

LESSON PLAN

Date _____

Trade:- Welder

Name _____

Unit/Lesson:- Twenty Nine

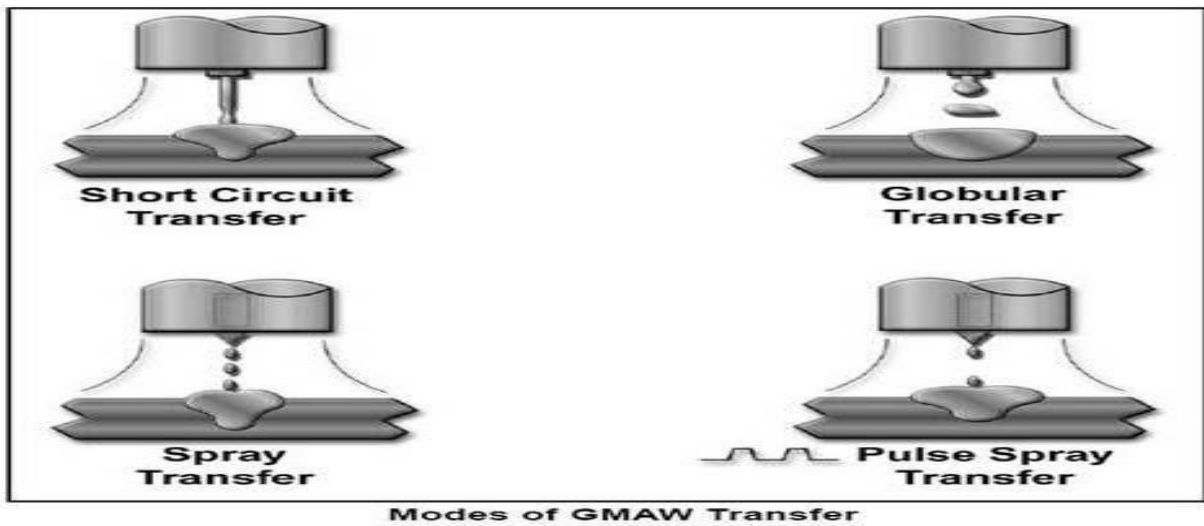
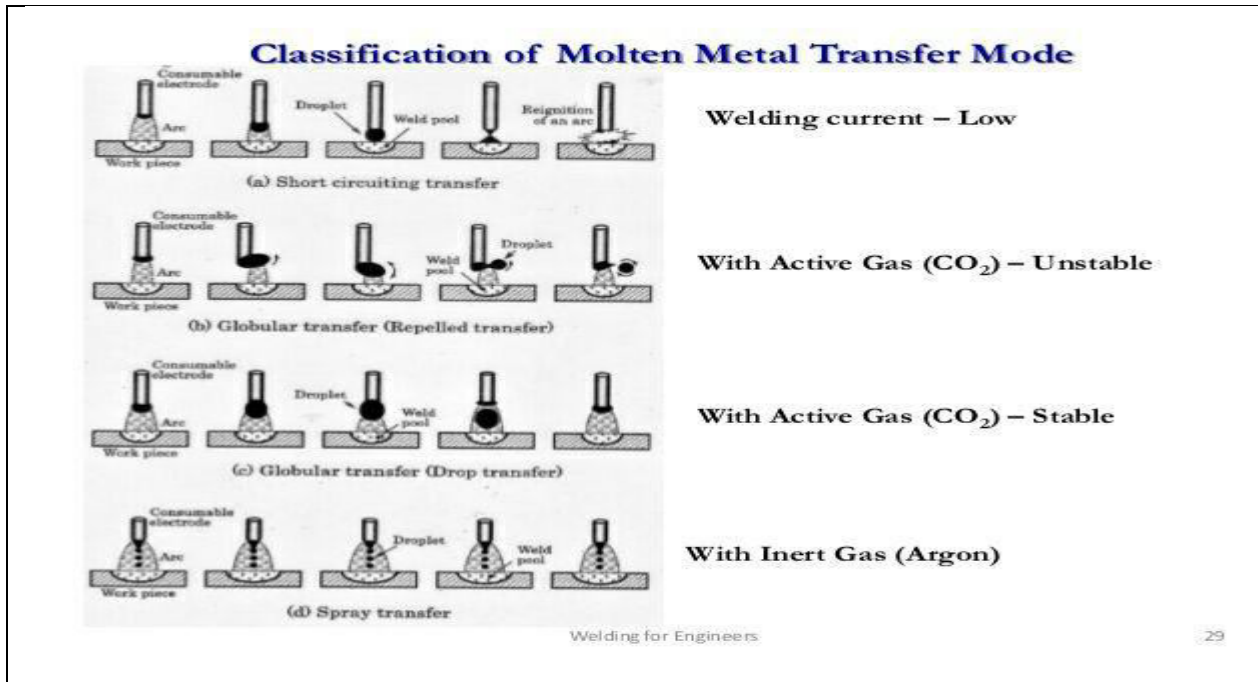
Subject:- Advantages of GMAW over SMAW, limitation and application process variable of GMAW. Mode of metal transfer dip or short circuiting transfer, spray transfer and globular transfer . Pulsed Metal Transfer.

PREPARATION

- 1) (Materials, Tools, Models, Charts and other aids)

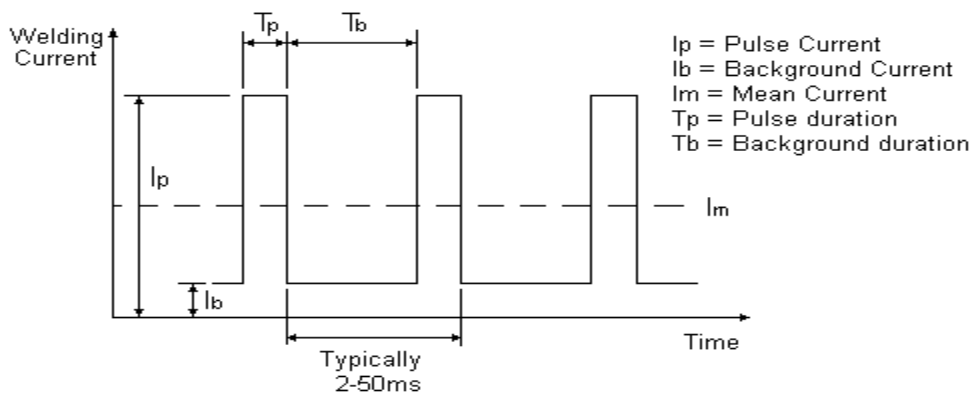
INTRODUCTION:- Today we discuss about advantages of GMAW over SMAW and mode of metal transfer in GMAW. There are three types of metal transfer in GMAW which are called spray,dip and globuler.

Topic	Information point	Spot Hint
Advantages of GMAW over SMAW:-	<ol style="list-style-type: none"> 1. Less edge preparation then smaw 2. No stub loss. 3. Suitable for thin and thick metal. 4. Less distortion. 	
Mode of metal Transfer in GMAW:-	There are three types metal transfer in GMAW while filling joint.	
<ol style="list-style-type: none"> 1. Spray transfer :- In spray transfer filler wire deposits in very fine droplets. This process done for normal joint and require high current. This process used in Flat position and also called free flight transfer. 		
<ol style="list-style-type: none"> 2. Dip or Short Circuit Transfer:- in this process each drop touch the weld puddle before transfer every time. This process used in each position and thin materials welding. 		
<ol style="list-style-type: none"> 3. Globular Transfer:- In this process some drops transfer per second with low current. It is also called intermittent transfer . 		



1	Write two advantages of gmaW over SMAW?
2	What is globular transfer?
3	What is spray transfer?

Pulsed Metal Transfer:-



Pulsed MIG/MAG welding is a variant of the conventional MIG/MAG welding process in which the current is pulsed. Pulsing was introduced originally for control of metal transfer at low mean current levels by imposing short duration high current pulses. The cycle consists of applying the repeated pulse current over a constant background current:

Modern welding sets permit the use of a wide range of pulse amplitudes, durations and waveforms at frequencies from a few Hertz to a few hundred Hertz. Pulse amplitude and duration are best combined to melt and detach a single droplet of the same/slightly smaller diameter as the electrode wire. Selection of pulse parameters for a given wire feed speed is a complex operation. Pulse height and duration are a function of wire composition, diameter and to a lesser extent, shielding gas composition. This has led to the advent of Synergic welding sets

The principal advantages of pulsed MIG/MAG welding are:

- It allows the use of smooth, spatter free welding at mean currents (50-150A), which would otherwise be too low for all except dip transfer with its irregular transfer and associated spatter.
- Pulsing can extend spray operation below and through the natural transition (180-220A for 1-1.2mm mild steel wire) from dip to spray where globular transfer would normally occur.
- Pulsed transfer is midway between spray transfer and the dip transfer mechanism, which can be too 'cold' (due to non-continuous arcing; the arc effectively 'goes out' between each melting cycle). This makes it ideal for welding thicker sections where more heat is needed but for which spray transfer is still too 'hot'.
- Pulsed MIG allows welding at higher deposition rates in all positions where dip or spray transfer are not applicable

Synergic vs. non-synergic:- There are two different types of pulsed GMAW processes: synergic and non-synergic. In a synergic pulsed GMAW system, the power level automatically adjusts to the wire speed as it changes. This is the most common method in welding equipment today, as it is the easiest for welding operators to set and achieve good welding parameters.

For example, if the wire feed speed changes from 200 inches per minute (ipm) to 400 ipm, the arc length or power on the wire will remain the same relative to the power level that was on the 200 ipm setting.

On the other hand, using a non-synergic pulsed GMAW process requires the welding operator to adjust the power to match the wire feed speed.

Assignment:-

Advantages of GMAW over SMAW, limitation and application process variable of GMAW.

Mode of metal transfer dip or short circuiting transfer, spray transfer and globular transfer

Checked By-----

Inst.-----