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If there is one group of elements that has played a significant role in shaping human civilization, it is the metals. One good quality of metals is that they are easy to shape, whether they are molten, hot or cold. Another quality is they can be joined together to merge or to form different shapes. Most metals can be joined by a process called welding.

In welding, the edges of two metal pieces are held together and melted with a gas flame or a powerful electric spark called an â€˜electric arcâ€™. That is why welding is commonly referred to as â€˜arc weldingâ€™ of more specifically Metal Inert Gas welding or MIG welding. The molten metals then fuse together and form a strong joint as they cool.

The technique used in MIG welding is simple. A consumable wire electrode and a shielding gas are fed through a welding gun onto the metal pieces to be welded. When cooled, the bond becomes very strong which can later be finished by grinding, cleaning, polishing and painting. Four primary techniques in MIG welding include globular, short-circuiting, spray and pulse spray.

MIG Welding was initially developed for welding aluminium and other non-ferrous metals and alloys such as brass, copper and bronze. Later developments found it suitable for iron and steel as well because it allowed for lesser welding time compared to other welding processes. Since then, MIG welding has become the most the most preferred and prevalent welding process. MIG welders usually come in between 150 to 450 amperes electrical capacity. Along with welding equipment come a number of welding accessories that include tool balancers, gouging torches, electrodes, connectors, clamps, and welding aid tools such as chipping hammers, electrode holders and pliers.

Today, MIG welding has application in almost all goods manufactured goods from metals. You may not know, but frames of your bicycle and motorcycle, chassis of your car and sides of your refrigerator are made by welding together iron or steel pipes, angles or sheets. Many of the welding processes in mass production industries have now been automated. For example, the entire car body including doors are now made and assembled by robotic arms. The versatility of welding process enables one to create numerous shapes and profiles, in that context it can be said that welding is both an art as well as a science. Current developments include laser welding, friction welding, electron beam welding and ultrasonic welding. Perhaps future developments may make it possible to weld non-metal items as well.

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