AS 4234—1994

Australian Standard®

Solar water heaters—Domestic and heat pump—Calculation of energy consumption

This Australian Standard was prepared by Committee CS/28, Solar Water Heaters. It was approved on behalf of the Council of Standards Australia on 24 June 1994 and published on 22 August 1994.

The following interests are represented on Committee CS/28:

Australian and New Zealand Solar Energy Society

Australian Electrical and Electronic Manufacturers Association

Department of Mines and Energy, N.T.

Department of Primary Industries & Energy (Commonwealth)

Electricity Supply Association of Australia

Energy Research Centre

Energy Victoria

Engineering and Water Supply Department, S.A.

Master Plumbers and Mechanical Services Association of Victoria

Metal Trades Industry Association of Australia

Office of Energy N.S.W

Solar Energy Industries Association of Australia

The Australian Gas Association

The University of New South Wales

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PREFACE

This Standard was prepared by the Standards Australia Committee CS/28 on Solar Water Heaters. The performance evaluation procedure defined in this Standard has been designed to provide a means of evaluating the annual task performance of solar and heat pump water heaters and to provide a means for quickly evaluating the performance of a series of product configurations for a range of locations.

This Standard sets out a method of determining the annual performance of domestic solar and heat pump water heaters using a combination of test results for component performance and a mathematical model to determine an annual load cycle task performance. The Standard also defines a procedure for evaluating the task performance of conventional domestic water heaters so that the energy savings of solar and heat pump water heaters can be evaluated relative to conventional water heaters operated under the same annual task load.

Testing of solar water heating systems under outdoor or indoor solar irradiance conditions has been defined in AS 2984—1987, *Solar water heaters—Methods of test for thermal performance—Outdoor test method*, and AS 2813—1985, *Solar water heaters—Methods of test for thermal performance—Simulator method*. Outdoor testing requires a long test period (8-10 weeks) due to the need to obtain stable inputs for a range of operating conditions. Indoor testing (solar simulator) provides stable input conditions, however, the equipment required and operating costs are very expensive. The major drawback of the outdoor or indoor solar irradiance testing is that the test must be repeated for every variation of system configuration offered by the supplier.

The procedure defined in this Standard overcomes the time and cost limitations of previous water heater performance standards and provides a procedure for calculating the purchased energy consumption of solar and heat pump domestic water heaters.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

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