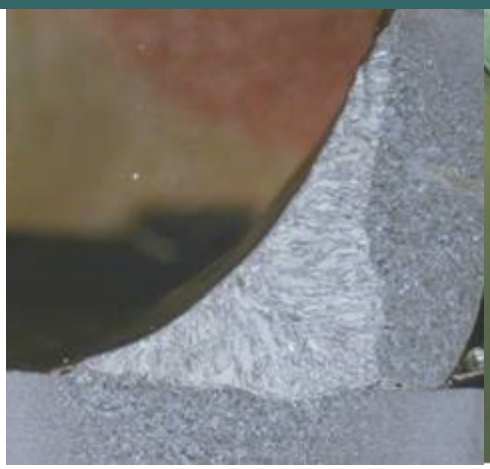
WJM Technologies
excellence in material joining

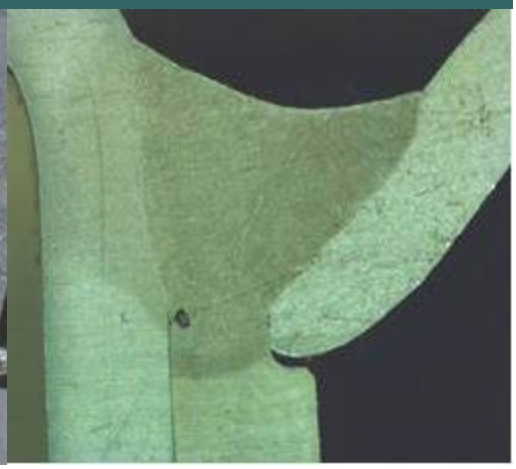
One-day Course

MIG (GMAW) & TIG (GTAW)

Course Contents

1. Introduction to Arc welding
2. GMAW and GTAW
3. Welding Metallurgy of steels, stainless steels, and aluminum
4. Process Variables
5. Weld Defects
6. Welding Quality & Specifications





GMAW (previously known as MIG welding) and GTAW (previously known as TIG welding), are two of the most commonly used arc welding processes. Both can be used in manual or automated mode. This course introduces users to fundamentals of arc welding starting with an introduction to process physics including welding modes effect of polarity, and torch angle. In the second section, we will review metallurgy and chemistry as it relates to melting and solidification of steels, stainless steels, and aluminum; effect of alloying elements and impurities on weld quality and defect formation will also be presented. The next section covers process variables such as voltage/current control, shielding gases, wire speed, electrode orientation, and joint position. The following section will cover weld defects (overlap, undercutting, underfill, porosity, incomplete fusion, weld metal cracks, and heat-affected zone cracks) and present strategies to reduce defects using process control. The last section delves into weld quality and use of welding standards to set limits and tolerances on weld defects to make sure that welded parts meet customer requirements.

Girish Kelkar, Ph.D.
Cerritos, CA 90703
Phone: (562) 743-7576
www.welding-consultant.com
girish@welding-consultant.com