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English version

Welding - Comparison of standardised methods for the avoidance of cold cracks (ISO/TR 17844:2004)

Soudage - Comparaison de méthodes normalisées pour éviter les fissures à froid (ISO/TR 17844:2004)

Schweißen - Vergleich von genormten Verfahren zur Vermeidung von Kaltrissen (ISO/TR 17844:2004)

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Foreword

This document CEN ISO/TR 17844:2004 has been prepared by Technical Committee CEN/TC 121 "Welding", the secretariat of which is held by DIN, in collaboration with Technical Committee ISO/TC 44 "Welding and allied processes".

This document includes a Bibliography.

Introduction

The purpose of this document is to compare currently available methods for determining welding procedures for avoiding hydrogen induced cold cracking during fabrication.

This subject has been extensively studied in recent years and many methods of providing guidance on avoidance of cold cracking have been published. These methods vary considerably in how comprehensively the subject has to be treated. It was considered appropriate to set certain important working criteria for selecting the published methods to be included in this document. In deciding which criteria would be adopted it was agreed that these should include the capabilities for effective use by industry, the end user. Thus the methods should be able to be used on the basis of traditionally available information and relevant factors. The agreed list of criteria was set to include the following main input parameters

- steel composition;
- welding heat input;
- joint geometry and material thickness;
- weld hydrogen level;
- preheat

and in addition

- graphical/computer format of data.

Using the above criteria, the following methods were selected.

- CE (EN 1011-2/ISO/TR 17671-2, C.2-Method A);
- CET (EN 1011-2/ISO/TR 17671-2, C.3-Method B);
- CE_N (JIS B 8285);
- P_{cm} (ANSI/AWS D1.1).

Each method is considered in a separate clause, under the following headings.

- Description of type of test data used to devise the guidelines, e.g. CTS, y-groove, etc;
- Parent metal composition and range of applicability;
- Material thickness and range of applicability;
- Hydrogen level and welding processes;
- Heat input;
- Other factors/special considerations;
- Determination of preheat (step-by-step example description).

An informative Annex compares and contrasts the predictions of the methods in respect of ten different steels and a range of material thickness, joint geometry's, heat inputs and hydrogen levels.

It is important that any calculations using a given method are undertaken using the current edition of the appropriate standard.

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