CLADDING Vs. HARDFACING

Let's Talk.

Hardfacing and cladding are similar processes often used in welding and metal working. While there are similarities between the two, there are also many differences. To help you understand the differences between hardfacing and cladding, this infographic will take you through the basics.

What is hardfacing?

Hardfacing is a welding process used to deposit wear-resistant layers on metal components typically used on components subject to high wear and tear, such as valves, pump parts, and other machinery parts. The hardfacing process involves depositing metal alloys on the surface of the component to form a protective layer. This layer increases the component's resistance to wear and tear, making it last longer and perform better.

Industries that use hardfacing.

- Cement
- Chemical
- Steel
- Marine
- Mining
- Paper
- Agriculture
- Construction
- Energy
- Pharmaceutical

What is cladding?

Cladding is a welding process that involves depositing a metal layer on the component's surface to increase its corrosion resistance against harsh environments, such as chemicals, water, and extreme temperatures. The cladding process involves depositing a layer of metal on the component's surface, usually stainless steel, and this layer acts as a barrier and prevents corrosion and wear.

Industries that use hardfacing.

- Aerospace
- Medical
- Pharmaceutical
- Marine
- Mining
- Food processing
- Chemical
- Semiconductor
- Energy
- Automotive

The Similarities.

- Involve depositing a metal layer on the component's surface to protect it from wear and corrosion.
- Both processes use manual arc welding and other techniques, such as TIG welding.
- Require a skilled welder to ensure high-quality welds.

The Differences.

- Hardfacing typically involves depositing an alloy of iron and carbon.
- Cladding typically involves depositing a layer of stainless steel.
- Cladding provides corrosion resistance.
- Hardfacing provides wear resistance.

Types of processes

There are a variety of hardfacing and cladding processes available, each with its own advantages and disadvantages. The most common hardfacing and cladding processes are manual arc welding, automatic arc welding, and TIG welding.

Manual arc welding

The most common type of hardfacing and cladding process. It is simple to use and deposits both hardfacing and cladding alloys. However, it is less precise than other processes and can cause incomplete welds.

Automatic arc welding

A more precise process than manual arc welding, often used when precise welds are required, such as in the automotive and aerospace industries. It is a more complex process than manual arc welding and requires a skilled welder to ensure high-quality welds.

TIG welding

The most precise type of hardfacing and cladding process, often used for hardfacing and cladding in the medical and nuclear industries, where precise welds are essential. It is a complex process that requires a skilled welder and is more expensive than other processes.

The Benefits hardfacing vs cladding

Hardfacing and cladding provide a wide range of benefits, including increased wear and corrosion resistance, improved performance, and reduced maintenance costs. The hardfacing and cladding processes also add strength and durability to components, making them last longer and perform better.

Fabricators complete both processes in a short amount of time, making them ideal for time-sensitive projects.

The Challenges hardfacing vs cladding

Although hardfacing and cladding offer several benefits, they also come with some challenges. The processes require a skilled welder to ensure high-quality welds, and they can be expensive. In addition, hardfacing and cladding materials can be difficult to find.

The best materials.

The best hardfacing and cladding materials are strong and durable, with the most common hardfacing material being an alloy of iron and carbon. In contrast, the most common cladding material is stainless steel. Other materials, such as titanium, cobalt, and nickel, work for both processes, too.

The application determines what materials to use. For example, they often use stainless steel for cladding components in corrosive environments, while titanium for hardfacing components is subject to high wear and tear.

The conclusion.

Hardfacing and cladding are similar processes used in welding and metalworking. While there are similarities between the two, there are also many differences. Hardfacing deposits wear-resistant layers on components, while cladding deposits corrosion-resistant layers. The application determines the best hardfacing and cladding materials and techniques.