AS 2984—1987

Australian Standard®

SOLAR WATER HEATERS – METHOD OF TEST FOR THERMAL PERFORMANCE – OUTDOOR TEST METHOD

This Australian Standard was prepared by Committee CS/28, Solar Water Heaters. It was approved on behalf of the Council of the Standards Association of Australia on 28 August 1987 and published on 5 October 1987.

The following interests are represented on Committee CS/28:

Australian Gas Association

CSIRO, Division of Energy Technology

Department of Consumer Affairs, N.S.W.

Department of Housing and Construction

Department of Industrial Relations and Employment, N.S.W.

Department of Mines and Energy, N.T.

Department of Resources and Energy

Electricity Supply Association of Australia

Energy Authority of New South Wales

Engineering and Water Supply Department, S.A.

Gas and Fuel Corporation of Victoria

International Solar Energy Society

Master Plumbers and Mechanical Services Association of Victoria

Melbourne and Metropolitan Board of Works

Metal Trades Industry Association of Australia

Solar Energy Industries Association of Australia

University of New South Wales

Victorian Solar Energy Council

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PREFACE

This Standard was prepared by the Association's Committee on Solar Water Heaters. It is one of a series of Standards relating to solar hot water systems prepared in response to requests from the solar industry and the CSIRO. The proposal for a Standard dealing with outdoor testing of systems was made by the Energy Authority of N.S.W.

Outdoor testing of solar water heaters has been carried out over many years in Australia, by Government and industrial organizations and educational establishments, as a tool in research, and product development. Much recent work has been done by the School of Mechanical and Industrial Engineering at the University of N.S.W. for the purpose of comparison of different systems, and it is this work which forms the basis of this Standard. The assistance received from the University of N.S.W. is gratefully acknowledged.

The thermal performance of a household solar water heating system depends on external factors such as –

(a) climate;

(b) total daily load and monthly variation of daily load;

(c) time of loads during the day; and

(d) temperature of the cold inlet and hot outlet water.

Testing of solar water heating systems using a solar simulator has been defined in AS 2813. The range of systems that can be tested in a simulator is governed by the degree to which the simulator can produce the irradiation incidence angle patterns specified in AS 2813. To test collectors that are influenced strongly by irradiation incidence angle (e.g. evacuated tube and stationary concentrator collectors) AS 2813 specifies that the simulator has to be capable of operating through angles from 10 degrees to the horizontal to the maximum solar elevation.

As few test sites in Australia will have access to a simulator that satisfies the requirements of AS 2813, this Standard outdoor test method is proposed as an alternative.

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