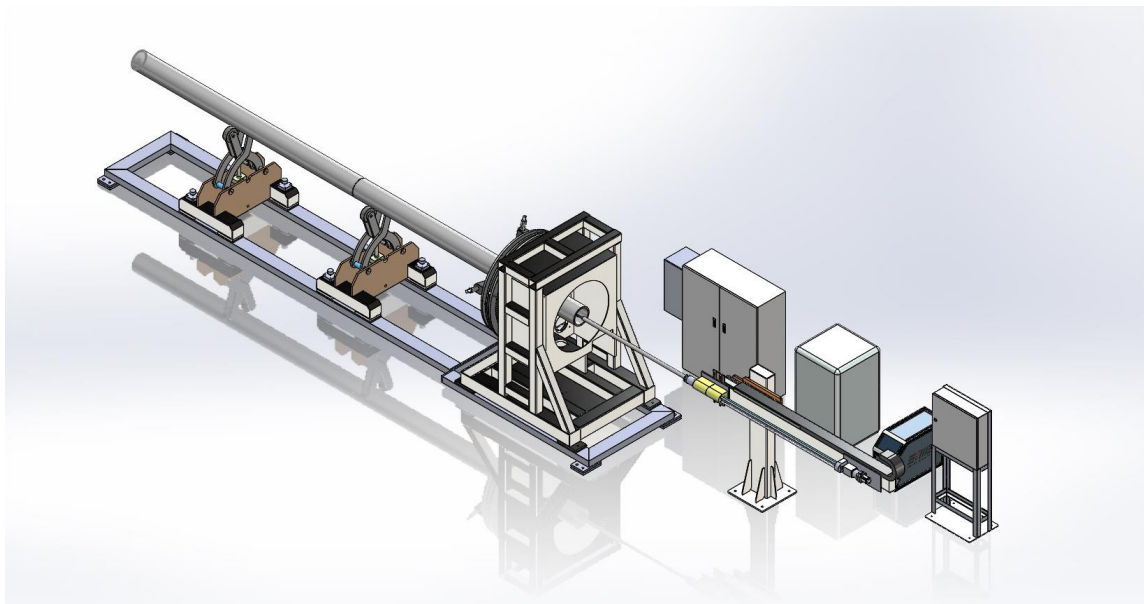


**PROJECT:** SUPPLY OF AUTO PULSED WIRE TIG COMPACT HCS & ACCESSORIES AS PER ENCLOSURE

**PURPOSE:** TO CARRY OUT CLADING OF 2M PIPES FROM 4 1/2 " TO 8 1/2"

**TIME PERIOD FOR MANUFACTURE:** 12 WEEKS EX WORKS



Range of Welding Equipments: MMAW | MIG/MAG | TIG | Plasma Cutting |CNC |  
Welding Robots | Welding Automation |

Memco has set up it's own best in class welding equipment manufacturing facility at Mumbai, India.  
*Our products & instruments are tested by NABL accredited lab.*



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Note – Images for illustration purpose only

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## MACHINE OVERVIEW:

This is basically a fully automated PLC based GTAW cladding station which shall be fixed in the workshop.

There will be a water cooled Torch mounted on slides arcing with the rotating job and the filler wires fed automatically in the weld pool.

The welding torch will be held in a Collet mounted at the end of a round slide which can enter the smallest Pipe.

The welding parameters like current, voltage, welding speed, wire feed, step over etc will be programmable and controllable via PLC and will have overrides through a handheld remote pendant.

1. COLUMN
2. BOOM (Z1)
3. VERTICAL SLIDE (Z)
4. SPOOL HOLDER
5. WIRE FEEDER
6. TORCH CLAMP & TERMINAL

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7. ROTATOR (R)
8. IDLERS
9. REFRIGERATED CHILLER
10. CONTROL PANEL WITH A/C
11. ELECTRICAL DISTRIBUTION BOX
12. HMI
13. REMOTE PENDANT
14. POWER SOURCE

Range of Welding Equipments: MMAW | MIG/MAG | TIG | Plasma Cutting |CNC |  
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## 1. COLUMN



- **ALUMINIUM EXTRUSION STRUCTURE** - LIGHT WEIGHT AND STRONG
- RACK N PINION AND LM RAIL FOR RUNNING BOOM UP/DOWN
- **LIMIT SWITCHES** AT THE TOP AND BOTTOM
- **STEPPER MOTOR** MOUNTED ON TOP FOR BOOM UP DOWN
- **DRAG CHAINS** AND CABLE TRAYS FOR CABLES
- UP/DOWN PB SWITCH ON THE SIDE

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- EMERGENCY SWITCH ON THE SIDE
- COUNTERWEIGHT ARRANGEMENT

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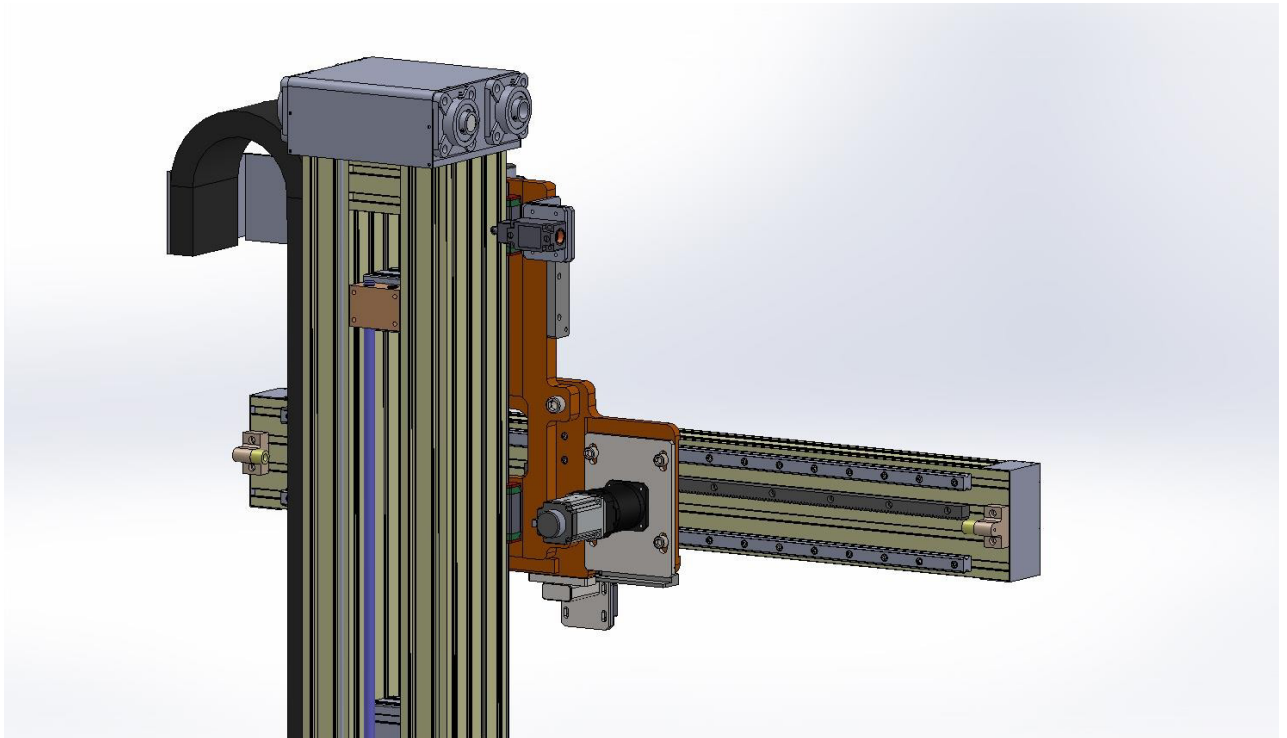
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## 2. BOOM



- HALLOW PIPE CONSTRUCTION / OPTIONAL AL EXTRUSION
- EASY FIXING ON THE COLUMN MOUNTED BASE PLATE

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- DESIGNED TO HAVE MINIMUM SAG AT THE END
- RACK & PINION AND LM RAIL FOR MOVING FORWARD/REVERSE
- ACTS AS STEP INCREMENT IN STRING OR SPIRAL MODE
- BASE PLATE TO MOUNT LM GUIDE AND BALL SCREW BASED AVC SLIDE
- LIMIT SWITCHES AT EITHER END OF THE BOOM
- STEPPER MOTOR FOR PRECISE MOVEMENT
- OVERALL STROKE OF 1500 MM
- DRAG CHAINS AND CABLE TRAYS FOR CABLES

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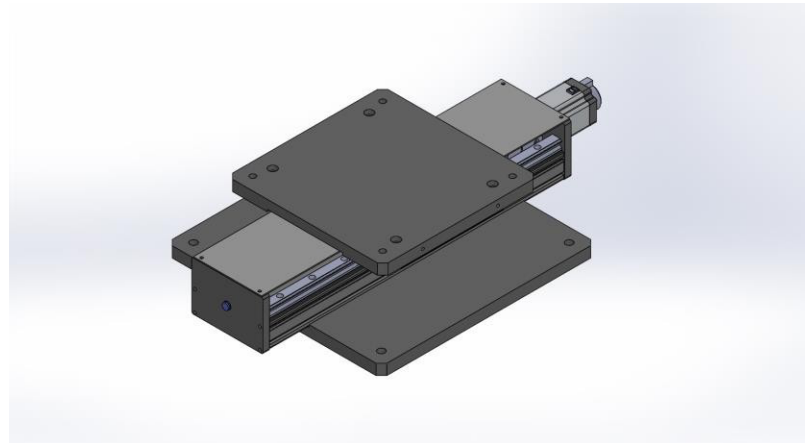
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### 3. Z SLIDE



- BALLSCREW AND LM GUIDE WITH BRAKE MOTOR FOR UP DOWN MOVEMENT
- STROKE OF 200 MM TO ACCOMMODATE PIPES FROM 4" TO 8"
- BOTH ENDS LIMIT SWITCH
- BASE PLATE TO MOUNT TORCH ASSEMBLY

Range of Welding Equipments: MMAW | MIG/MAG | TIG | Plasma Cutting |CNC |  
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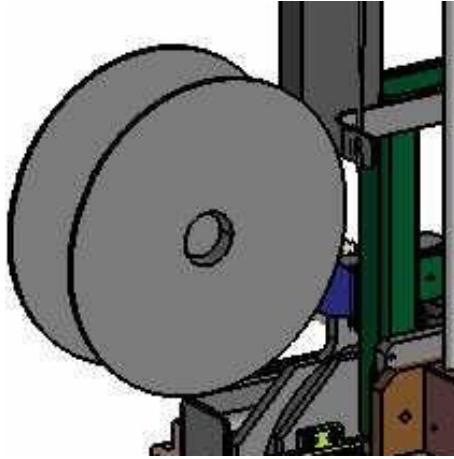
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#### 4. SPOOL HOLDER



- MOUNTED ON THE SIDE OF THE "XZ" SLIDE FOR EASY LOADING OF WIRE
- SMOOTH ENTRY IN THE FEEDER THROUGH BRASS NIPPLES.

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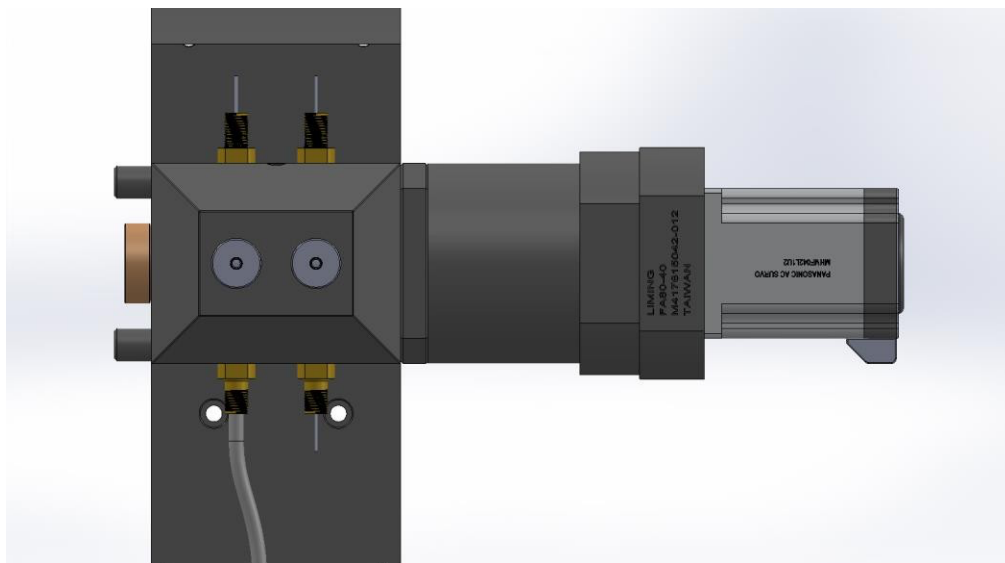
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## 5. WIRE FEEDER



- ANODIZED ALUMINIUM BODY WIRE FEEDER
- GEARED STEPPER MOTOR COUPLED WITH 1:40 SERVO GEARBOX
- MOTOR ENCODER TO MEASURE WIRE SPEED AND CALCULATE DEPOSITION RATE

Range of Welding Equipments: MMAW | MIG/MAG | TIG | Plasma Cutting |CNC |  
Welding Robots | Welding Automation |

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- DUAL ROLLER WITH 1.2 MM AND 1.6 MM GROOVE
- INDEPENDENT TENSIONER SCREW
- WIRE GUIDE BUSHES ON ENTRY AND EXIT FOR SMOOTH LOADING OF NEW SPOOL
- WIRE FEEDING IN STRAIGHT LINE TO THE TORCH HEAD

Range of Welding Equipments: MMAW | MIG/MAG | TIG | Plasma Cutting |CNC |  
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## 6. COLLET TYPE TORCH CLAMP & INSULATED TERMINAL BLOCK

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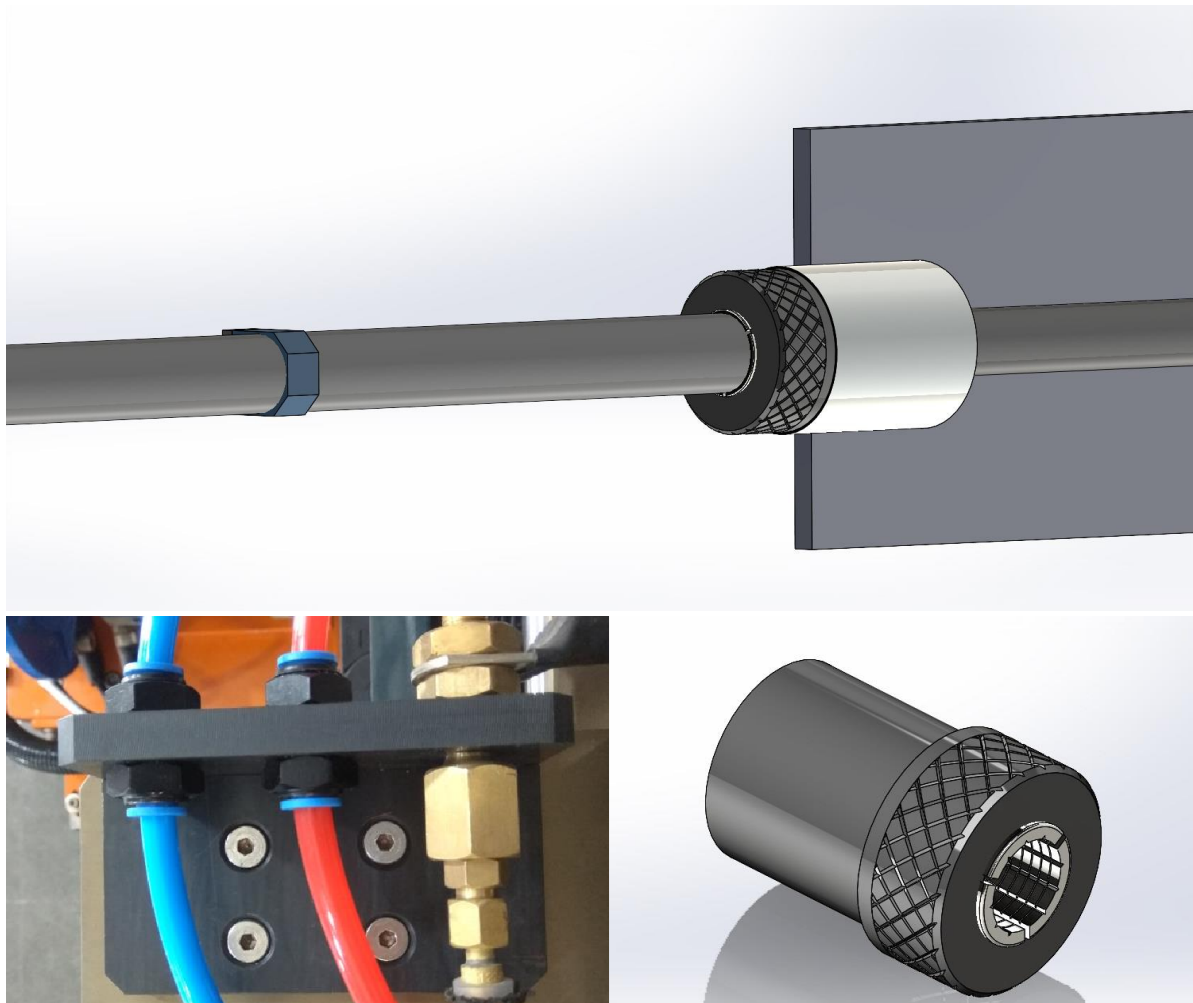
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- PVC INSULATED ANGLE FRAME FOR POWER | WATER | GAS TERMINAL
- QUICK RELEASE COUPLING FOR PU WATER AND GAS HOSE PIPES
- QUICK RELEASE NUT AND COLLET
- STOPPER FOR THE TORCH TO MAINTAIN LENGTH
- ALL CABLES | HOSES | LINERS HIDDEN INSIDE THE TORCH TUBE AND X SLIDE

Range of Welding Equipments: MMAW | MIG/MAG | TIG | Plasma Cutting |CNC |  
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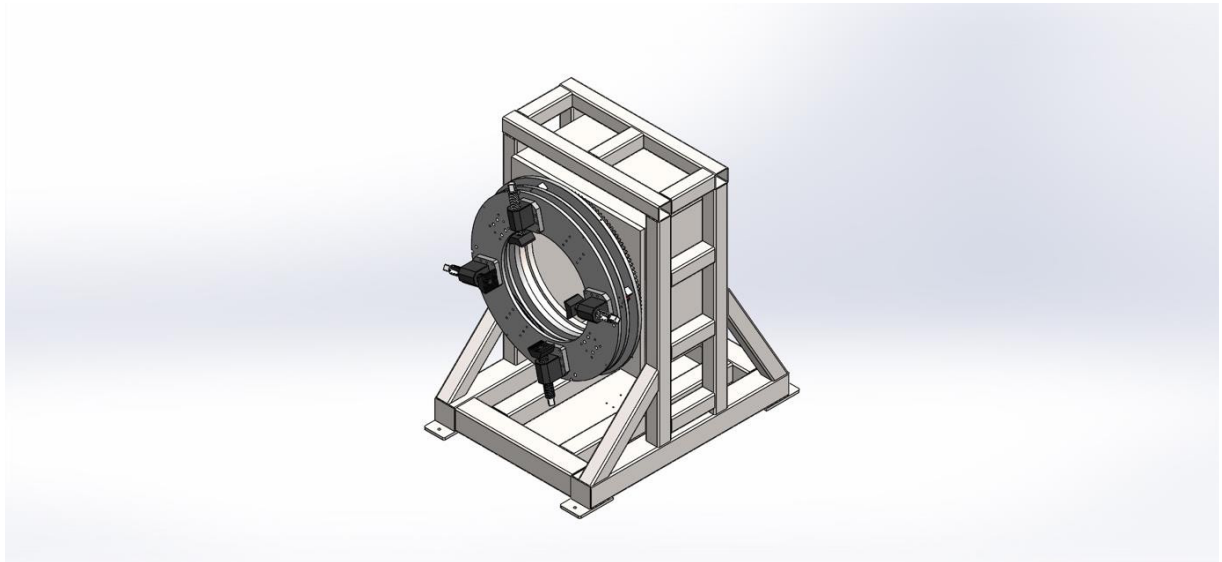
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## 7. ROTATOR



- HEAD STOCK TO ACCOMMODATE UPTO TO 10" PIPE THROUGH BORE
- ALUMINIUM EXTRUSION STRUCTURE
- FLOATING JAW PLATE ON 2 AXIS LM RAILS
- 4 SCREW JAWS WITH EXTENSIONS TO HOLD PIPES FROM 4" TO 10"

Range of Welding Equipments: MMAW | MIG/MAG | TIG | Plasma Cutting |CNC |  
Welding Robots | Welding Automation |

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- ROTATOR FIXED RIGIDLY ON A SKID FRAME
- 10" COLOR TOUCH SCREEN HMI MOUNTED ON THE SIDE

Range of Welding Equipments: MMAW | MIG/MAG | TIG | Plasma Cutting |CNC |  
Welding Robots | Welding Automation |

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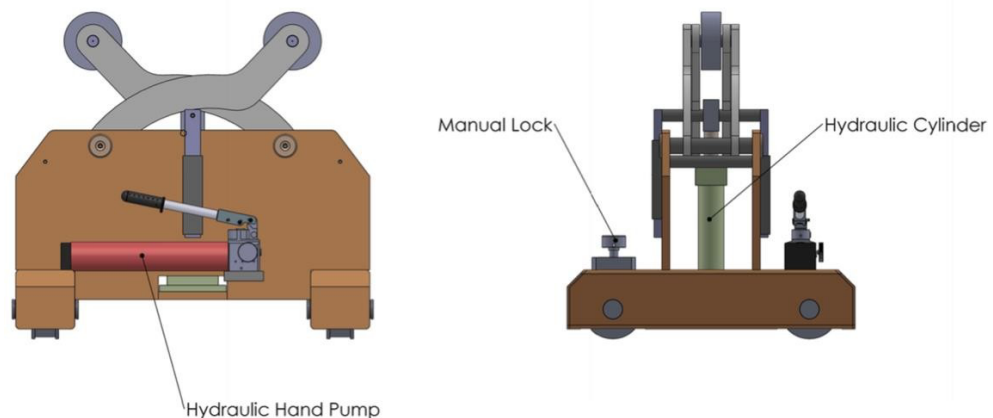
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## 8. SELF ADJUSTING IDLER SETS -



- FABRICATED STRUCTURE ON WHEELS
- SCISSOR JACK WITH HYDRAULIC CYLINDER MOVEMENT
- SIMPLE HAND LEVER TO OPERATE CYLINDER FROM AN OIL PUMP
- LESS NO OF MOVING PARTS FOR LOW MAINTENANCE

Range of Welding Equipments: MMAW | MIG/MAG | TIG | Plasma Cutting |CNC |  
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- TO ACCOMMODATE FROM 4" TO 10"

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## 9. REFRIGERATED CHILLER



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- 2 Kw CAPACITY
- REFRIGERATED COOLING WITH MINIMUM 14 DEG SETTABLE
- FLOW AND TEMPERATURE INTERLOCK
- 1 PHASE PUMP AND COMPRESSOR
- QUICK RELEASE COUPLING FOR WATER “IN” AND “OUT”
- ALUMINIUM EXTRUSION BODY
- WATER FLOW SWITCH TO GIVE POTENTIAL FREE CONTACT

Range of Welding Equipments: MMAW | MIG/MAG | TIG | Plasma Cutting |CNC |  
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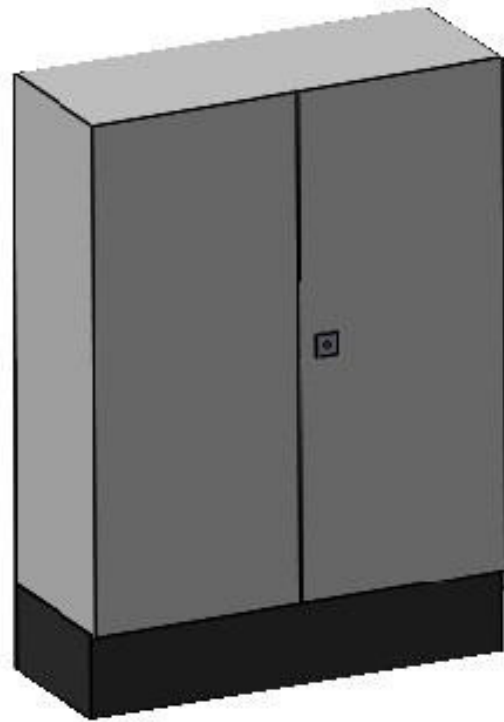
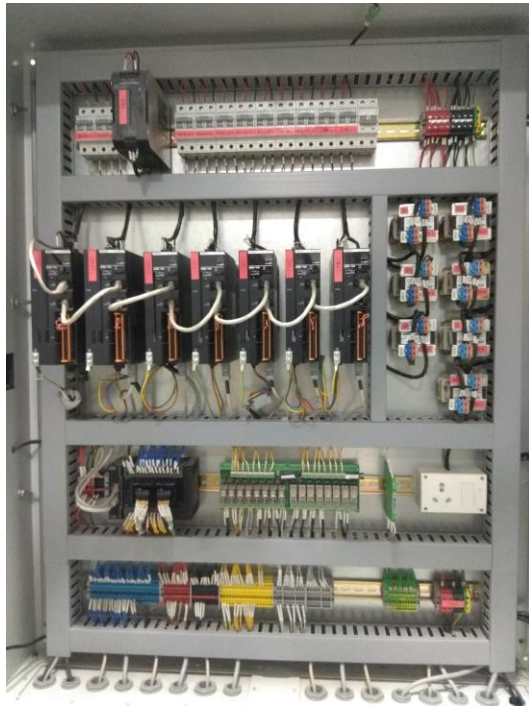
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## 10. CONTROL PANEL



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- 2 DOOR AIR-CONDITIONED PANEL CONFORMING TO IP 55
- SCREWLESS MALE FEMALE CONNECTORS ON THE SIDE FOR FIELD SIGNALS
- DIN RAIL MOUNTED PLC | SMPS | RELAY BOARDS | TERMINALS | MCB
- STEPPER DRIVE | ISOLATORS | LINE CHOKES
- PRINTED FERRULES | PRINTED LABELS | MIN 0.5 SQ MM WIRES | AC DC ISOLATION
- 200 MM HIGH COVERED STAND
- CABLE GLANDS FOR SERVO ENCODER AND POWER CABLES
- SEPARATE EARTHING STRIP FOR INDIVIDUAL EARTHING OF EACH COMPONENT

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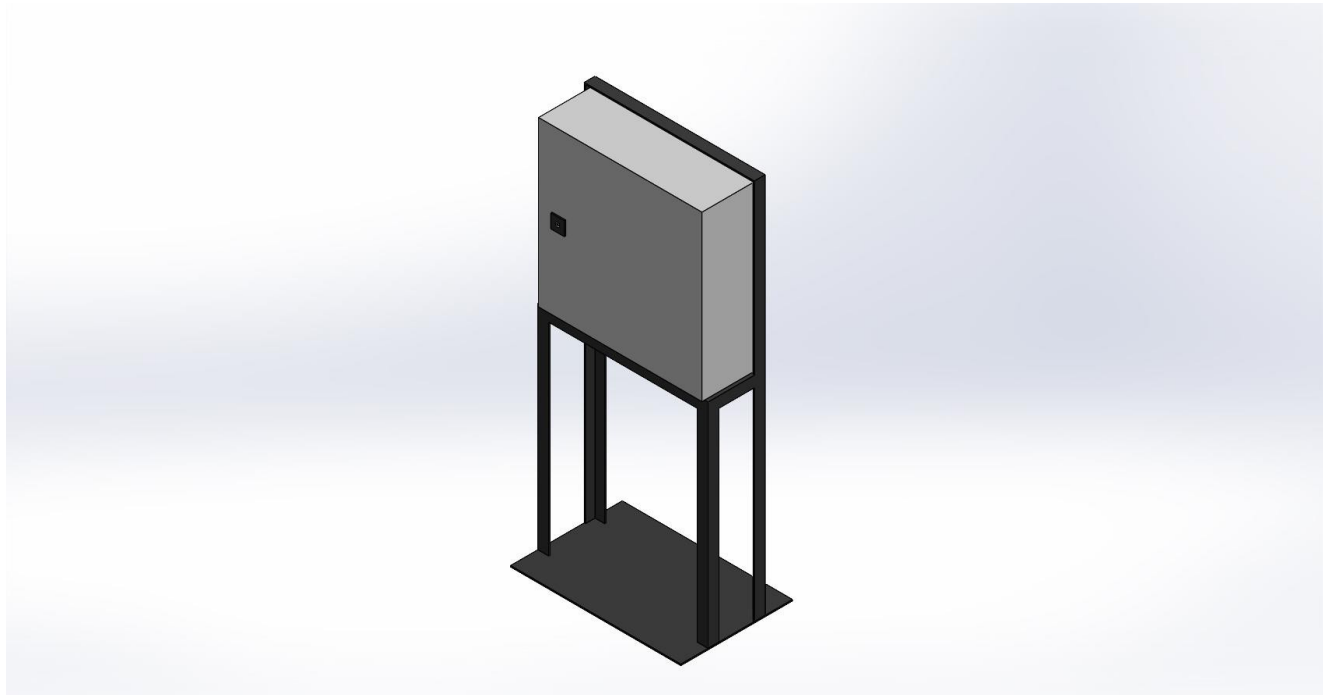
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## 11. ELECTRICAL DISTRIBUTION BOX



- R Y B PHASE INDICATION

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Welding Robots | Welding Automation |  
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- SINGLE CONNECTION REQUIRED FROM CUSTOMER SIDE
- INDEPENDENT MCB FOR POWER SOURCE | CHILLER | CONTROL PANEL
- NEAT ROUTING THROUGH CABLE TRAYS AND DRAG CHAINS

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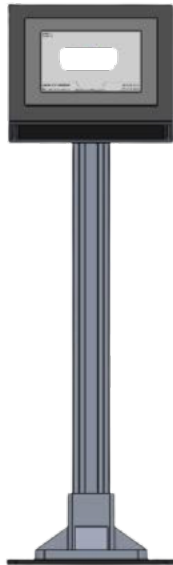
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## 12. HMI



10" TOUCH SCREEN HMI FOR DATA ENTRY | OPERATIONS | ALARMS | DATA LOG | DISPLAY

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Welding Robots | Welding Automation |

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<p>16/07/2020 15:37:45</p> <p style="text-align: center;"><b>HOME</b></p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid gray; padding: 5px; width: 30%;">DATA</div> <div style="border: 1px solid gray; padding: 5px; width: 30%;">MAIN</div> <div style="border: 1px solid gray; padding: 5px; width: 30%;">OPERATION</div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="border: 1px solid gray; padding: 5px; width: 30%;">ENGG. PARAMETER</div> <div style="border: 1px solid gray; padding: 5px; width: 30%;">OPTION</div> <div style="border: 1px solid gray; padding: 5px; width: 30%;">DISPLAY</div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="border: 1px solid gray; padding: 5px; width: 30%;">UTILITY</div> <div style="border: 1px solid gray; padding: 5px; width: 30%;">DATA LOGGING</div> <div style="border: 1px solid gray; padding: 5px; width: 30%;">ALARM</div> </div> <p style="font-size: small; text-align: center;">HOME DATA OPERATION DISPLAY ALARM</p>	<p>16/07/2020 15:38:10</p> <p style="text-align: center;"><b>OPERATION</b></p> <table border="1" style="width: 100%; font-size: x-small;"> <tr> <td>START</td><td>DOWN SLOPE</td><td>DRY RUN</td><td>WEAVE +</td><td>VOTAGE</td><td>0.0</td><td>VOLT</td> </tr> <tr> <td>AMP -</td><td>TORCH UP</td><td>AMP +</td><td>WEAVE JOG</td><td>CURRENT</td><td>0.0</td><td>AMP</td> </tr> <tr> <td>TORCH LEFT</td><td>AVC OFF</td><td>TORCH RIGHT</td><td>WEAVE -</td><td>WIRE FEED</td><td>0.0</td><td>MM/MM</td> </tr> <tr> <td>ROTARY CCW</td><td>TORCH DOWN</td><td>ROTARY CW</td><td>GAS TEST</td><td>HEAT INPUT</td><td>0.00</td><td>KJ/MM</td> </tr> <tr> <td>WIRE -</td><td>WIRE OFF</td><td>WIRE +</td><td>COOLING CYCLE</td><td>WIRE DEPOSIT</td><td>0.000</td><td>KG/HR</td> </tr> <tr> <td></td><td></td><td></td><td></td><td>WIRE USED</td><td>0.000</td><td>KG</td> </tr> <tr> <td></td><td></td><td></td><td></td><td>WELD SPEED</td><td>0.0</td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td>ROTARY</td><td>0.0</td><td>R</td> </tr> <tr> <td></td><td></td><td></td><td></td><td>TORCH POSITION</td><td>0.0</td><td>R</td> </tr> <tr> <td></td><td></td><td></td><td></td><td>STEP POSITION</td><td>0.0</td><td>R</td> </tr> <tr> <td></td><td></td><td></td><td></td><td>TO CLAD</td><td>0.0</td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td>JOB RPM</td><td>0.00</td><td></td> </tr> </table> <p style="font-size: x-small; text-align: center;">Home DATA OPERATION DISPLAY ALARM</p>	START	DOWN SLOPE	DRY RUN	WEAVE +	VOTAGE	0.0	VOLT	AMP -	TORCH UP	AMP +	WEAVE JOG	CURRENT	0.0	AMP	TORCH LEFT	AVC OFF	TORCH RIGHT	WEAVE -	WIRE FEED	0.0	MM/MM	ROTARY CCW	TORCH DOWN	ROTARY CW	GAS TEST	HEAT INPUT	0.00	KJ/MM	WIRE -	WIRE OFF	WIRE +	COOLING CYCLE	WIRE DEPOSIT	0.000	KG/HR					WIRE USED	0.000	KG					WELD SPEED	0.0						ROTARY	0.0	R					TORCH POSITION	0.0	R					STEP POSITION	0.0	R					TO CLAD	0.0						JOB RPM	0.00	
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<p>16/07/2020 15:35:19</p> <p style="text-align: center;"><b>ALARM</b></p> <table border="1" style="width: 100%; font-size: x-small;"> <tr> <td colspan="2">SERVO STATUS</td> <td>EMERGENCY</td><td>OK</td> </tr> <tr> <td>ROTATOR</td><td>OK</td> <td>X FORWARD LS</td><td>OK</td> </tr> <tr> <td>X AXIS</td><td>OK</td> <td>X REVERSE LS</td><td>OK</td> </tr> <tr> <td>Z AXIS</td><td>OK</td> <td>Z UP LS</td><td>OK</td> </tr> <tr> <td>WIRE FEEDER</td><td>OK</td> <td>Z DOWN LS</td><td>OK</td> </tr> <tr> <td></td><td></td> <td>CHILLER FAULT</td><td>OK</td> </tr> <tr> <td></td><td></td> <td>WATER FLOW SWITCH</td><td>OK</td> </tr> <tr> <td></td><td></td> <td>GAS FLOW SWITCH</td><td>OK</td> </tr> </table> <p style="text-align: right; font-size: x-small;">RESET ALARM</p> <p style="font-size: x-small; text-align: center;">Home DATA OPERATION DISPLAY ALARM NEXT</p>	SERVO STATUS		EMERGENCY	OK	ROTATOR	OK	X FORWARD LS	OK	X AXIS	OK	X REVERSE LS	OK	Z AXIS	OK	Z UP LS	OK	WIRE FEEDER	OK	Z DOWN LS	OK			CHILLER FAULT	OK			WATER FLOW SWITCH	OK			GAS FLOW SWITCH	OK	<p>16/07/2020 15:54:54</p> <p style="text-align: center;"><b>INPUT &amp; OUTPUT STATUS</b></p> <table border="1" style="width: 100%; font-size: x-small;"> <tr> <th style="width: 50%;">INPUT</th> <th style="width: 50%;">OUTPUT</th> </tr> <tr> <td>X0 EMERGENCY</td> <td>Y0 GAS SOLENOID</td> </tr> <tr> <td>X1 X FORWARD LIMIT SW</td> <td>Y1 PS TRIGGER</td> </tr> <tr> <td>X2 X REVERSE LIMIT SW</td> <td>Y2 TL GREEN</td> </tr> <tr> <td>X3 Z UP LIMIT SWITCH</td> <td>Y3 TL AMBER</td> </tr> <tr> <td>X4 Z DOWN LIMIT SWITCH</td> <td>Y4 TL RED</td> </tr> <tr> <td>X5 CHILLER FAULT</td> <td>Y5 Z BREAK</td> </tr> <tr> <td>X6 WATER FLOW SWITCH</td> <td></td> </tr> <tr> <td>X7 GAS FLOW SWITCH</td> <td></td> </tr> </table> <p style="font-size: x-small; text-align: center;">Home DATA OPERATION DISPLAY ALARM</p>	INPUT	OUTPUT	X0 EMERGENCY	Y0 GAS SOLENOID	X1 X FORWARD LIMIT SW	Y1 PS TRIGGER	X2 X REVERSE LIMIT SW	Y2 TL GREEN	X3 Z UP LIMIT SWITCH	Y3 TL AMBER	X4 Z DOWN LIMIT SWITCH	Y4 TL RED	X5 CHILLER FAULT	Y5 Z BREAK	X6 WATER FLOW SWITCH		X7 GAS FLOW SWITCH																																			
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Range of Welding Equipments: MMAW | MIG/MAG | TIG | Plasma Cutting |CNC |  
Welding Robots | Welding Automation |  
Memco has set up it's own best in class welding equipment manufacturing facility at Mumbai, India.  
*Our products & instruments are tested by NABL accredited lab.*



**Miraj Electrical & Mechanical Co. Pvt. Ltd.**

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### 13. PENDANT

5" WIRELESS ANDROID BASED PENDANT  
FULL FUNCTION BUTTONS FOR VARIOUS OVER RIDES  
ESSENTIAL PARAMETER VALUES IN REAL TIME ON DISPLAY  
UNIQUE IP ADDRESS TO AVOID CROSS CONNECTION  
ANDROID APP WHICH CAN BE LOADED ON A NORMAL PHONE

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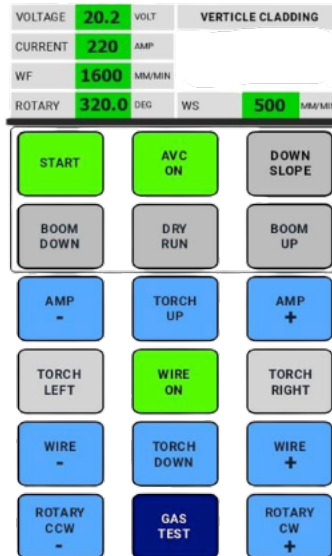
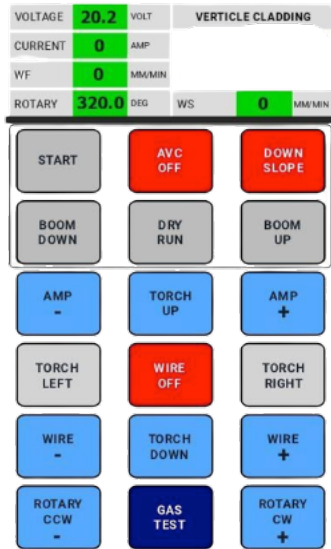
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## 14. HF TIG DIGITAL WELDING INVERTER



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- FULLY DIGITAL INVERTER TYPE POWER SOURCE (EWM - GERMANY)
- HEAVY DUTY 550 AMPS WITH 420 AMPS 100% DUTY CYCLE.
- DI/DO AND AI/AO SIGNALS TO PLC.
- O/P SHORT MSG AND AUTO SHUTDOWN INTERLOCK.
- 95 SQMM HOFR CABLES FOR POSITIVE AND NEGATIVE LEADS.
- WATER COOLED FLEXIBLE POWER CABLE INSIDE THE TORCH.
- PU TUBES FOR WATER OUT AND GAS.

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### **Machine Specifications:**

- Process : Single Wire Auto Pulsed Tig
- Min Dia : 4"
- Max Dia : 10"
- Max weight : 2500 kg
- Floor Space : Approximately 8000 mm X 2500 mm

### **Functions in Manual Mode:**

- Boom (X1) "IN" "OUT" movements
- AVC Slide (Z) "UP" "DOWN" movement
- Wire FOR/REV
- Rotator CW/CCW Inching
- Rotator 90deg inching for fast truing
- Gas Test and flow adjust

### **Functions in Auto Mode:**

- Cycle Start and Down slope
- Incr/Decr of:
  1. Current (5 Amps per touch default)

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2. Voltage (0.2 V per touch default)
  3. Rotation (10 mm/min per touch default)
  4. Wire Feed (25 mm/min per touch default)
  5. Step Distance (0.5 mm per touch default)
- AVC ON/OFF
  - Wire ON/OFF

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### **Features:**

Stepper motors for Z, X, BOOM UP/DOWN, Rotator and Wire Feeder  
Single power connection required from customer end to our DB  
Auto AVC selection for ID and OD  
Choice of STRING or SPIRAL Bead  
Override of Volt | Current | Weld Speed | Wire Feed | from the Pendant.  
Step ON/OFF option for starting bead  
Full control of Power source from PLC/HMI/PENDANT  
Touch Retract function for fixed HF distance and consistent starts  
Torch and Wire retract on down slope  
Dry run (test) mode for parameter checks  
Separate cycle for job cooling  
Data logging of parameters like volt, current, wire feed and welding speed  
Real time graphical representations of essential variables including heat input  
Correction of parameters in real time through Pendant  
Total wire consumption (indicative) in kg on display  
Interlocks with Water flow, Gas flow and XY limits and indication on alarm page  
Interlocks with Lower and Higher limits of voltage and current  
Virtual full function pendant on HMI

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Different pages for Alarm, Data, Display Operation and Data Log/Trend  
XZ positions and Rotator angle on display page  
Engineering parameters on a password protected page  
Remote access to PLC through team viewer or similar software  
Original Legal software and PLC program loaded in a laptop (Optional)  
Android based Wireless Pendant with unique IP addresses  
Display of values of essential variables on Pendant

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### **Component Specifications:**

1. PLC: Fatek
2. HMI: Exxor with Ethernet and “web page” function
3. Stepper Motor & Drives: Spark
4. SMPS: Omron
5. Isolators & terminals: Phoenix Germany
6. Motor Encoder & Power Cables: Lapp Germany
7. Enclosure: Rittal/Eldon
8. Switch gears: Hager
9. Chiller: Advanced Cooling India
10. Torch Lance and Heads: Sap Industries/
11. Structure: India
12. Paint: Standard Epoxy
13. Power Source : MEMCO

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- All mechanical items carry a limited warranty of 18 months from the date of acceptance.
- All electrical items carry a limited warranty of 12 months from the date of acceptance.
- Civil work/foundations lifting facilities to be provided by customer.
- Utilities like power water gas wire and machining facilities to be provided by customer.
- Ticket, Lodging and Boarding to be arranged for 2 Engineers for around 2 weeks.
- Skilled and nonskilled manpower for assistance to be provided by customer.

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