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Reconfirmed 2016

Australian Standard™

Heat exchangers— Tubeplates— Method of design

This Australian Standard was prepared by Committee ME/1, Pressure Equipment. It was approved on behalf of the Council of Standards Australia on 16 April 1999 and published on 5 July 1999.

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STANDARDS AUSTRALIA

RECONFIRMATION

OF

AS 3857—1999

Heat exchangers—Tubeplates—Method of design

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Technical Committee ME-001 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

Certain documents referenced in the publication may have been amended since the original date of publication. Users are advised to ensure that they are using the latest versions of such documents as appropriate, unless advised otherwise in this Reconfirmation Notice.

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee ME/1, Pressure Equipment, to supersede AS 3857—1990, *Heat exchangers—Tubeplates—Method of design*. Acknowledgment is gratefully made of the considerable assistance provided by Orica Engineering Pty Ltd (formerly ICI Australia Engineering Pty Ltd) which developed this method of design.

This Standard is the result of a consensus among representatives on the Joint Committee to produce it as an Australian Standard. Consensus means general agreement by all interested parties. Consensus includes an attempt to remove all objection and implies much more than the concept of a simple majority, but not necessarily unanimity. It is consistent with this meaning that a member may be included in the Committee list and yet not be in full agreement with all clauses of this Standard.

The main change in this revision is the incorporation of Amendment No. 1 to AS 3857—1990.

The Standard covers a method for the design of heat exchanger tubeplates. The Standard was originally drafted with the intention that it would be incorporated into AS 1210, *Pressure vessels*, as a replacement for the method contained in the first and second editions of AS 1210 but the draft was subsequently terminated. However, during the course of development of the proposal, its content was extended and it is now a self-contained method of design, suitable for publication as a separate Standard.

The Standard provides an additional method to other methods specified in AS 1210 for the design of tubeplates for heat exchangers complying with that Standard. The method may also be suitable for the design of some boiler tubeplates.

Although the design method may appear to be somewhat complex, it is no more so than some design methods for other pressure vessel components such as flanges.

While the method is applicable to long-hand calculations, its most effective use will be achieved by programming a computer. An appendix provides a simple algorithm for calculating Lord Kelvin's modified Bessel functions and this algorithm allows programs to be compiled on a computer. Tabulated values of the functions are also provided in the appendix. Suggested worksheets and worked examples of calculations are included in another appendix.

As the proposed design method allows actual stresses at any location to be determined, it can be used for heat exchangers designed to AS 1210 Supplement 1, *Unfired Pressure vessels—Advanced design and construction* (Supplement to AS 1210—1997).

The theoretical background for the method given in this Standard is given in a technical paper titled 'Australian Tubesheet Code' by P McGowan and I Mirovics presented at the ASME Conference on Pressure Vessels and Piping at Nashville, Tennesee in June 1990.

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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