

### Motor testing centres network developed under the IEA's 4E EMSA

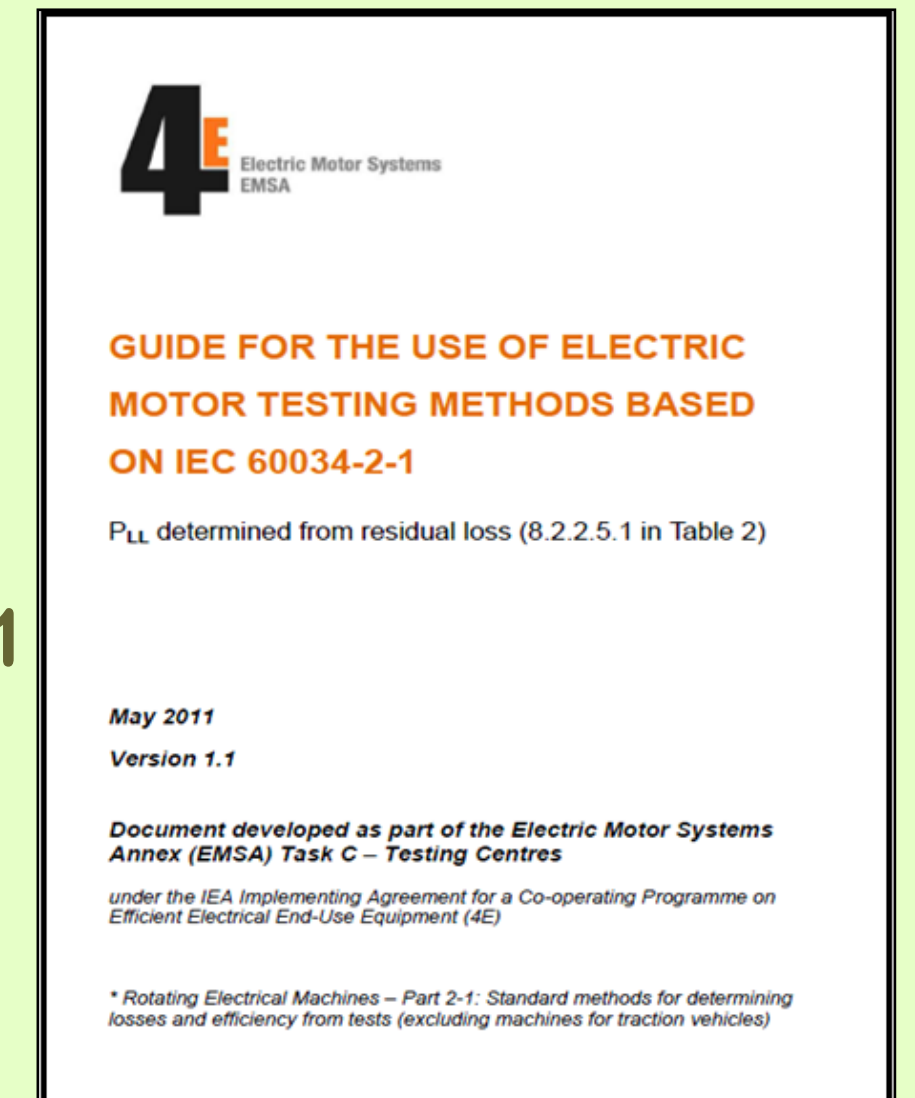
The 4E Electric Motor Systems Annex (EMSA) aims to raise awareness worldwide about the energy saving potential of motor systems, and to provide guidance to exploit these. At present, seven national Governments are members of the Annex: Australia, Austria, Denmark, The Netherlands, South Africa, Switzerland, and the United States of America. Australia has taken the role of Task Leader for the International Energy Agency's 4E EMSA Task C called 'Testing Centres'. Under this task, a Testing Centres network has been developed to raise the quality of motor testing and measurements worldwide by developing networks between motor testing laboratories in different countries in order to facilitate the exchange of experiences and develop best practice.

The next Testing Centres Workshop will be held after lunch on 4 December in Zurich alongside the *Motor Summit 2012*. For more information and to register to participate, contact [bonn.maguire@climatechange.gov.au](mailto:bonn.maguire@climatechange.gov.au).



### Testing Centres Network activities related to the IEC test method

The testing centres network has focussed on interpreting and clarifying the use of the IEC 60034-2-1 test method in a practical laboratory setting and with regulation in mind.



### APP project on harmonisation of test methods

The Asia-Pacific Partnership on Clean Development and Climate (APP), which ended in April 2011, brought together Australia, Canada, China, India, Japan, Republic of Korea and the United States to address the challenges of climate change, energy security, and air pollution in a way that encourages economic development and reduces poverty. A 'Harmonisation of Test Methods' project undertaken by Australia involved testing 27 motors with three different power ratings: 0.75 kW, 11 kW, 55 kW to four test methods from the international test method standard, IEC 60034-2-1:2007. Three of these methods were (indirect) summation of losses methods and the fourth was the output:input method, which provides a direct measurement of efficiency.

### Project on testing motors controlled by variable speed drives (VSDs)

Significant energy savings can potentially be made in global electricity use if the energy efficiency of motor systems is optimized. There is increasing interest by industry and governments on the energy savings potential of using VSDs in variable load situations and about the use and testing of VSDs and motor combinations, pushing the development of the draft technical specification *IEC 60034-2-3*.

In 2011, a VSD testing project was carried out to investigate the impact of a number of variables on various VSD-motor combinations.



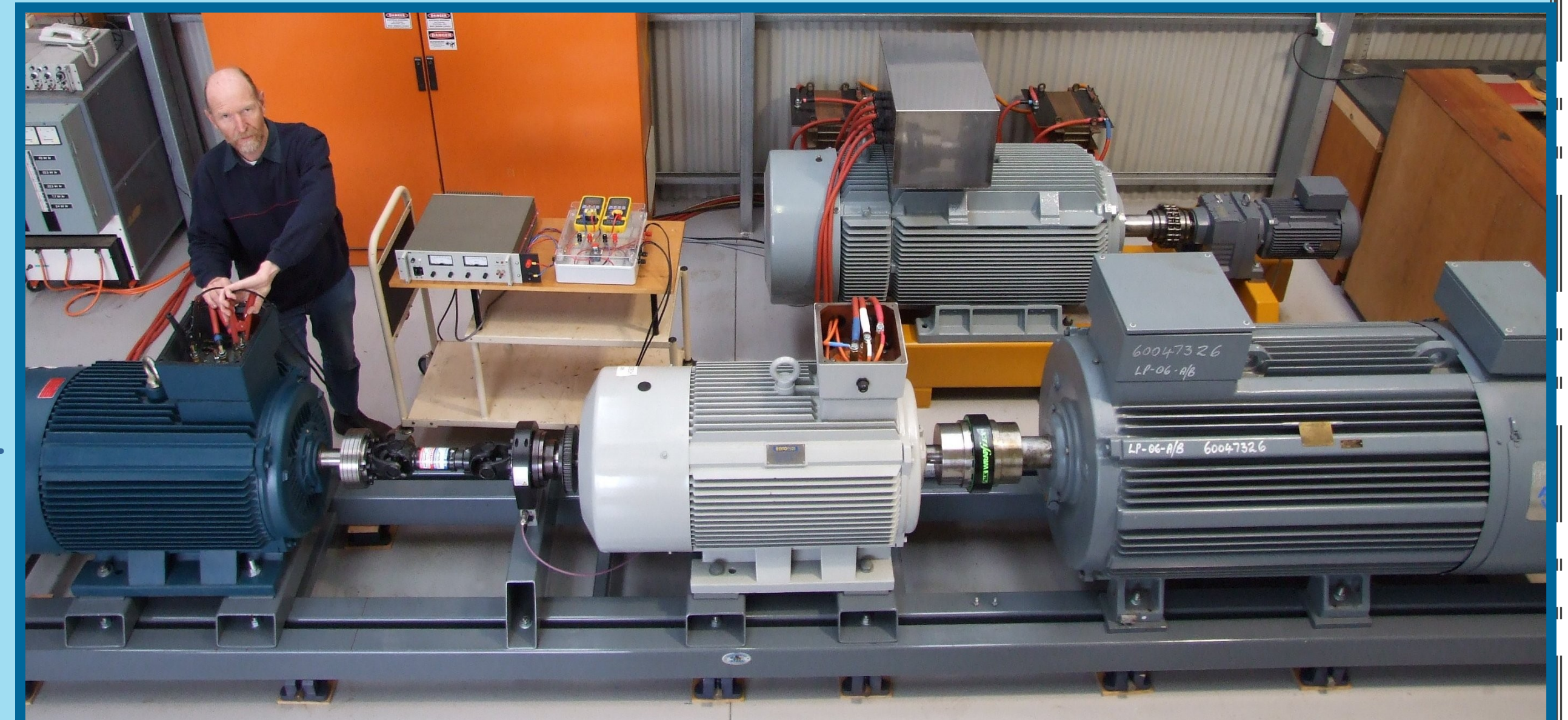
### Software 'round robin'

The Software Round Robin simulated a round-robin motor efficiency measurement trial, but without exchanging an actual motor. Ten participating laboratories were provided with test data obtained from an 11 kW, 2 pole motor, and asked to calculate the motor's loss components, and its overall efficiency, according to the requirements set out in IEC 60034-2-1: 2007.

# Australian-led Developments in electric motor energy efficiency testing

## Abstract

According to the International Energy Agency (IEA), an average of 45% of electricity used in major countries powers electric motor systems. Australia has been regulating the minimum energy performance standards (MEPS) of electric motors since 2001 (MEPS1). The stringency of these levels was increased in 2006 (MEPS2). It is mandatory that, prior to their sale, all three phase cage rotor induction motors from 0.75kW up to, but not including- 185kW must be registered and meet the MEPS2 requirements as specified in Australian/New Zealand Standard AS/NZS 1359.5:2004. To ensure the effectiveness of this regulation, Australia has been focusing efforts on compliance testing, to inform standards development, and harmonisation at the domestic and international levels. In the last three years the Australian Equipment Energy Efficiency (E3) Program has tested more than 100 motors as part of its compliance activities.



Australia has also been leading a number of other initiatives at the international initiatives level. In particular, Australia has been acting as Task Leader of the International Energy Agency 4E EMSA 'Testing Centres' Task C, which began in 2009. Under this task, a testing Centres network has been developed to facilitate discussion and sharing of experience with motor testing in laboratories around the World. The aim is to raise the quality of testing of motors worldwide. by developing networks between laboratories in different countries. The aim of this has been to facilitate discussion and sharing of experience with motor testing in laboratories around the World.

Further international benchmarking was done by a 'software round robin' to examine the impact of calculating efficiency values by different laboratory software packages/implementation using the same data and IEC testing procedure algorithms.

Another initiative managed by Australia was the project 'Harmonisation of Test Methods' conducted under the Asia Pacific Partnership (APP) Building and Appliances Task Force (BATF). This involved a comparative analysis of results from the testing of 27 motors in China, to four different test methods, as described in the international test method standard: IEC 60034-2-1:2007.

Australia has also undertaken a project on measuring the efficiency of motors when driven by different VSDs.



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