

## IPG Photonics Applications Lab

### INTRODUCTION SCRIPT

If you want to stick two pieces of paper together, you can use glue, tape or staples. But what if you need to permanently attach two pieces of metal? Soldering, brazing, and welding are all methods of joining two or more pieces of metal using heat. While soldering and brazing require a filler material, welding may be done without filler by using high temperatures to melt the pieces and then fuse them together. A properly done weld is as strong as the pieces of metal!

Humans have been welding metals for thousands of years, at first by applying heat and pressure. As tools and techniques evolved, blacksmiths developed forge welding, controlling the flames of their forges to heat metal pieces that were then pounded together with a hammer.

Modern welding dates to the early 1800s and the discovery of the electric arc. Since that time, dozens of welding methods have been developed, each with its own characteristics and applications. Recently, laser welding has emerged as a versatile process, providing fast, deep, and high quality welds. When paired with robotic delivery laser welding enables applications ranging from automotive and aerospace to shipbuilding and from medical devices to jewelry.