



How Arc Welding Works

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Arc welding has given us a major step up in the manufacture of metal components. So, how exactly does it work?

Arc welding uses an electrical power source that creates an arc between an electrode and a base substance. The arc creates enough sustained high heat to melt the metal at the point of the arc allowing the metals to fuse. Electrodes come in two different types. They are either consumable or non-consumable depending on if the electrode is actually used up in the welding process or is able to be reused. These are just a few facts about arc welding.

The welding area is often protected by some type of inert gas. This is called shielding. In the early days of arc welding, the shielding gases were oxygen and nitrogen. These gases led to bad welds. They tended to be brittle and porous and tended to fail. In the middle of the last century, research showed that hydrogen worked much better. Later, carbon dioxide replaced hydrogen as the gas of choice in shielding.

The welding industry is very fond of the use of initials in describing the various welding processes. MIG and TIG welding is a good example. MIG welding means metal inert gas welding and TIG welding is tungsten inert gas welding. Other common expressions are SAW for submerged arc welding and FCAW for flux-cored arc welding. Sometimes, people find themselves unduly intimidated by all of these initials and view learning welding with the same skepticism as learning ancient Greek. The truth is that welding, although a very highly skilled craft, is not that difficult to master.

This is an important fact about arc welding because there is a severe shortage of qualified welders and the demand is growing everyday. Almost 80% of American companies that utilize arc welding in their manufacturing process report that have difficulty finding new employees to fill vacancies. It was recently reported that the average age of the professional welder was a very high 54 years. It is easy to see that this rather old work force will be reaching retirement age in high numbers over the next ten years. This has led to the arc welding field being called one of the best kept secrets in the future employment picture.

Because of the use of high voltage electrical currents and extremely high temperatures, arc welding has often been viewed as rather dangerous occupation. The risk from burns and electrical shock was high in the past and the reputation was somewhat deserved. Today, advances in safety regulations and personal safety equipment have reduced the risks greatly. In fact, welding is now considered to be no more dangerous than crafts such as carpentry and plumbing.

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