



6 BIG MISTAKES MADE IN THE WELDING INDUSTRY

WHAT DO YOU NEED TO KNOW?

by Fernando Lescovar

Arc welding, this young lady of more than 100 years of age, has always been considered a mixture of science and skill. With the arrival of the 21st century and its requirements for high performance, productivity, and generation of products on a scale never seen before, this process has come to require, nowadays, increased attention in serving various areas of knowledge, to produce welded equipment with low cost, very high quality, prolonged performance guarantee and other similar requirements.

Introduction:

Therefore, based on these strong current requirements, we will deal in the following paragraphs with 6 major mistakes that are usually made by companies that produce welded items and that could achieve greater profitability and process control by identifying one or more of these errors in their daily lives and correcting them.

1. Not thinking about quality objectively

The quality required for a welded assembly (equipment, structures, etc.) It strongly depends on the construction standard that supports this equipment, local legislation, as well as on the additional requirements determined by the customer.

Therefore, the application of quality concepts is directly associated with the acceptance criteria and the discontinuities defined for the product.

A common mistake is to establish the absolute quality of a welded joint as a requirement to be met, or to forget to look at the requirements of the order and apply the standard of the manufacturing company. These errors are a source of great rework or waste of resources.

Quality, therefore, is the pure and simple adequacy of the standard previously determined and desired by the customer and by the official bodies responsible for the current quality standards.



Knowing such requirements, legislation, and standards can generate the optimization of resources in the face of no waste linked to excessive testing and inspections, nor the mistaken absence of inspections.

2. Not Thinking About Lean Manufacturing

Lean manufacturing is based on the Toyota method of manufacturing and has numerous tools that have not yet been absorbed by a large part of the Brazilian industrial market that produces welded equipment, especially in the basic industry. Lean production, when put into use, can add significant gains in productivity, reduction of time, waste, and rework, thus positioning the welding activity as a process of easy increase in the overall profitability of the factory.

Some examples of lean manufacturing tools are:

- Kaizen
- Kanban
- Value Stream Map
- Just in time
- 5S
- Jidoka and Poka Yoke



3. Not surrounding yourself with practical work tools

Old ways of working that considered calculations of the volume of consumables, searches of lists of qualified EPSs, and control of welders, done by hand, to generate great consumption of time of professionals, are now fully possible to be mechanized through applications dedicated to each of these functions, integrated with the data available in the company.

The use of these tools allows for rapid training of professionals still in training (learn on the job) and the availability of professionals with greater knowledge for more noble activities, which require strong dedication and understanding.

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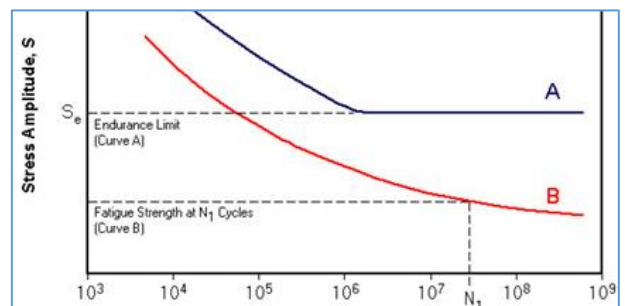
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4. Not mastering the knowledge of welding engineering

The development of steels with a more delicate and complex chemical composition and metallurgy, as well as the evolution of welding processes and machines, require knowledge of welding engineering items, such as fine controls of thermal input, welding metallurgy, and its various aspects, such as the composition of the weld metal, metallurgical characteristic of the thermally affected zone, resulting hardness in the various segments of the weld and so on. Ignorance of these concepts leads to welded joints that may eventually be susceptible to early fatigue, as well as the appearance of cracks and unexpected wear and tear during their use.



5. Not Performing Welding Safely

The welding activity is considered a hot activity that can, as a consequence, generate the ignition of flammable fluids, and fire of combustible materials, thus generating high risks to the team that is close to the execution of this process.

In addition to this specific aspect, arc welding is a source of infrared and ultraviolet radiation, thus also generating consequences related to the negative aspects of these types of radiation.

Other risks related to welding are located in the field of the generation of gases resulting from the melting of consumables and the risks of electric shocks. These concerns, associated with the use of individual and collective protective equipment, are essential for the correct production of welding in a safe environment.



6. Not Constantly Staying Updated and Trained

Welding machines, add-ons, and accessories are constantly being modernized.

Standards are reviewed and published every two years, discoveries on techniques, processes, and consumables are launched on the market, and topics such as the Internet of Things (IoT), cloud storage, big data, and new-generation robotization are also tools of Industry 4.0 that evolve rapidly month by month. It is, therefore, a mandatory item for the welding professional to seek education and

training environments, as well as to maintain their connection with the welding community so that they do not make the mistake of becoming an outdated professional in a short time.

This aspect also covers the factory team, including welders, foremen, and other professionals who deserve continuous improvement updates and training.



The Technik Group is able to assist you in all the situations presented in this text. Count on us.

About Us

The Technik Group's mission is to generate value by bringing innovations and tools that will facilitate the management and engineering of industries in general, in the face of the challenges of the 21st century.

Its purpose is to collaborate and have effective participation in the changes and adaptations to which the Brazilian industrial sector is subject

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Some Reasons Why You Need to Automate the Localization of EPSs and CQs

Throughout our career with our various clients, I have often discussed the management of welding documents, such as Procedure Qualification Records (RQPS), Welding Procedure Specifications (EPS), and Welder Certificates (CQS).

What is most observed is the following:

When a new project arrives for budget, they hand over the project to their senior welding analyst and he searches, joint by joint, in a table of qualified welders and EPS, the fulfillment of all the essential variables of the project (thickness, position, family of materials, heat treatment, processes, copper joints, etc.). The cost of this activity is very high, due to the time dedicated, and involves high risks linked to errors, as we are all human.

See below:

1. When qualifying a redundant RQPS (i.e., you had already qualified it, but due to an error in the verification process, you qualify it again and it costs ~ R\$3000.00, not accounting for lost time, welder's salary, and material costs), there is a loss (waste) of resources.

Also, in this case, qualifying a redundant welder, which costs up to R\$500.00, this cost is added to the previous cost.

2. On the other hand, if you make a mistake by not identifying a lack of EPS for the joints in manufacture, sometimes you may have customers demanding that you stop all work until the new and urgent qualification is done.

This is not so easy to quantify in terms of loss, because it depends on the project and the size of the company, but it can reach hundreds of thousands of dollars

And why is this a common problem?

By the human factor. No matter how good an engineer or analyst is, they are still only human and doing too many cross-checks of information will tire them out and may eventually cause some errors, which could cause them to flag a specific weld as unqualified (when, in reality, it is), or worse, causing them to flag a specific weld as being qualified (when it is not).

Both will increase the cost to the company and your headache as well.

How can you avoid this altogether?

You should work to have a populated database of all your Procedure Qualification Records (RQPS), Welding Procedure Specifications (EPS), and Welder Certificates (CQS), with all the essential variables that are relevant to the codes you work with. From there, make use of the Technik application for the selection and control of welding documents.

Ask us how.

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