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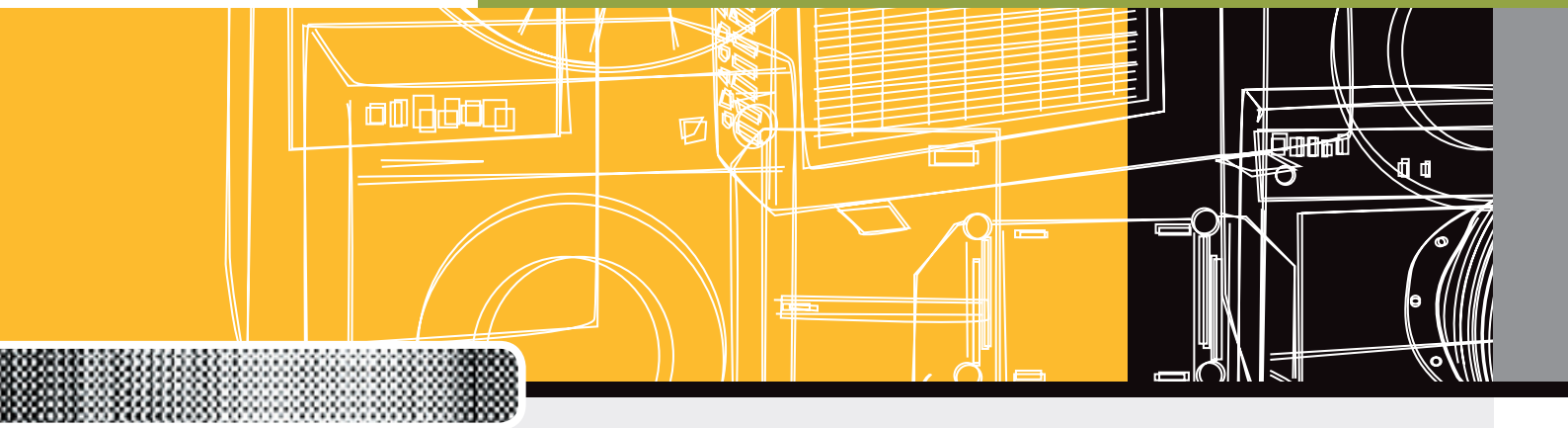
NATIONAL APPLIANCE AND EQUIPMENT
ENERGY EFFICIENCY PROGRAM

STANDARDS DEVELOPMENT - 2002



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March 2003

Standards Development 2002

NAEEEC Report 2003/06

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INTRODUCTION

All Australian governments are committed to making sure that the National Appliance and Equipment Energy Efficiency Program (NAEEEP) they have developed over the past 15 years promotes better products to consumers.

The National Appliance and Equipment Energy Efficiency Committee (NAEEEC), the body of government officials charged with administering the program is committed to both:

1. Developing Australian Standards to underpin the scheme (whether existing or emerging) that are robust, technically relevant and reproducible; and
2. Assisting the organisations that test to these Australian Standards to measure energy efficiency and other performance indicators accurately.

Each year, NAEEEC devotes a considerable portion of its budget to projects that might be described as Standards Development, such as:

- Funding of testing designed to develop industry competency with a new or developing Standard.
- Funding of testing programs designed to inform the process of the setting of MEPS levels.
- Commissioning of round robin testing programs designed to ensure that enforcement programs are based on robust and reproducible test methods.
- Provision of technical expertise to Standards Committees.
- Assistance to Standards Australia to maintain representation on key international Standards Committees.
- Assistance in the development and maintenance of the supply of materials used in testing.

During 2002 NAEEEC committed more than $350,000 to standards development and round robins and a further $105,000 for checktesting. This report details that work, which is reported by appliance type. In this calendar year, the major expenditure items were electric water heater and commercial refrigeration testing, though all products within the program were addressed in some way during the year. In addition, NAEEEC together with Standards Australia provides financial support to Australian delegates to travel to attend international standards meetings throughout the world. This not insubstantial cost is accepted by government as part of maintaining technically sound Australian Standards. In 2002, NAEEEC supported delegates to attend meetings of ISO refrigerator committee TC85 SC5, ISO air conditioner committee TC85 SC6, IEC clothes washer committee SC59D (and working groups), IEC dishwasher committee SC59A, IEC standby working group TC59 WG9 and IEC electric motor efficiency committee SC2G.

This is the first public report of this type prepared by NAEEEC. NAEEEC proposes to report annually on this subject if stakeholders find this information of value.

ELECTRIC WATER HEATERS

Number of Registrations in 2002	**2**
Number of independent NATA accredited Laboratories	**2**
NAEEEC expenditure/commitment on Standards Development in 2002	**$95,000**

Background

At present Australia and New Zealand use separate but similar test standards for determining heat loss and capacity of electric water heaters. In 1999 it was agreed that the two standards should be harmonised into a single joint Australian and New Zealand standard to be known as AS/NZS 1056.1 (this may be published as a new standard number).

Over the past 3 years development work undertaken by NAEEEC in collaboration with manufacturers has lead to the development of a draft joint standard. In 2002 a test program was undertaken to refine the test method and determine what differences, if any, exist between the performance results obtained using either the current Australian standard, the current New Zealand standard or the proposed new joint standard.

In June 2002 NAEEEC commissioned SGS Australia to conduct tests to the various standards under review on a range of water heater units. These units were supplied by manufacturers in Australia, New Zealand and the USA. SGS Australia is a NATA registered laboratory for water heater testing. As an additional precaution, a NATA witness was used to check the set up for each of the tests. Additional tests to investigate particular aspects of the new test method were also undertaken. Test to the US test method were also conducted on the US units.

Research Undertaken This Year

A total of 9 test units were supplied by industry. These included units from Australia (4), New Zealand (3) and the US (2). With the exception of two of the New Zealand units that were low pressure (remote feed tank), all other units tested were mains pressure. The US units were included in the test program for comparative purposes. This was considered important given that future MEPS levels may be partially based upon equivalent levels adopted in the US – the main purpose was to confirm current US MEPS levels and look at comparative results between the test methods.

The following range of tests were commissioned in the test program.

Heat Loss Tests

- Heat Loss tests to AS 1056.1-1991
- Heat Loss tests to NZS 4606-1989 (or NZS 4602 as applicable)
- Heat Loss tests to AS/NZS 1056.1:2002 (draft)
- Heat Loss tests to USA water heater test standard (Part 430 subpart B Appendix E) for US units only.

Static Capacity Test

- To NZS 4606-1989

Hot Water Delivery Rating Test

- To AS/NZS 1056.1:2002 (draft) (tests complete, results not available yet)

Investigations were undertaken into the following areas:

- The effect on heat loss resulting from differing ΔT (different core temperatures, impact of wider thermostat deadbands)
- The effect of different methods of ambient temperature measurement (weighted and unweighted sensors)
- The effect of pipe insulation on inlet and outlet fittings
- Appropriate levels of resolution for energy and temperature measurement
- Use of integration for data collection

Outcomes to Date

A report on the tests was prepared by EES and presented to the EL/20 meeting in New Zealand in early August 2002. Additional tests were undertaken through to November 2002 when a brief presentation of results was made to EL/20.

The study generally found that the test method was robust. The major issues identified in the study were:

- The importance of accounting for temperature drift in heat loss calculations. Failure to account for such drift could result in measurement errors of 25% for small tanks and as high as 100% in large tanks.
- Confirmation that the proposed method for determining the temperature control cut-out temperature (ie the 5 minute period starting 3 minutes after the power is switched) is a reliable method of temperature determination, noting that the period around when the power is switched can be subject to convection currents.
- The use of a 24 hour equilibrium period prior to testing was generally found to be adequate. This period could be reduced in certain circumstances subject to further analysis of start up curves.
- It is critical to ascertain that the tank remains in thermal equilibrium throughout the test.
- Thermal mass has little effect on the determination of average ambient air temperatures.

Next Steps

A round robin testing program using two of the test units used in the 2002 test program has been initiated in 2003. Both independent and industry laboratories will participate in the program. Tests are expected to be completed by mid 2003 and a report prepared soon after.

A full report on the results of the test program will be tabled at EL20 in April 2003.

COMMERCIAL REFRIGERATORS

Number of Registrations in 2002	**N/A**
Number of independent NATA accredited Laboratories	**0***
NAEEEC expenditure/commitment on Standards Development in 2002	**$105,000**

* Several laboratories are NATA accredited for residential refrigerator and freezer testing. It is expected that a number of these laboratories will extend their current accreditation to include for the testing of commercial refrigerators when required.

Background

Minimum energy performance standards for commercial refrigeration units are expected to commence in 2004. Australian Standards committee ME/008 is further redeveloping Australian standard AS1731 for the testing of commercial refrigerators to closely follow the IEC prEN 441.

NAEEEC and ME/008 identified the need to conduct some development testing on commercial refrigerators. The purpose of the test program is to assist the standards committee to refine the test procedure, product groups and to assist government and industry in setting a mutually acceptable MEPS level.

Research Undertaken This Year

Following some initial test procedure development work undertaken at Mechlab a series of tests were commissioned from two test laboratories late in 2002. These tests are being conducted on a range of commercial refrigeration units supplied by industry.

The test program includes the following scope of works:

- Tests on a total of 13 units including open, closed and remote types.
- Limited testing at different climate classes.
- Comparative testing using both the Australian standard AS1731 and the US standard ANSI/ASRAE 72-1998.
- A limited round robin comparing results obtained from the two test laboratories on a common test unit.
- Development and performance analysis of various test pack types permitted for use in the Australian standard.

Next Steps

Those parts of the standard relating to test methodology will be released for comment in March 2003 with the proposed minimum energy performance levels available mid year 2003.

LIGHTING BALLASTS

Number of Registrations in 2002	**N/A**
Number of independent NATA accredited Laboratories	**2**
NAEEEC expenditure/commitment on Standards Development in 2002	**$10,000**

Background

In 2001 AS/NZS 4783.1:2001 *Performance of electrical lighting equipment – Ballasts for fluorescent lamps* was published. The objective of this standard is to provide the lighting industry with an acceptable method of test to determine the energy consumption and performance of fluorescent lamp ballasts available for sale in Australia and New Zealand.

In early 2003 minimum energy performance standards for fluorescent lamp ballasts were introduced in Australia and New Zealand. To ensure industry confidence in the use of this standard for the purposes of demonstrating compliance with MEPS NAEEEC, undertook a series of tests using the recently published standard.

In June 2002 NAEEEC commissioned TCA Australia to conduct tests in accordance with AS/NZS 4783.1:2001 on a range of ballasts. TCA Australia is a NATA registered laboratory for fluorescent lamp ballast testing. The purpose of the tests was to ensure that the test method for ballast efficiency (AS/NZS4783.1) could be practically applied in a test laboratory and also to review the requirements for ballast MEPS in the draft Part 2 to make sure that these were consistent with both the test method in Part 1 (links between Part 1 and Part 2 were consistent) and the agreements on MEPS between government and industry were accurately incorporated.

Research Undertaken This Year

A total of 27 test ballasts were supplied by two leading suppliers to the Australian market. These ballasts included 18/20W units, 36/40W units and 58/65W units. In the initial test program only the 36W ballasts were tested (11 in total). These units covered a range of rated voltages including 230V, 240V and 250V as well as a range of efficiencies (mainly code (C) and low loss type ballasts (B1)). All test ballasts were of the ferromagnetic type.

Each ballast was tested to determine total corrected input power. Total corrected input power was determined using two different methods:

- As per Appendix C of AS/NZS4783.1:2001 ie with a relative light output measurement.
- As per Appendix E of AS/NZS4783.1:2001 ie without a relative light output measurement (only power measurement into the lamp as a proxy for light output).

Tests were conducted on each test ballast at four different voltages; 220V, 230V, 240V and 250V. The voltage to the reference ballast remained constant for all tests.

Generally other aspects of the tests were conducted in accordance with the relevant requirements of standard AS/NZS4783.1:2001. Relative light output was measured in accordance with Appendix D of AS/NZS 4783.1:2001.

Late in 2002 re tests on five of the 36W units using a modified test method were also conducted.

Outcomes to Date

Test results were analysed and circulated to the standards committee EL41/8.

The tests uncovered some practical issues regarding the test method and some recommendations were included to overcome these problems. Some changes were also required to the draft Part 2 standard to make this consistent with MEPS objectives and the test method in Part 1. Recommendations were made to EL41/8 overcome these problems and were subsequently implemented in the Part 2 prior to its publication in late 2002.

One further outcome of the test program was the development of a low cost screening method to check for MEPS compliance. This has been developed in conjunction with Ultra-Tech Electronics.

Next Steps

During the first half of 2003 as a follow up to these initial tests the following additional tests are planned.

- Testing of five 36W units at a second independent laboratory
- Testing of a range of other ballasts of 18W and 58W capacities at TCA
- Screen testing of a range of other ballasts

Upon completion of all testing (including round robins) a final report will be produced by EES and circulated to EL41/8. This is expected to be completed in the second half of 2003.

CLOTHES DRYERS

Number of Registrations in 2002	**11**
Number of independent NATA accredited Laboratories	**3**
NAEEEC expenditure/commitment on Standards Development in 2002	**$5000**

Background

Three Australian laboratories currently hold NATA accreditation for the testing of clothes dryers. As part of the program to improve reproducibility of the performance tests included in AS/NZS 2442.1, NAEEEC has undertook in 2000 round robin testing amongst these independent NATA accredited test laboratories. The results of this work were published by NAEEEC in March 2001 as "Verification Testing – Clothes Dryers". The outcome of this work was a series of recommendations that an improved test method designed to account for buoyancy and accumulated water within the dryer be included as an amendment to the standard and these were accepted by EL15/4 in 2001. There have been delays within Standards Australia regarding the publication of this amendment. However it is now due for public comment and publication in 2003.

Following the round robin program of 2000, a checktesting program undertaken in 2001 found problems with a dryer that used conductivity as the method of sensing moisture levels. Conductivity dryers use the conductivity of the moist load to assess the moisture content to determine the time of program termination and their performance may be affected by the conductivity of the water used to wet the load in the dryer test. The current standard AS/NZS2442.1-1996 (as amended) may not adequately deal with these types of clothes dryers as the conductivity is a parameter that is not yet specified in the Australian Standard (though the 3rd edition of IEC Standard IEC61121 (2002-07) covers this aspect).

In 2002 it was decided to undertake some preliminary investigations into this aspect of clothes dryer testing.

Research Undertaken This Year

A limited number of tests (8) were conducted at the laboratories of Test Research to determine the impact of varying water conductivity on the test result. Conductivity of the test water ranged from about 2.0 mSiemens/m (distilled water) to about 200 mSiemens/m. Water hardness ranged from 5 to 44 ppm (note: conductivity of the water is not necessarily related to the water hardness).

Outcomes to Date

The results showed no strong correlation between water conductivity and final moisture content or energy consumption. Repeat tests using water with a set conductivity showed good repeatability, energy consumption results were within a range of ±0.7%. When using water with varying levels of conductivity the variability in energy consumption results increased ten fold to ± 7% (and the results became random in nature). The variability also appears to be dependent on the precise control strategy and technology used within the dryer. The results of these tests are to be

presented to the next Standards Australia committee meeting (EL 15/4) on clothes dryers.

Next Steps

Following presentation of results at EL 15/4 a direction shall be sought from that committee as to what future work (if any) should be undertaken in this area. At this stage, when considering checktest results on clothes dryers that use the conductivity method of sensing moisture levels regulators shall take into account the potential impact of variations in test water conductivity.

DISHWASHERS

Number of Registrations in 2002	**41**
Number of independent NATA accredited Laboratories	**3**

Background

Over the past 3 years, EL15/4 has been working towards a new test method for dishwashers, a full revision of AS/NZS2007.1-1998. This new method includes a range of refinements which have been developed from experience as well as the adoption of a range of measures from the forthcoming IEC test method with has been under revision since 1996. NAEEEC has funded some 150 dishwasher tests on a range of reference machines and test machines over the period in order to assist in the standards development process.

At the time of the design of the new energy label in 1999 (which was implemented in 2000) it was agreed that all dishwashers on the market would be retested to the new dishwasher test method when it was completed. In addition, a new requirement for the energy label was that dishwashers would be tested for energy labelling on the program the manufacturer recommends for a normally soiled load (currently no specific program is required). This was to come into force at the time when there was conversion to the new test method.

A review of the dishwasher energy labelling algorithm in mid 2002 recommended that the current algorithm remain unchanged during the transition to the new test method and the introduction of the "normal" program. The transition date has been adjusted several times due to delays in the release of the new test method.

Research Undertaken This Year

As a follow on from the testing program conducted on the reference dishwashing machines in the previous years, additional tests were conducted on four of the reference machines. These tests were conducted at Test Research. The tests were designed to gauge the reproducibility of the new test method and the reference program on the reference machines and to provide extra data on calibration procedures for the reference machine which is now written into the standard. These tests were the final in the series.

Outcomes to Date

The results from parallel testing of all four machines demonstrated that each of the units produced results within the accepted range for reproducibility.

Next Steps

The revised version of AS/NZS 2007.1 went to public comment in mid 2002. Standards Australia report that the standard should be published in April 2003.

The associated part 2 revision was released for public comment in January 2003. Comments are being considered in March 2003 and this standard should be published shortly after the Part 1.

DISTRIBUTION TRANSFORMERS

Number of Registrations in 2002	**N/A**
Number of independent NATA accredited Laboratories	**1**

Background

Distribution Transformers within the range 10 kVA to 2500 kVA units for use on 11kV and 22kV networks are scheduled to be regulated for MEPS in 2004. Over the past few years, the Standards committee has been developing a new regulatory standard AS 2374.1.2 for MEPS for distribution transformers.

NAEEEC has identified the need to conduct some development testing on distribution transformers. The purpose of the test program is to assist the standards committee to refine the test procedure and to assist government and industry in setting a mutually acceptable MEPS level.

Research Undertaken This Year

In May 2002 expressions of interest in providing testing services were sought from various transformer testing facilities throughout Australia.

Outcomes to Date

From the 16 laboratories approached in May 2002, two were selected to provide test services. One independent and one manufacturer's laboratory were selected; both have NATA accreditation for the test.

Next Steps

In 2003 several distribution transformer manufacturers will be approached with a view to providing sample units within the range 10 kVA to 2500 kVA for testing. Tests will be conducted in accordance with the Australian Standards AS2374.1 (oil filled) and AS2735 (dry type) to determine the power efficiency level of each unit. A report is expected to be completed by the end of 2003.

ELECTRIC MOTORS

Number of Registrations in 2002	**331**
Number of independent NATA accredited Laboratories	**0***

* While there are no independent NATA accredited laboratories at the moment, several laboratories have expressed interest. One manufacturer lab has NATA accreditation for motor testing and offers a commercial testing service.

Background

MEPS for three phase electric motors came into force on 1 October 2001. As at the end of 2002, CMG Technology Laboratory was the only NATA accredited laboratory for electric motor testing in Australia. It remains the sole test facility used by NAEEEC for verification testing.

In 2002, two further test laboratories have indicated that they are likely to seek NATA accreditation for motor testing. To gauge the reproducibility of the test method and to assist these two laboratories in their endeavours to attain accreditation, two of the units tested at CMG Australia will be included in a round robin to these other laboratories when they obtain the relevant accreditation.

Research Undertaken This Year

Ongoing negotiations have been conducted with test laboratories that are likely candidates for NATA accreditation throughout 2002.

Outcomes to Date

Whilst strong expressions of interest have been received from laboratories proposing to obtain NATA accreditation, no firm commitment has yet been made. NAEEEC continues to work with and encourage test facilities considering obtaining NATA accreditation for the test.

Next Steps

Assuming that firm commitments are received from laboratories seeking NATA accreditation round robin testing will be initiated. Each participating test laboratory will be asked to perform the following tests:

- Pretest - measure the stator line to line resistance at ambient temperature.
- Rated load thermal test – as per clause 7 of AS1359.101 (IEC60034-1).
- Percentage load tests – as per clause 6.3.2 of AS/NZS1359.102.3 (nominally 25%, 50%, 75%, 100%, 125% and 150%) – after thermal equilibrium conditions are established as required.
- No load tests – as per clause 6.4 of AS/NZS1359.102.3 (6 voltage points approximately 20%, 35%, 50%, 75%, 100% and 125% of rated).

LAMPS

Number of Registrations in 2002	**N/A**
Number of independent NATA accredited Laboratories	**Unknown**

Background

It is proposed that MEPS for linear fluorescent lamps be introduced in 2004. The proposal was detailed in the MEPS profile for lamps which was released in August 2002 (NAEEEC Report 2002/10). A draft Part 2 for lamps MEPS (proposed as AS/NZS 4782.2) which incorporates the MEPS levels contained in the MEPS profile is currently being prepared by EL41/8 for release in mid 2003.

Test standards for lamps are AS/NZS60081 and AS/NZS60901, which are identical to IEC standards of the same number. These standards are used extensively internationally.

Research Undertaken This Year

Test laboratories that have NATA accreditation and suitable capability for lamp testing are being sought in 2003.

Outcomes to Date

There are no specific outcomes at this stage.

Next Steps

It is expected that a range of test will be conducted at appropriate laboratories prior to the introduction of MEPS in 2004.

REFRIGERATORS/FREEZERS

Number of Registrations in 2002	**147**
Number of independent NATA accredited Laboratories	**4**

Background

An extensive round robin testing program amongst the independent NATA accredited testing laboratories was completed in 2000 and a report entitled *Verification Testing – Refrigerators* was published in March 2001. The report found a high degree of reproducibility for the test amongst the three NATA registered test laboratories at that time.

In 2001 an extensive testing program was undertaken on both Australian and US refrigerators to assist in the setting of MEPS levels. The outcome of the test program was an agreement between industry and government on new MEPS levels now due to be introduced on 1 January 2005.

No development testing has been undertaken for this appliance type since 2001. A fourth, newly NATA accredited laboratory will be included in a limited round robin test program in 2003.

Research Undertaken This Year

No specific research work on refrigerators was undertaken this year. The standards committee EL15/23 are continuing with a number of refinements to the text of the test method.

Outcomes to Date

There are no specific outcomes at this stage.

Next Steps

A limited round robin test program for refrigerators is planned for later in 2003.

AIR-CONDITIONERS – Single Phase

Number of Registrations in 2002	**468**
Number of independent NATA accredited Laboratories	**2**
NAEEEC expenditure/commitment on Standards Development in 2002	**$5,000**

Background

Two Australian laboratories currently hold NATA accreditation for the testing of single phase air-conditioners. As part of the program to improve reproducibility of the performance tests included in AS/NZS 3823.1.1 and AS/NZS 3823.1.2, NAEEEC has undertaken to conduct round robin tests amongst these independent NATA accredited test laboratories.

A third laboratory associated with the University of South Australia has also been invited to participate provided the tests are used as part of a NATA accreditation process.

Research Undertaken This Year

Two air conditioner units that were tested as part of the National checktesting program were selected for comparative testing. Both units were relatively small single phase air conditioners; one unit was of the inverter type (split system) and the other was a standard single speed compressor (split system).

Following the checktest at the first laboratory the units were shipped in late 2002 to the second laboratory. Comparative tests were conducted in February/March 2003.

In addition a NATA accredited power measurement laboratory was contracted to conduct parallel testing of the units to ascertain whether certain load types that are known to have a high level of harmonics (eg inverter air conditioners) are likely to create power measurement accuracy issues. The work will compare standard metering equipment typical of labs used in appliance testing (eg rotating disk meters) with highly accurate digital metering that can adequately handle any harmonic waveforms. The outcome of these tests may be to recommend restrictions on the type of metering used to measure certain load types that are known to have higher harmonic content.

Outcomes to Date

Testing is due to be completed by end of April 2003

Next Steps

Results shall be published in a report due to be released in mid 2003.

AIR-CONDITIONERS – Three Phase

Number of Registrations in 2002	**458**
Number of independent NATA accredited Laboratories	**2**
NAEEEC expenditure/commitment on Standards Development in 2002	**$75,000**

Background

This product was only subject to regulation from October 2001. A test program to assist in developing competency in the test procedure amongst accredited facilities was completed in 2001. In 2002 no further developmental work to improve competency (repeatability and reproducibility) was undertaken on this appliance type because there was sufficient confidence in the accuracy of the existing test facilities.

In 2002, checktesting was confined to verification tests of four strategically selected packaged air-conditioners. All four units failed the checktest. All units failed the cooling capacity test, two units also failed the heating capacity test and the same two units also failed to meet the MEPS requirement. These tests were seen as demonstration tests establishing the accuracy of testing in this field.

Further verification tests have been scheduled for 2003 where failure would see sanctions applied.

In 2002 the University of NSW, Department of Mechanical Engineering was engaged to assist in developing a second edition of part 3 of AS/NZS 3823 . In particular, the University undertook ongoing development of a computer simulation tool (HPRATE) suitable for the testing of three phase air conditioners. This work culminated in the publication of the second edition of AS/NZS 3823.3:2002 in August 2002. As part of this consultancy the University also held two training seminars in 2002. The seminars were designed to inform industry of their obligations in respect of three phase air conditioners and to give them experience in the use of a simulation tool..

Outcomes to Date

There are no specific outcomes at this stage.

Next Steps

A limited round robin is proposed for late 2003.

CLOTHES WASHERS

Number of Registrations in 2002	**70**
Number of independent NATA accredited Laboratories	**3**
NAEEEC expenditure/commitment on Standards Development in 2002	**$45,000**

Background

Since 1999, clothes washers have been subject to significant standards development work. This work has included the following:

- **Development of a new reference detergent:** Problems with the supply of the reference detergent for top loading machines necessitated a review of the potential supply options for this critical test consumable.
- **Development of a swatch normalisation procedure:** The object of this testing program was determine the relationship between the wash performance of various swatch batches. Such a relationship can then be used to normalise results of all tests.
- **Assistance in the development of a rinse performance test:** Standards Australia is seeking to develop a reliable test method for measuring the rinse performance of washing machines. Such an indicator is needed so existing voluntary and any future mandatory water efficiency rating schemes can be based on pertinent, accurate and reproducible test results.

Research Undertaken This Year

Research - Reference Detergent

Following the evaluation of a number of alternatives, a contract was let to Specialty Chemicals in association with The University of NSW Analytical Laboratories to develop and market a new reference detergent suitable for use in top loading washing machines (and possibly front loading machines as well). The detergent development was completed in April 2002 and has been available for sales since that date.

A series of trial tests of the new top load reference detergent in a front loading machine were also conducted. The test used the new reference detergent in combination with a perborate and a silicone antifoaming agent. The results from these tests were compared to the results obtained using the current IEC front load detergent (also in combination with perborate).

Research- Swatch normalisation procedure

In order that the relationship between the wash performance of each batch could be determined various batches of AS9 soiled swatches (both current and historical batches) were washed over a range of wash durations, with an identical mechanical and chemical action for every wash. Reflectance of the swatch was recorded both before and after washing. The results were then used to formulate normalization curves for each batch. Following significant preparatory work, in May 2002 the main test program was commenced (stage 3). These tests were completed in early June 2002.

Research – Rinse performance test

Existing measures used for measuring rinse performance (eg ANSI/AHAM and IEC) have all depended on measuring concentrations of alkali in the final rinse water. All have fallen into disuse because of doubts about their accuracy and the dependence on the initial alkalinity of the water. At a meeting of the EL 15/4 standards committee in October 2002 it was agreed that an alternative method should be trailed.

The recommended method relates to detergent dissolved in the retained water in a wet load. It depends upon UV spectrophotometry measurement of the concentration of sodium dodecylbenzene sulfonate (SDS) in the aqueous liquor held in the wet load on completion of the program. SDS is the surfactant in AS/NZS wash performance test. At this stage NAEEEC is providing support in the form of Project Management services. To date no testing has been undertaken.

Outcomes to Date

Outcomes - Reference Detergent Development

Initial tests in May 2002 showed that the new detergent produced soil removal results with a tolerance of ±1.5%. The testing of the reference detergent continued during the second half of 2002. More recent tests on samples that appear to have absorbed some moisture (it is unclear at this stage if this was a problem in the manufacture or in the use of the product) have produced soil removal results with a tolerance of ±2.5%. Energy Efficient Strategies (EES) continues to work with all concerned parties to improve these tolerances.

The results of tests using the reference detergent in a front loading machine suggest that if sufficient anti foaming agent is used (5g), soil removal results obtained using the new top load reference detergent are almost identical to the results obtained using the current front load detergent.

Outcomes – Swatch normalisation procedure

The results from this test program along with a proposed swatch normalisation method were presented to a Standards Committee meeting (EL15/4) on June 25, 2002. The meeting accepted the proposed normalisation method. The method has subsequently been scheduled to become mandatory in March 2003. Swatch normalisation data is available from www.energyefficient.com.au and is being included on the revised energyrating web site.

Outcomes – Swatch normalisation procedure

NAEEEC consultants have scoped the research work required for this program. They have prepared tendered documents, received tenders and made recommendations to the Standards committee in respect of the received tenders. Continued progress is now contingent upon the identification of a body to fund the ongoing test program as new swatch batches are required.

Next Steps

Following the completion in 2002 of the development of the new top load reference detergent and swatch calibration procedure a round robin testing program will be conducted with the three independent NATA accredited test laboratories in 2003. The test program will include both a front load and a top load washing machine. Upon completion of the tests (mid 2003) it is expected that the test units will be offered to industry for comparative testing. A report will be available late in 2003.

NAEEEC will continue to test and calibrate all new AS9 swatch batches prior to approval for their use. In addition, as part of a quality control procedure, NAEEEC shall undertake ongoing testing of each new batch of reference detergent using the swatch calibration machine.

NAEEEC MEMBER ORGANISATIONS

The Commonwealth, New Zealand, each State and each Territory are represented on NAEEEC and participate in its deliberations. Representatives are drawn from officials within Government departments, agencies and statutory authorities or from persons appointed to represent those bodies. Representatives are usually a senior officer directly responsible for energy efficiency. The membership is currently under review and may expand to include other agencies working in these fields.

The *Australian Greenhouse Office* is the lead Commonwealth agency for greenhouse matters. The Australian Greenhouse Office (AGO) is responsible for monitoring the National Greenhouse Strategy in a cooperative effort with States and Territories and with the input of local Government, industry and the community. An AGO officer is the chair of NAEEEC and others provide support for its activities.

The NSW *Ministry of Energy and Utilities* provides policy advice to the NSW Government and operates a regulatory framework aimed at facilitating environmentally responsible appliance and equipment energy use. The Ministry is represented on the Energy Efficiency and Greenhouse Gas working group through which the appliance and equipment related elements of the National Greenhouse Strategy will be progressed.

The NSW *Sustainable Energy Development Authority* was established in February 1996 with a mission to reduce the level of greenhouse emissions in New South Wales by investing in the commercialisation and use of sustainable energy technologies.

The *Office of the Chief Electrical Inspector* is the Victorian technical regulator responsible for electrical safety and equipment efficiency. Its mission is to ensure the safety of electricity supply and use throughout the State. The corporate vision of the Office is to demonstrate national leadership in electrical safety matters and to improve the superior electrical safety record in Victoria. The Office's strategic focus is to ensure a high level of compliance is sustained by industry with equipment efficiency labelling and associated regulations.

The *Sustainable Energy Authority* was established in 2000 by the Victorian Government to provide a focus for sustainable energy in Victoria. The Authority's objective is to accelerate progress towards a sustainable energy future by bringing together the best available knowledge and expertise to stimulate innovation and provide Victorians with greater choice in how they can take action to significantly improve energy sustainability.

The *Electrical Safety Office, Department of Industrial Relations*, is the Queensland technical regulator responsible for electrical safety and appliance and equipment energy efficiency. The office ensures compliance with electrical safety and efficiency regulations throughout Queensland.

The *Environmental Protection Agency*, a Division of Sustainable Industries, is Queensland's lead agency in the promotion of energy efficiency, renewable power, and other initiatives that reduce greenhouse gas emissions throughout the State. The key aim of the unit is to achieve increased investment in sustainable energy systems, technology and practice.

Energy Safety WA seeks to promote conditions that enable the energy needs of the Western Australian Community to be met safely, efficiently and economically.

The Western Australian *Sustainable Energy Development Office* promotes more efficient energy use and increased use of renewable energy to reduce greenhouse gas emissions while increasing jobs in related industries.

The *Office of the Technical Regulator* seeks to ensure the coordinated development and implementation of policies and regulatory responsibilities for the safe, efficient and responsible provision and use of energy for the benefit of the South Australian community.

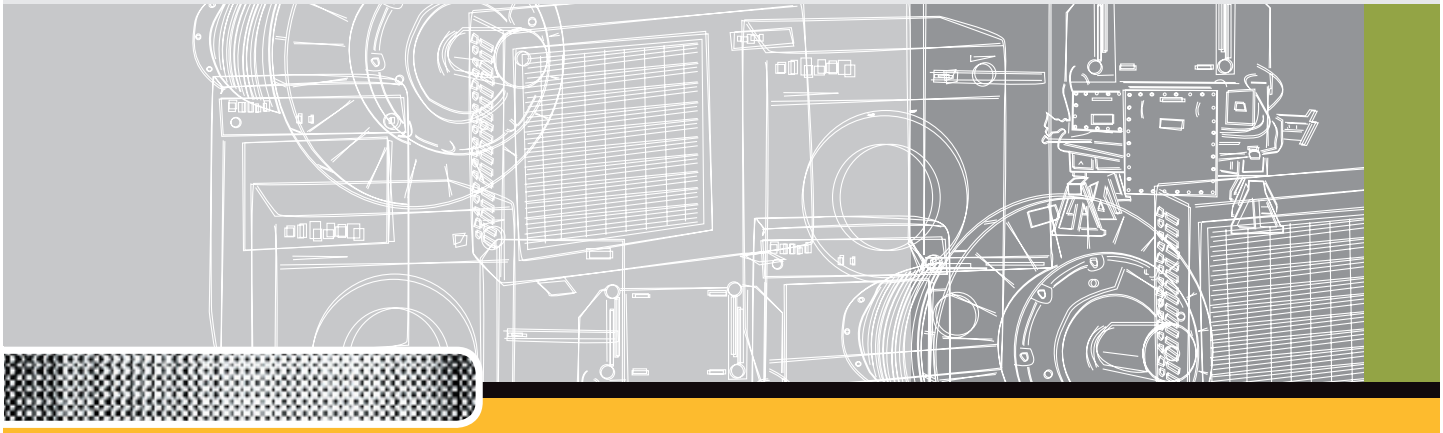
The Tasmanian Government's interest is managed by the *Office of Energy, Planning and Conservation.*

The Australian Capital Territory's interest is managed by the *Energy Policy Unit, Economic Management Branch, ACT Department of Treasury.* (http://www.treasury.act.gov.au/energypolicy)

The *Department of Employment, Education and Training* is responsible for the administration of regulations in the Northern Territory regarding various aspects of safety, performance and licensing for goods and services including electrical appliances.

The *Energy Efficiency and Conservation Authority (EECA)* is the principal body responsible for helping to deliver the New Zealand Government's extensive sustainable energy future. EECA's function is to encourage, promote and support energy efficiency, energy conservation and the use of renewable energy sources.

The *Ministry for the Environment* (MfE) is the lead environmental policy agency in New Zealand and is the government policy agency which advises the Minister of Energy on energy efficiency and renewables policy. MfE administers the Energy Efficiency and Conservation Act 2000, and energy efficiency regulations made under the Act.



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or any member organisation working
on the National Appliance and Equipment
Energy Efficiency Program.