

Making GTAW Faster : Automated GTAW (AVC, Weavers and ColdWire Feeders)



Auto GTAW with AVC, Weaving and Cold wire feeder Setup

One of the key challenges in Automating GTAW is the consistency of fit up and ovality of the work piece / joint. As when the torch is fixed and the job is rotating any change in the tungsten to work piece will result in a change in voltage. As the distance reduces the voltage reduces and if the distance increases so does the voltage. Any change in voltage can result in inconsistency weld penetration.

Automatic Voltage Corrector is a motorized slide controller which helps maintain the same voltage by altering the arc gap. This ensures constant voltage, constant arc gap during welding. So when the work piece moves closer to the tungsten, the arc voltage reduces from the set level, the motorized slide moves upwards away from the work piece to maintain the same arc voltage.

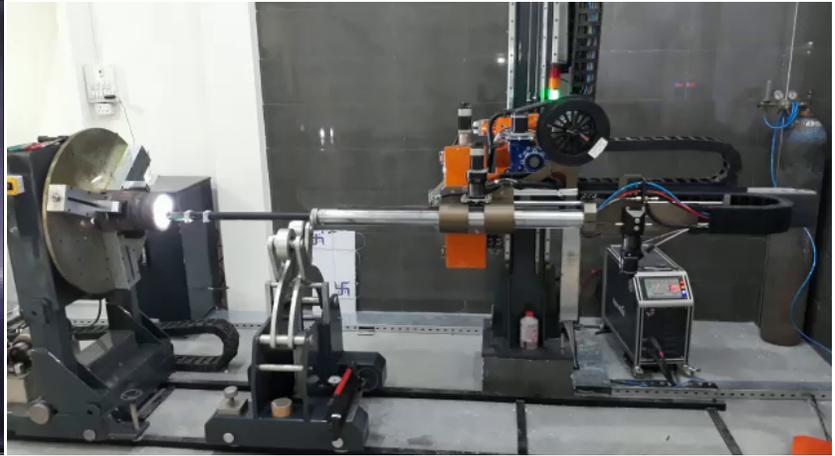
Similarly when the work piece gets away from the tungsten, the voltage increases from the set level, the motorized slide starts moving back towards the work piece to maintain the set voltage level. The speed at which this correction happens can be adjusted to suite the welding speed and avoid unwanted movement of the torch.

Weaving or oscillating the torch setup can help cover a larger area. This can help take care of slight fit up mismatches and capping runs as well.

Using AVC Slides we can do root welds in Automated GTAW. This can be coupled with Weavers, Oscillators to get wider weld beads along with Cold / Hot Wire feeding. This can bring up welding speeds and deposition rates for GTAW process. For example in **Figure 1** we can see a 300mm dia. pipe to pipe joint made for Auxiliary piping of power plant skids. The 8mm thick pipes were welded together to get X-Ray quality welds using AVC based automation system. The joint was welded in 2 pass, root with filler and capping pass. This system replaced the existing practice of welding root with GTAW and then fill-up with GMAW.

This AutoTig Head consisting of AVC, Weaving , Cold Wire Feeder can be added on to any existing Column / Boom Setup to make a complete automated GTAW welding.

This can speed up the welding speeds upto 150mm/min to 200mm/min. With repeatable results on quality and productivity.



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