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Subject: Welding Report

This report contains a discussion of the differences between soldering brazing and welding. It also includes a discussion of 2 types of welding different from MIG welding.

Soldering is the process of connecting different metals by melting a metal alloy of lead and tin with a hot iron that reaches more than 600 degrees Fahrenheit (Tesca, 2021). This technique is commonly used, but not limited, for the assembly of electrical components or wires. When used in parts not related to electrical work, different techniques and materials must be implemented. It is also worth mentioning that the use of lead has continuously decreased when soldering due to health concerns.

Brazing, on the other hand, is the process of joining components with the melting of a filler metal between the parts, reaching temperatures above its melting point (Willingham & Goodall, 2019). It differs from soldering since it can reach temperatures above 842 degrees Fahrenheit and the metal filler does not necessarily consist of lead and tin. It can be made from copper, nickel, cobalt, or even precious metals.

Lastly, welding is the process that creates the union of multiple parts with heat and pressure, feasible with different types of materials such as thermoplastics, metals, and in some cases wood(Sild, 2022). One of the most important differences to notice from this process is the temperature required. In welding, the joints must reach 3800 degrees Celsius which is considerably bigger compared to soldering and brazing. Also, welding creates the strongest joints between the three processes.

The welding process is so widely used that there are multiple techniques developed from this process, like stick welding and laser welding. Stick welding uses a consumable electrode

rod with a flux-coated covering. When it comes in contact with the workpiece it creates a short circuit for a fraction of a second allowing the flow of the current. With this flow, the heat is produced and the arc burns with the workpiece(Fronius, 2023). This practical method is so common that it is used in many areas such as construction, repair, and maintenance work. On the other hand, laser welding employs a highly focused, high-energy laser beam to create precise and controlled welds(ESAB, 2023). Due to its ability to create intricate shapes and extreme precision, it is used in the electronics and aerospace industries. Each of these techniques, and many others, have its advantages and applications, making them essential tools in a wide range of industries.

All in all, there are multiple ways to attach the joints between two parts. Whether it is brazing, soldering, or welding, they all attach parts but should be used accordingly depending on the situation at hand. Even if you choose one of these three processes there are also many techniques available within them that could satisfy the needs of the work being done, like stick welding or laser welding.

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