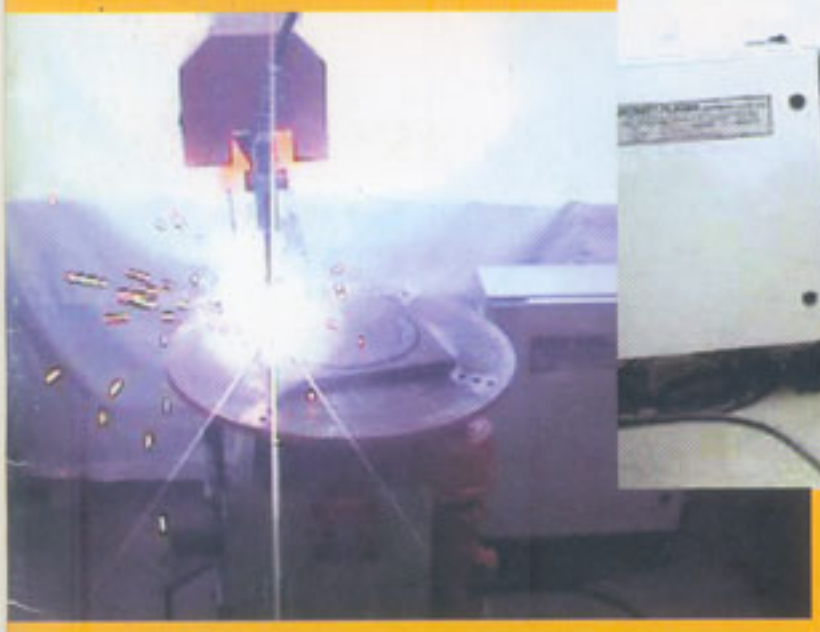
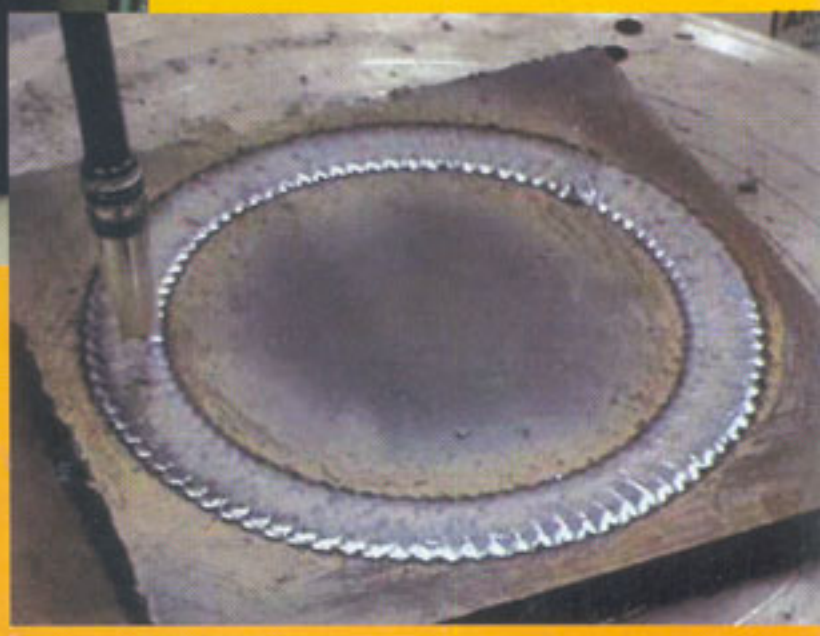
FCAW / MIG

HARDFACING & CLADDING





Protect Mechanical Parts
Subjected to Intense Wear,
Corrosion, Abrasion,
Thermal Shock, Impact etc.
With our FCAW System

ARCRAFT PLASMA
EQUIPMENTS (INDIA) PVT. LTD.

FCAW (Flux Cored Arc Welding) / MIG (Metal Inert Gas Welding)

Flux-cored arc welding (FCAW) is a common arc welding process. FCAW requires a continuously fed consumable tubular electrode containing a flux and a constant voltage or, less commonly, a constant current welding power supply. The use of an externally supplied shielding gas ia optional creating the primary process variation: * FCAW-S (self-shielded or "open-arc")* FCAW-G (gas-shielded)

MIG (Metal Inert Gas Welding) is a common arc welding process. MIG requires continiusly fed wire electrode in wire form & constant voltage supply. It requires externaly supplied shielding gas.

Hardfacing

Metal parts often fail their intended use not because they fracture, but because they wear, whichich causes them to lose dimension and functionality. Hardfacing, also known as hardsurfacing, is the application of buildup or wear-resistant weld metals to part's surface by means of welding or joining.

Benifits Of Hardfacing

1. **Reduces Cost:** Restoring a worn part to "as new" condition generally costs between 20-70% of a brand new replacement part.
2. **Prolongs Equipment Life:** Service life increases of 3 to 10 times are common with properly overlaid parts.
3. **Reduces Downtime:** Parts last longer and fewer shutdowns are required.
4. **Less Spare Parts Inventory:** There is no need to keep numerous spare parts when worn parts can be rebuilt.

Power Source

What base metals can be hardfaced?

Carbon and low-alloy steels with carbon contents of less than 1 percent can be hardfaced. High-carbon alloys may require a special buffer layer.

The following base metals can be hardfaced:

- Stainless steels , Manganese steels, Cast irons and steels, Nickel-base alloys
- Copper-base alloys

Deposition Rate of different welding processes

Procedure	Deposition Rate (lbs./hr.)
FCAW	8 to 25
PTA	5 to 20
GMAW	5 to 12
SMAW	3 to 5
SAW	8 to 25
GTAW	3 to 5
OFW	5 to 10

Note: It can be seen that FCAW has highest deposition rate among all common processes.


Positioner & Oscillator

Common Materials Used in Hardfacings

Hardfacings are good for substrate materials that are suitable for welding, such as low-carbon steel. The most common hardfacing materials are nickel alloys and iron/chromium alloys used in wear resistance and high stress abrasion. Common materials for hardfacing are listed as Follows:

Metal Alloy	Purpose
Cobalt-base alloys	wear and corrosion resistance
Copper-base alloys	rebuilding worn machinery parts
Iron chromium alloys	high stress abrasion
Manganese steel	wear application
Nickel-base alloys	metal-to-metal wear resistance
Tool steel	tooling, wear application
Tungsten carbide	high stress abrasion

APPLICATIONS

FCAW/MIG is used for all Overlaying, Hardfacing & Cladding applications.

Typical application areas of the FCAW/MIG technology are extruding machine screws, valves, valve seats of internal combustion engines (motorcar, marine, locomotive etc.), accessories for ships, petroleum chemistry and power generation, cutting tools (milling cutters, broaches, knifes) , Equipment for mining, crushing, rolling, road buiding and tunneling, Process equipment in ceramics and cement production, Molds and forging dies, Pulp and paper industry equipment, Agricultural equipment, parts for nuclear plants, parts for chemical plant

Advantages of FCAW

1.It is a process which can be vary easily automated to the highest degree, as compare to any other welding process.
2. Deposition efficiency & deposition speed is very high.
3. It has got very high electrical efficiency (low heat input)
4. FCAW used spray transter for deposition of metal to job
5. All the above results in a very low deformation in the job.
6. It is possible to add alloys through the core (flux) to give the final desire composition.
7. It is possible to work on site / out doors.

Model ACW	250	300	400	500	600
Input Volts	380-440, 3Ø, 50Hz	380-440, 3Ø, 50Hz	380-440, 3Ø, 50Hz	380-440, 3Ø, 50Hz	380-440, 3Ø, 50Hz
Output Rating	250A	300A	400A	500A	650A
OCV	18-44V	18-44V	18-52V	18-56V	18-60V
Duty cycle	70%	70%	70%	70%	70%
KVA	10	14	18	24	30
Cooling	Forced Air	Forced Air	Forced Air	Forced Air	Forced Air
Insulation Class	H	H	H	H	H
Permissible Wire O in mm	0.8-1.2	0.8-1.2	0.8-1.6	0.8-1.6	0.8-2.4
Overall Dimensions (approx) in mm					
Length mm	685	685	685	740	740
Width mm	590	590	590	640	640
Height mm	930	930	930	1030	1030
weight (Kg)	190	205	230	300	325
wire speed - o to 14 meters per minute					

Finished Bead

Welding Turntable / Positioner

Load :150kgs , Vertical load :100 kgs., Height :650 mm, Rpm :0-2, Tilting :Manual With PMDC motors & Electronic Solid State Drives
* Higher Models Available - Specifications given on request

Oscillator

Oscillator with column & boorn suitable for the above positioner
With variable speed potential control along with micro slide
With PMDC motors & Electronic Solid state Drives.

Controller

Programmable Logic Control (PLC) with 4 Input and 8 Output to control Power Source, Positioner, Oscillator & Wire Feeder, Water Recirculator Cum Chiller
Housed in a seperate Control Panel

Welding Gum

Suitable Welding Gun will be provided as per requirement of the customer. Standard Guns available are 250 A / 400 A / 600 A in Gas Cooled / Water Cooled models.

Wire Feeder

The feed mechanism is robust, light in weight for easy manoeuvrability maintenance free, and has drive system totally enclosed in alloy steel casing with hardened rollers, with interchangeability to choose different wire diameters, pre-flow and post-flow to eliminate contamination of weld. Electronic stepless control with feed back system for constant output speed and quality welding, push buttons for inching and gas checking. Quick release device for easy change over of insulated spool holder.

Water Recirculator Cum Chiller

Refrigerated water chiller with 20 Ltr SS tank, 0.5 hp Water Pump, Temperature Control from 8 to 26 degrees. Housed in small portable chassis.

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