The Standards of the Brazed Aluminium Plate-Fin Heat Exchanger Manufacturers' Association

Second Edition 2000

Revision 2 (31 August 2007)

The following gives the Revision 2 to sections of the Standards with the changes highlighted. The Appendix repeats the information but with no highlighting so that you can cut and paste the information into your full copy of the Standards.

The changes are to Section 4.7.1 and 4.9.1.

Revision 1 was issued 25 February 2003 and still applies.

The list of ALPEMA Members given on page (ii), and their contact information, gets out of date rapidly. It is therefore recommended that you go to the Membership page of the ALPEMA web site for the latest information (www.alpema.org/members.htm).

Issued by ALPEMA

www.alpema.org
davebutterwirth@alpema.org

Corrections and revisions - highlighted

First change

4.7.1 Non-Destructive Testing

Manufacturers recommend the following non-destructive testing of the connecting pipework welds to be carried out to maintain an acceptable quality level.

1. A visual inspection of all connecting pipework root welds.
2. A liquid penetrant examination of all connecting pipework and cap welds.
3. A radiographic examination of a minimum of 10% of all closing butt welds. Representative samples of each welder's work should be examined.

The test procedures and acceptance criteria shall be in accordance with the governing construction code.

Note: Dye penetrant examination of the brazed surfaces should not be performed as this testing is not appropriate, not required and the results will be misleading. This is due to

1. The configuration of the side bar and parting sheet surface and
2. The braze engagement length (bar width) which greatly exceeds the minimum braze engagement length required by the governing construction Codes.

For Clarification Purposes:

1. Due to the geometry of the side bar and parting sheet surface, false indications of braze defects will occur when subjected to liquid penetrant examination.
2. Due to the width of the bars used, the braze engagement length far exceeds the minimum required by the construction Codes and thus the adequacy of the braze joint does not depend on the braze joint extending fully to the outside surface of the plate fin heat exchanger.

Second change

4.9.1 Heat Exchanger Start-up

WARNING: TO ENSURE SAFE OPERATION EACH STREAM OF THE HEAT EXCHANGER MUST BE PROTECTED WITH A PRESSURE RELIEF DEVICE. IT IS THE RESPONSIBILITY OF THE USER TO PROVIDE AND ENSURE PROPER INSTALLATION OF THE PRESSURE RELIEF DEVICES. THE RELIEF PRESSURES SHALL BE SET NO HIGHER THAN THE MAXIMUM ALLOWABLE WORKING PRESSURE OF THE STREAMS, CONSIDERING BOTH THE HEAT EXCHANGER AND THE CONNECTING PIPING.

Prior to start-up, internals of the connecting pipework and vessels system must be thoroughly cleansed of all particulate matter such as rust, scale, grit or sand. The system should then be purged using oxygen-free nitrogen or other suitable purge gas (dewpoint of -40°C or less). The objective of this purge is to remove any residual moisture, the presence of which could result in freeze damage to the heat exchanger during operation. Duration of the purge should range from a few hours to several days depending on size, complexity and physical state of the heat exchanger system. The purge exit should be monitored until consistent readings of dewpoint (approaching that of the inlet purge gas dewpoint) are obtained.

Cool-down of the heat exchanger shall, where possible, be done using gas (i.e. no liquid phase present). Cool-down should be carefully controlled to avoid thermal shocking of the heat exchanger and pipework. A rate of 2°C per minute maximum is normally recommended to allow for gradual dimensional adjustments but the manufacturer should be consulted if this rate is likely to be exceeded. With agreement of the manufacturer rates in excess of 2°C have been approved for certain heat exchanger applications. [Sentence removed] The medium when introduced to the system should not have a temperature difference greater than 30°C relative to the local metal temperature.

A record of all relevant data should be kept for each individual start-up. This will be required in the event of problems developing later in the life of the heat exchanger.

WARNING: THE MAXIMUM OPERATING PRESSURE FOR THE DESIGN OR WORKING TEMPERATURE SHOWN ON THE HEAT EXCHANGER'S NAMEPLATE AND THE MANUFACTURER'S DRAWINGS MUST NOT BE EXCEEDED.

Appendix

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