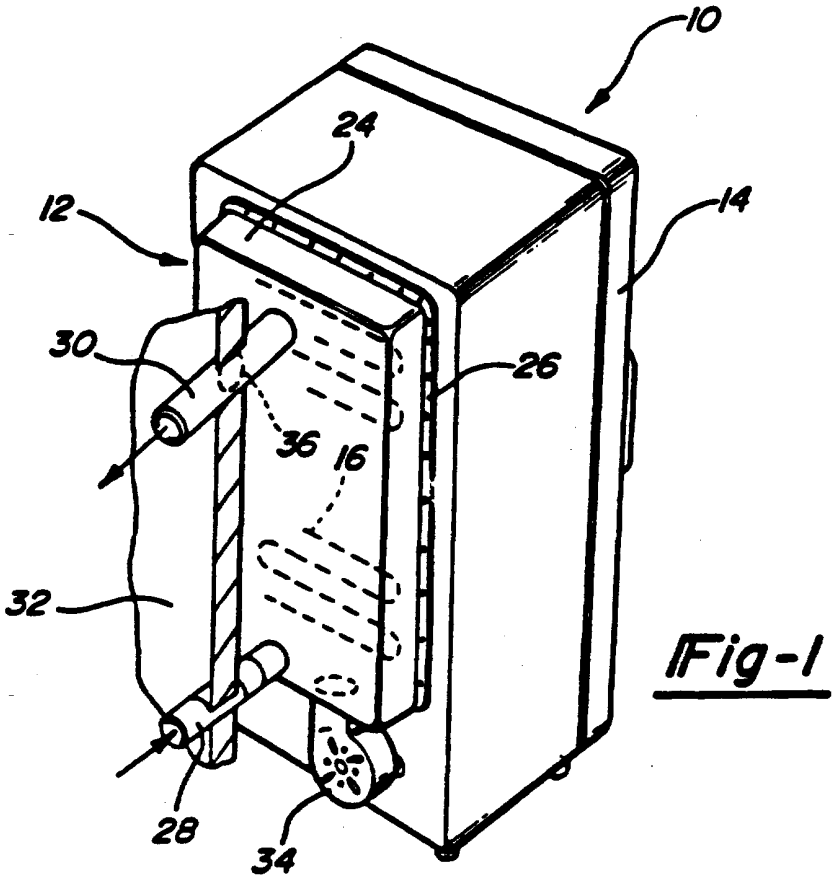

Fig-1

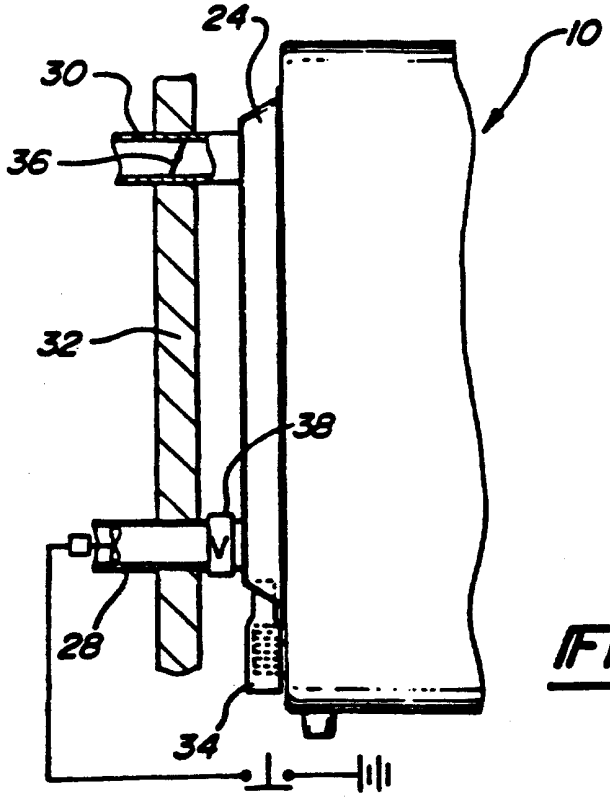

Fig-2

[FR Doc. 95–18037 Filed 7–20–95; 8:45 am]
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