HARMONIZATION OF STANDARDS
THE AUSTRALIAN AND NEW ZEALAND EXPERIENCE

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1. INTRODUCTION

1.1 BENEFITS

There are economic and environmental benefits to be gained by introducing energy performance requirements for appliances. There are also economic benefits obtainable from the removal of barriers and obstacles to trade. These two facts can be incompatible, as imposing energy efficiency requirements can represent an obstacle to trade. This problem can be solved by agreeing on common standards for energy efficiency, in a process referred to as "standards harmonization."

1.2 MEANING OF “HARMONIZATION”

The term "standards harmonization" is one that is frequently used, but that means different things to different people. To some, it carries the vision of a happy, cooperative situation, while others envisage a powerful partner imposing its will upon weaker ones.

In this paper, the term "harmonization" will mean bringing the Standards of two (or more) economies close enough together to make the complying products of each economy acceptable to the others. This does not necessarily require the Standards to be identical, but differences will generally be due to requirements based on logic or real need, not on habit or prejudice. For example, differences in standards may be present due to differences of voltage or frequency, climate, seismic activity, or different legislative practices.

2. THE HARMONIZATION OF STANDARDS IN AUSTRALIA AND NEW ZEALAND

2.1 THE DECISION TO HARMONIZE

Harmonization may be achieved in different ways. In the case of Australia and New Zealand, the way chosen has been to establish a strong bias to producing joint standards instead of single-country ones. This decision was not primarily for the sake of energy efficiency, but was a recognition that the two countries were increasingly becoming a single market. The consequent effort to remove trade barriers led to the agreement for closer economic relations (CER) and, more recently, to the Trans-Tasman Mutual Recognition Agreement. Under this agreement, it is the rule rather than the exception that any product that may be sold in its jurisdiction of origin may be sold anywhere within Australia and New Zealand. (A jurisdiction means New Zealand or any state or territory of Australia.)

2.2 OUTLINE OF THE JOINT STANDARDS AGREEMENT

In agreeing to produce joint Australian and New Zealand Standards, it was necessary to agree a few rules. The basic ones were as follows.

2.2.1. There was an agreement that the prime assumption would be that all new Standards projects would be joint. If a single country Standard was wanted, then a clear case for it not being joint had to be made.

2.2.2. This rule has had to be relaxed a bit, due to differing requirements for Standards in each country. The most notable area was in buildings, where the different styles of building regulation make different demands upon Standards. As few buildings are transported across the Tasman Sea, a lack of joint Standards is not expected to become a problem. The present convention is that a project is to be joint if at least one of the partners wants it to be joint.

2.2.3. Within a project, agreement is by consensus, not by majority. This provides a degree of protection to minority interests, although on some occasions the advantage lies with those who talk longest.

2.2.4. The final decision to publish is taken after a vote. The overall number of positive votes must be at least 75% of the total, and at least 66% within each country. This is meant to avoid the country with the larger representation forcing through Standards that contain material that is inappropriate for the smaller country. However, in some cases, there may be only two committee members from the smaller country, and this rule effectively gives each of those members the power of veto.

2.2.5. If voting results in an impasse, it is possible to "de-joint" the project and publish separate Standards. However, this is very much the non-preferred option. The matter has to be referred to joint management groups, and before "de-jointing" the project there is great pressure put on the committee to resolve the differences of opinion and retain the Standard as a joint one.

2.2.6. When a project is proposed to be joint, preference is given to having the Standard based on an international Standard, or one with international status. This usually means an IEC or ISO recommendation, but can also be a national Standard that is recognised and used by other countries. This provision is of greater benefit to the smaller economy, where international trade tends to assume greater relative importance than internal trade.

2.2.7. Committee meetings are supposed to take place in both countries, in rough proportion to the representation on the committee. In practice meetings tend to be held more often in Australia, specifically in Sydney. However, this is partly due to geography and airline schedules. With the two-hour time difference between New Zealand and the eastern states of Australia, it is possible to travel from New Zealand to Sydney, attend a full day's meeting and return home in a day. Visiting New Zealand for a day's meeting involves two nights away. Also, there are large distances involved in travelling within Australia; the distance from Perth to Sydney is further than that between Sydney and New Zealand. Sydney is therefore reasonably central.

2.2.8. In the joint Standards development process, additional emphasis is placed on public consultation in both countries. This is in part a reaction to a move to keep the numbers on joint Standards committees relatively small, which is in itself an attempt to reduce the number and duration of committee meetings and make the development process more efficient.

2.3 JOINT ENERGY EFFICIENCY STANDARDS PROJECTS

The first joint Standard was published in 1988 *(ME/23).* The subject was energy performance labelling of refrigerators and freezers. Since then, nearly all energy efficiency related Standards have been joint. The obvious exception is a suite of building energy efficiency Standards produced specifically to support the New Zealand Building Code.

Projects to produce energy efficiency Standards include the following.

2.3.1. Producing the joint Standard on energy performance labelling of refrigerators and freezers *(EL/15/23).*

2.3.2. Developing additional energy performance labelling standards *(EL/15/4)*, which now include clothes washers, dishwashers, clothes dryers and, more recently, room air-conditioners.

2.3.3. Revision of the energy performance labelling Standards *(EL/15/-)*, each to comprise a first part that specifies the method of test, and a second part that specifies the labelling requirements, details of the label design and, in the case of domestic refrigerating appliances, the minimum energy performance that is required. The second parts are designed to be suitable for referencing by regulations. The second parts refer to the first parts for the relevant test method.

2.3.4. A further revision of the "Part 2" energy performance labelling Standards to "deflate" the grading system *(EL/15/23, Wilkenfeld 2000)*. The energy performance label design features a star grading system, with relatively inefficient models being allocated one star. The number of stars increases with efficiency, with the maximum number of stars being six. After the scheme had been in place for ten years, most models on the market were eligible for five or six stars, thus reducing the effect of the label. In other cases, because of bias in the system, manufacturers found it difficult to obtain an improvement in rating. The labelling system was therefore overhauled and redesigned, with a label that is similar in concept but different in detail to the old one.

2.3.5. Extension of the air-conditioner Standard to include ducted and packaged systems with ratings up to 65 kW *(EL/15/16)*. The suite of Standards caters for several energy efficiency requirements. In Australia, small units have mandatory energy performance labelling, and packaged units have mandatory minimum energy performance requirements. The packaged units may also make use of the energy performance labelling on a voluntary basis. In New Zealand the requirements are currently voluntary, although regulations to mirror the Australian requirements are in preparation. The test methods allow for the performance of some larger units to be determined through a mixture of on-site measurement and calculation instead of testing in a test laboratory.

2.3.6. Development and publication of two parts of an efficiency Standard for three-phase cage induction motors *(EL/46)*. The measurement part is a forerunner of the Standard being written by the IEC to form a truly international Standard. At present there are major differences between the North American Standard and the European-based IEC Standard. The part of the Standard that sets efficiency limits includes minimum efficiency values, and also efficiencies that must be met if the motor is to be described as "high efficiency". For two and four pole motors, the high efficiency values are the European "eff 1" level, and the minimum efficiencies correspond to the European "eff 2" values. This part of the Standard has two sets of tables, one for each of the existing common test procedures. Once the new IEC Standard has been published, the Australian/New Zealand Standard will be amended to suit.

2.3.7. Developing two parts of a Standard for ballasts for fluorescent lamps *(EL/41/8)*. Originally this was to be a single part Standard based on the European ballast labelling scheme. However, the APEC Colloquium on Minimum Energy Performance Standards that was held in Korea in October 1999 showed that a separate measurement Standard would be useful as this was lacking from the IEC suite. It was also realised that a single test procedure could be devised that could be used for virtually all ballast efficiency classification schemes, even though the schemes look very different at first glance.

2.3.8. Commencing work on joining the existing separate Standards on domestic electric storage water heaters *(EL/20)*. This is a bigger task than most of the others as the Standard will cover all aspects of the water heaters, not just energy efficiency.

2.3.9. Working on converting the suite of Standards for solid fuel space heaters from New Zealand only to joint Australian and New Zealand and then to international ISO Standards. (The latter are not yet published due to a procedural problem.) This suite does not include a part for minimum energy performance; nor do ISO nor IEC produce such Standards. However, it would be straightforward to set a limit or to introduce some form of labelling if desired. A regional council in New Zealand has imposed limits on particulate emissions, making use of the test method Standard, and up to a point there is good correlation between high efficiency and low particulate emissions.

2.4 STANDARDS RELATED TO ENERGY EFFICIENCY ASPECTS OTHER THAN APPLIANCES

In addition to Standards for energy efficient appliances, a number of other energy efficiency related joint Standards projects have been undertaken.

2.4.1. Production of a Standard that defines the different types of energy audit *(EN/1)*. Recommendations arising from energy audits often have low uptake rates, often because the energy user commissioning the energy audit and the contractor carrying out the energy audit have different ideas on what the purposes, scale and outputs of an energy audit are supposed to be. The Standard specifies three levels of energy audit, with the inputs and outputs for each.

2.4.2. Commencing work on a Standard for solar and heat pump water heaters *(CS/28)*. In Australia and New Zealand, the provision of domestic hot water can use around a third of domestic energy, while conditions are often ideal for using thermal solar energy for this purpose. However, to be acceptable for wide-scale adoption, solar water heaters need to be of reliable quality. This Standard will address this issue. It will also need to cater for the different types of solar water heater; the most suitable type for a given location may depend on local climatic conditions.

2.4.3. Making lighting design standards joint *(LG/1)*. This Standard sets the quality requirements that a lighting design has to meet. It would therefore be used as a reference when setting maximum power density limits or other values for lighting energy efficiency. The New Zealand Building Code has such requirements for lighting in commercial buildings.

2.5 FUTURE PROJECTS

There are a number of projects planned or envisaged for future energy efficiency Standards.

2.5.1. Commercial Refrigeration units — These units include standalone refrigeration units such as drink dispensers and glass-fronted display cabinets for dairy products and the like, typically found in small shops. At the other end of the scale are remote systems typically used in supermarkets for selling frozen goods. The need to display the contents and make them easy to retrieve results in such units being relatively inefficient. There are therefore worthwhile potential energy savings available despite their relatively small numbers compared with domestic refrigeration appliances.

2.5.2. A performance Standard for tubular fluorescent lamps — There are several ages of technology currently used by the manufacturers of fluorescent lamps, and as a result their performance varies widely. The efficacy of a lamp, especially its end-of-life performance, depends on the type of phosphor, the mix of phosphors when several are used, the dimensions of the lamp, and any treatment of the phosphor layer. It is therefore proposed to define tubular fluorescent lamps in terms of their efficacy, using IEC-defined methods, and to set minimum efficacy requirements that will prevent the sale if the least efficacious types, except where they are required for some specific specialised purpose.

3. OUTCOMES

3.1 PROVEN ADVANTAGES

The success of the energy efficiency programmes that utilise Standards has demonstrated the vital role played by sound and carefully developed technical Standards, which provide the necessary definition of energy efficiency plus the means of predicting energy efficiency potential and of measuring effects. Over the years, there was increasing acknowledgement of the several advantages in taking a joint approach to the development of energy efficiency Standards.

3.1.1. There is a wider pool of expertise to draw from, thus ensuring high quality input to the Standards development process. For the development of the Standards on electric motors, for example, the initial drafting was carried out by a pair of experienced former motors designers, one from Australia and one from New Zealand. Possibly these were the only two such people available for the drafting.

3.1.2. Having two or more countries involved in developing a Standard forces a degree of flexibility and hence wider applicability. This means that the resulting Standard is more likely to be suitable for additional countries, with consequent benefits to trade in the products covered by the Standard.

3.1.3. The cost of developing a joint Standard is very much less than the cost of developing separate Standards for each country. This may be especially true for smaller countries in a joint arrangement. There are fewer members of the standards committee involved from the smaller country, and while travel costs are higher, these are often not much more than the cost of domestic travel.

3.1.4. As additional benefit, it has been found that cooperation in developing energy efficiency Standards has led to cooperation on other energy efficiency projects. Examples have been the sharing of results of investigations into standby losses in homes, and exchanging publicity material and making it available to counterpart agencies in the other country.

3.2 DRAWBACKS

To counterbalance partially the advantages, there are a few minor disadvantages.

3.2.1. The development time for a Standard is likely to be a bit longer, mainly because of the extra time needed for communications, postal delivery of the various committee drafts, giving sufficient notice of meetings to take account of the need to book foreign travel etc. However, after a committee has met a couple of times, it becomes more viable to hold some of the shorter meetings with a telephone link between the countries.

3.2.2. There is some inevitable loss of complete control and the need to compromise on some points. On the other hand, the Standard will probably, to an objective observer, be the better for taking differing perspectives into account. Also, it is still possible to have a few national variations within a Standard, although more often than not it is possible to attribute the variation to other factors. For example, most of the joint Standards dealing with energy performance labelling distinguish between countries “where registration of labels is required” and countries “where registration is not required”. In practical terms, these are Australia and New Zealand respectively, but by stating the difference in this way, it makes the Standard more independent of regulations and also more attractive to other countries who may wish to adopt or adapt the Standard.

3.2.3. One problem that did not have to be faced by Australia and New Zealand was what language the joint Standards were to be written in. Although there are certain differences in accent, vocabulary, usage and spelling in the two countries, the choice of English as the language for Standards is fairly obvious. Other countries may face the expense and trouble of translation if joint Standards are proposed.

4. CONCLUSIONS

4.1 GUIDELINES

The experience of Australia and New Zealand has been that cooperation in the production of joint energy efficiency Standards is a worthwhile and beneficial exercise. If venturing down such a cooperative track, there are some basic guidelines to follow.

4.1.1. Set clear procedural rules for the development of Standards.

4.1.2. Check that it is practical for committee members to attend most meetings in person.

4.1.3. Consider all the different climatic and geographic areas of the potential application of the Standard, and also the different social, economic and cultural aspects that may affect the use of the Standard. Formulate the Standard so that it may be used for different purposes and to support different regulatory and voluntary regimes.

4.1.4. Allow, or indeed encourage, input from all stakeholders, the public, and even from potentially interested parties in other countries.

4.2 FUTURE DEVELOPMENTS

It is likely that in the future there will be increasing benefits to be gained from having energy efficiency Standards with international standing.

4.2.1. When developing an energy efficiency Standard, even for single-country use, it will be important to know what developments are happening, both regionally and internationally (even though at present international standards have a tendency to be the same as European regional ones).

4.2.2. At the initial stage of planning an energy efficiency Standard, it will be necessary to decide whether it ought to be single-country project, or made joint, or even proposed as a regional or international Standard.

4.2.3. To have influence over international Standards, it is necessary to participate in the development of international Standards, and in particular to attend meetings and to speak there. Sheer numbers at meetings may not be quite so important as having those attending know the Asia-Pacific regional view of the subject.

4.2.4. At present, the international standards organisations do not produce Standards that specify limits of energy performance (what Australia and New Zealand would term the "second parts" of their energy efficiency Standards). It may be worthwhile to consider developing regional energy performance classification Standards.

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