



NTPC-MAITI BARKAGAON PRIVATE INDUSTRIAL TRAINING INSTITUTE

BARKAGAON, HAZARIBAGH

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Run & Managed by

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Tungsten Inert Gas (TIG) welding, also known as Gas Tungsten Arc Welding (GTAW) is an arc welding process that produces the weld with a non-consumable tungsten electrode.

Tungsten inert gas (TIG) welding became an overnight success in the 1940s for joining magnesium and aluminium. Using an inert gas shield instead of a slag to protect the weldpool, the process was a highly attractive replacement for gas and manual metal arc welding. TIG has played a major role in the acceptance of aluminium for high quality welding and structural applications.



Week No.	Learning Outcome	Professional Skills with Indicative hrs.	Hrs.	Professional Knowledge
1-2	<p>Set the GTAW machine and perform welding by GTAW in different types of joints on different position and check correctness of the weld.</p> <p>[Different types of joints –Fillet(T-joint,lap,corner),Butt (square & V); Different metals- Aluminium Stainless Steel ;different position-1F & 1G]</p>	<p>Depositing bead on Aluminium sheet 2 mm thick in flat position.</p> <p>Square butt joint on Aluminium sheet 1.6mm thick in flat position.</p>	<p>15 hrs.</p> <p>15 hrs.</p>	<p>- GTAW process – brief description. Difference between AC and DC welding, equipments, polarities and applications.</p> <p>- Various other names of the process (TIG, Argon arc)</p> <p>- Power sources for GTAW – AC &DC</p>
3-4	do	Fillet weld – “T” joint on Aluminium sheet 1.6 mm thick in flat position. (1F)	20 hrs.	- Tungsten electrodes –types & uses, sizes and preparation

		Fillet weld – Outside corner joint on Aluminium sheet 2 mm thick in flat position. (1F)	30 hrs.	<ul style="list-style-type: none"> - GTAW Torches- types, parts and their functions - GTAW filler rods and selection criteria
5-6	do	Butt weld - Square butt joint on Stainless steel sheet 1.6 mm thick in flat position with purging gas (1G)	50 hrs.	<ul style="list-style-type: none"> - Edge preparation and fit up. - GTAW parameters for welding of different thickness of metals - Pulsed TIG welding – brief description, pulse parameters slope up and slope down.
7-8	do	Fillet weld – “T” joint on Stainless steel sheet 1.6 mm thick in flat position. (1F)	50 hrs.	<ul style="list-style-type: none"> - Argon / Helium gas properties – uses. - GTAW Defects, causes and remedy.
9-10	do	Pipe butt joint on Aluminium pipe Ø 50 mm x 3 mm WT in Flat position. (1G)	50 hrs.	<ul style="list-style-type: none"> - Friction welding process equipment and application - Laser beam welding (LBW) and Electron beam welding (EBW)
11-12	do	“T” Joints on MS Pipe Ø 50 mm OD x 3 mm WT, position – Flat (1F)	30 hrs.	<ul style="list-style-type: none"> - Plasma Arc Welding (PAW) and cutting (PAC) process – equipments and principles of operation. - Types of Plasma arc, advantages and applications.