

25. COMMERCIAL REFRIGERATION EQUIPMENT

Recommended directions

Commercial refrigeration equipment can be found in use around the world. Recognising that the performance of this equipment is important, the US, EU and Japanese governments have moved to establish labelling and standards programs to promote more efficiency designs. China and India have not yet acted on these products.

The International Organisation for Standardisation (ISO) has established two families of testing standards for measuring the performance of commercial refrigeration equipment: ISO 1992-3 'Commercial refrigerated cabinets - Methods of test' and ISO 23953 'Refrigerated display cabinets'. It is unknown at this time to what extent the fundamental test methods presented in these ISO standards are used in the development of the national test procedures adopted for the US, EU and Japan.

In the US, there are two test methods used for measuring commercial refrigeration equipment:

- 1) ARI/ANSI 1200-2006 "Performance Rating of Commercial Refrigerated Display Merchandisers and Storage Cabinets." This standard establishes definitions, test requirements, rating requirements, symbols, minimum data requirements for published ratings, marking and nameplate data and conformance conditions. It enables the measurement and comparison of energy consumption for remote commercial refrigerated display merchandisers; remote commercial refrigerated storage cabinets; self-contained commercial refrigerated display merchandisers; and self-contained commercial refrigerated storage cabinets. The second
- 2) ANSI/ASHRAE Standard 72-2005: "Method of Testing Commercial Refrigerators and Freezers." This testing standard is the combination of two earlier ANSI/ASHRAE standards and clears up ambiguity on testing, enhances consistency and test standardization, and requires that other tests be conducted for design validation.

In the EU an EuP study was conducted to determine whether MEPS should be adopted for commercial refrigeration equipment. At this time, the industry is working cooperatively with the designated authorities in Europe to try and establish an accurate and repeatable test method. Thus, the EU currently does not have a test method in place although a voluntary energy performance and rating standard has been in place for some years.

In Japan, the test method used for vending machines is JIS B8561 (2000 & 2007). These are subject to Top Runner efficiency requirements. Other commercial refrigeration equipment, such as refrigerated and frozen-food display cabinets, are not subject to Top Runner standards. Further research must be conducted to determine the commonality between this test standard and that of the ISO.

Conclusions

While commercial refrigeration equipment is recognized as a product that is commonly used around the world, there are many different types (i.e., DOE identifies over 40 product classes), and thus any harmonized test procedures developed would have to take into account variability in the models across the various markets. Furthermore international trade in this equipment is relatively limited across the major trading nations. In addition, in the course of the European review of test procedures, technical shortcomings were identified in the test method for remote condensing equipment. The US regulatory requirements do not presently address remote compressor/condensing units even though they account for the largest part of the CRE market and energy use in the US. This is partly because of

statutory definitions that limit the scope of the rulemaking to packaged units but is also hindered by technical limitations in the test procedures, thus on the face of it there ought to be good grounds to accelerate international cooperation in developing technically adequate test procedures for at least remote condensing units.

Overall, the prospects for international harmonisation of commercial refrigeration equipment are somewhat unclear. On the one-hand the EU appears to be poised to review its test procedures while China, India and Japan have not yet adopted efficiency requirements, and this suggests that there may be an opportunity to encourage the development and adoption of appropriate global test procedures. On the other hand there is only limited activity with these products, the international regulatory and product category picture is confused, and there may be limited interest in supporting globally harmonised efforts.