FABRICATION NEWS

January 1, 2022

BOARDMAN NEWSLETTER:

We have appreciated the positive feedback to the newsletter we've sent out over the years. We want to continue building strong relationships with our customers and be a resource as the experts in pressure vessel fabrication.

We hope you find this newsletter beneficial as we share tips in the pressure vessel design and construction process.

If there are any topics you would like us to address, please let us know

CLAD FABRICATION

Explosion bonded clad material is commonly used for pressure vessel construction. The clad liner (cladder) is explosively bonded to the backer material (backer). The alloy clad material can be bonded to most metals. The most common types of backer materials are SA-516-70 (P no. 1 material) and SA-387 Gr. 11 (P no. 4 material).

During the fabrication process, the edges of the clad material are "peeled back" to remove a small portion of the cladder from the backer. This allows the fabricator to weld the backer material without welding the clad liner. The backer material is the strength of the vessel. Once the backer material is welded, then you can perform the clad restoration.

Clad restoration means that you are "restoring the clad liner" that was peeled back. This is achieved by welding. The first pass of weld is called the buffer layer. The buffer layer of weld metal essentially seals the backer from the alloy liner. The next layers of weld are the chemistry layers. The chemistry layers of weld metal should match the chemical composition of the alloy clad material.

Clad restoration is performed on longitudinal seams, girth seams and nozzles insertion welds. Some common types of welding process used for clad restoration are SAW, ESW, FCAW, and GMAW.

Question: What are the three types of clad used for cladded vessel construction?
Answer: 1) Explosion Bonded Clad. 2) Rolled Bonded Clad. 3) Cladding by weld metal overlay.

The most common type of clad used for vessel construction is explosion bonded clad. This is most commonly used for shell plate and head plate materials. Nozzles usually receive a weld metal overlay, or most commonly referred to as a Corrosion Resistant Overlay (CRO)

Question: How can I be sure that the welding consumables used for fabrication meet the chemical requirements of the weld metal specification and classification?

Answer: Positive Material Identification (PMI). PMI is a way to test the chemical composition of weld metal and base metal. There are three different types of portable instrumentation that you can use to check the chemical composition of a metal. Optical Emission Spectrometry (OES), X-Ray Fluorescence (XRF), and Laser Induced Breakdown Spectroscopy (LIBS).

Before you start any production welding, you should always test your weld metal to ensure it's what you purchased. Just because a spool of wire has a sticker on it that says ER316L, doesn't guarantee you that your product is ER316L. Everyone makes mistakes, so make sure you are using the correct welding consumable.

BOARDMAN'S ENGINEERING SEMINAR

We are excited to be able to restart our extremely popular engineering seminar. This seminar is another example of Boardman setting the standard in our industry and investing in the relationship and development of our customers. During the two-day seminar, our guests will learn the following:

- Overview of ASME Code
- Design Criteria & Calculations
- Internal/External Pressure
- Fabrication Techniques
- Flange Ratings
- Metallurgy
- Joint Design & Efficiency
- NDT Methods & Testing
- Hands-on Welding Experience

The 2022 seminar will be held on April 19-20 and is filling up fast. Please reach out for more information and if you're interested in attending. As a recent attendee stated, ***"The experience tht Boardman and the instructor bring to the classroom is incredibly valuable. This course was worth every second of my time and I will be recommending it to all of my colleagues."***

We would love to hear from you and have an opportunity to quote your next project

Boardman, LLC

1135 S McKinley OKC, OK 73108
405-601-5180
shagemann@boardmaninc.com
www.boardmaninc.com