

Vendor Confirmation to Technical Specifications

Item Sl No	Technical Specifications	Vendor's Confirmation/Acceptance
1	Main PCB Item: Main PCB Welding Machine type: IGBT based Inverter type Purpose of the PCB: Regulating the welding power output by controlling of IGBT firing based on inputs and feedbacks. Reference Make and Model: (as per Annexure-I enclosed with technical specification) Application: Mogora Invaarc-400 welding machine Item Description: Main PCB ED-2012-06-01 Mogora Item Code: INVAAARC M-02 Mogora Part No: ED-2012-06-01	
2	CT PCB Item: CT PCB for Mogora Invaarc-400 welding machine Welding Machine type: IGBT based Inverter type Purpose of the PCB: Conditioning of Current transformer output signal to suitable voltage signal required by the Main PCB. Reference Make and Model: (as per Annexure-I enclosed with technical specification) Application: Mogora Invaarc-400 welding machine Item Description: CT PCB - ED-2012-11-00 Mogora Part No: ED-2012-11-00	
3	Filter PCB Item: Filter PCB for Mogora Invaarc-400 welding machine Welding Machine type: IGBT based Inverter type Purpose of the PCB: Filtering of power supply Reference Make and Model: (as per Annexure-I enclosed with technical specification) Application: Mogora Invaarc-400 welding machine Item Description: Filter PCB - ED-2012-01-00 Mogora Part No: ED-2012-01-00	
4	VRD Control PCB Item: VRD Control PCB for Mogora Invaarc-400 welding machine Welding Machine type: IGBT based Inverter type Purpose of the PCB: Voltage Reducer and Display PCB. This PCB reduces open circuit voltage to 4.6VDC for safety. It also controls voltage & current displays Reference Make and Model: (as per Annexure-I enclosed with technical specification) Application: Mogora Invaarc-400 welding machine Item Description: VRD Control PCB - ED-2013-13-00 Mogora Item Code: INVAAARC 56 M - 34 Mogora Part No: ED-2013-13-00	
5	Voltage Divider PCB Item: Voltage Divider PCB for Mogora Invaarc-400 welding machine Welding Machine type: IGBT based Inverter type Purpose of the PCB: This PCB is used for conditioning of voltage feedback signal to the Main PCB. Reference Make and Model: (as per Annexure-I enclosed with technical specification) Application: Mogora Invaarc-400 welding machine Item Description: Voltage Divider PCB - ED-2013-10-00 Mogora Item Code: INVAAARC 400 M - 37 Mogora Part No: ED-2013-10-00	

6	Protection PCB Item: Protection PCB for Mogora Invaarc-400 welding machine Welding Machine type: IGBT based Inverter type Purpose of the PCB: Over-voltage/under-voltage/Phase failure Protection with relay output for the machine. Reference Make and Model: (as per Annexure-I enclosed with technical specification) Application: Mogora Invaarc-400 welding machine Item Description: Protection PCB - ED-2014-25-00 Mogora Item Code: INVAAARC 400 M - 38 Mogora Part No: ED-2014-25-00	
7	Current Transformer Item: Current Transformer for Mogora Invaarc-400 welding machine Welding Machine type: IGBT based Inverter type Details of the item: The CT is used for converting input AC current into conditioned input signal format for the Main PCB of the machine. Type: HAL Sensor Current Transformer Form factor: toroid(round) Reference Make and Model: (as per Annexure-I enclosed with technical specification) Application: Mogora Invaarc-400 welding machine Item Description: HAL Sensor CT (Round) - Input -113-HA-1 Mogora Item Code: INVAAARC M - 25 Mogora Part No: 113-HA-1	
8	DC Current Sensor Item: DC Current Sensor for Mogora Invaarc-400 welding machine Welding Machine type: IGBT based Inverter type Details of the item: The DC Current Sensor is used for converting output welding current into conditioned input signal format for the Main PCB of the machine. Reference Make and Model: (as per Annexure-I enclosed with technical specification) Application: Mogora Invaarc-400 welding machine Item Description: DC Current Sensor - Output - CS500B Mogora Item Code: INVAAARC M - 08 Mogora Part No: CS500B	
9	Thermostat (IGBT heat sink) Item: Thermostat (IGBT heat sink) for Mogora Invaarc-400 welding machine Welding Machine type: IGBT based Inverter type Details of the item: Thermostat (IGBT heat sink), 80°C Reference Make and Model: (as per Annexure-I enclosed with technical specification) Application: Mogora Invaarc-400 welding machine Item Description: Thermostat (IGBT heat sink), 80°C Mogora Item Code: INVAAARC M - 15	
10	Control Transformer Item: Control Transformer for Mogora Invaarc-400 welding machine Welding Machine type: IGBT based Inverter type Details of the Item: Control supply voltage to various item cards and power supply to 230Vac cooling fan. Item Details: Input taps: 230, 380, 400, 415, 440 VAC, Rated input current: 1.5A Outputs: 0-17V, 18-0-18V, 0-8V, 0-17V, Rated output current: 750mA The cooling fan is connected in the 230V tap in the primary winding. Reference Make and Model: (as per Annexure-I enclosed with technical specification) Application: Mogora Invaarc-400 welding machine Item Description: Control Transformer Mogora Item Code: INVAAARC 400 M - 35 Mogora Part No: ST-1045-1-15 Make and Model(OEM): SONAL TRANS096	

11	Copper plate type Output Terminal Item: Copper plate type Output Terminal with insulation for Mogora Invaarc-400 welding machine Welding Machine type: IGBT based Inverter type Details of the item: The terminal is made of tinned copper strip with electrical insulation separating from the machine body. The terminal has holes drilled for connection of output cables. Reference Make and Model: (as per Annexure-I enclosed with technical specification) Application: Mogora Invaarc-400 welding machine Item Description: Output Terminal - Copper Plate Type Mogora Item Code: INVAAARC M - 24	
12	IGBT Module Item: IGBT Module for Mogora Invaarc-400 welding machine Welding Machine type: IGBT based Inverter type Details of the item: IGBT Module Make: SEMIKRON SEMIKRON Part No: SKM100GB12T4 Reference Make and Model: (as per Annexure-I enclosed with technical specification) Application: Mogora Invaarc-400 welding machine Item Description: IGBT Module (SEMIKRON) Mogora Item Code: INVAAARC M - 07 Mogora Part No: SKM100GB12T4	
13	3 Phase Diode Bridge Item: 3 Phase Diode Bridge for Mogora Invaarc-400 welding machine Welding Machine type: IGBT based Inverter type Details of the Item: Bridge rectifier in the machine is used for converting 415V 3 phase AC supply into DC supply for the inverter input in the machine. 3 Phase bridge rectifier make: RUTTONSHA RUTTONSHA Part No: RI 9TU 110/160 Reference Make and Model: (as per Annexure-I enclosed with technical specification) Application: Mogora Invaarc-400 welding machine Item Description: 3 Phase Diode Bridge (RUTTONSHA RI 9TU 110/160) Mogora Item Code: INVAAARC M - 09 Mogora Part No: RI 9TU 110/160	
14	High Frequency Diode Modules Item: High Frequency Diode Modules for Mogora Invaarc-400 welding machine Welding Machine type: IGBT based Inverter type Details of the item: The high frequency rectifiers are used for converting inveter output AC voltage into DC voltage for welding output. Reference Make and Model: (as per Annexure-I enclosed with technical specification) Application: Mogora Invaarc-400 welding machine Item Description: High Frequency Diode Modules (DZS08 SF7839) Mogora Item Code: INVAAARC M - 10 Mogora Part No: MBUP300400CT	
15	Capacitor, 0.1uF/1kV Item: Capacitor, 0.1uF/1kV for Mogora Invaarc-400 welding machine Welding Machine type: IGBT based Inverter type Details of the item: Capacitor (Input Diode Bridge: AC side) 0.1uF/1kV Reference Make and Model: (as per Annexure-I enclosed with technical specification) Application: Mogora Invaarc-400 welding machine Item Description: Capacitor (Input Diode Bridge: AC side) 0.1uF/1kV Mogora Item Code: INVAAARC 400 M - 43	

16	Capacitor, DC, 500Vac, 40uF Item: Capacitor, DC, 500Vac, 40uF for Mogora Invaarc-400 welding machine Welding Machine type: IGBT based Inverter type Details of the item: Capacitor DC (IGBT) CBB 88, 500Vac K 40uF [make: CFH] Reference Make and Model: (as per Annexure-I enclosed with technical specification) Application: Mogora Invaarc-400 welding machine Item Description: Capacitor DC (IGBT) CBB 88, 500Vac K 40uF [make: CFH] Mogora Item Code: INVAAARC 400 M - 41 Mogora Part No: CBB88	
17	Capacitor - Dual Filter, 1kV, 2X27nF Item: Capacitor - Dual Filter, 1kV, 2X27nF for Mogora Invaarc-400 welding machine Welding Machine type: IGBT based Inverter type Details of the item: Capacitor - Dual Filter(IGBT) CBB 83, 1kV K 2X27nF [make: CFH] Reference Make and Model: (as per Annexure-I enclosed with technical specification) Application: Mogora Invaarc-400 welding machine Item Description: Capacitor - Dual Filter(IGBT) CBB 83, 1kV K 2X27nF [make: CFH] Mogora Item Code: INVAAARC M - 26 Mogora Part No: CBB83	
18	Capacitor, 1kV, 4uF Item: Capacitor, 1kV, 4uF for Mogora Invaarc-400 welding machine Welding Machine type: IGBT based Inverter type Details of the item: Capacitor # IGBT CBB 84, 1kV K 4uF [make: CFH] Reference Make and Model: (as per Annexure-I enclosed with technical specification) Application: Mogora Invaarc-400 welding machine Item Description: Capacitor # IGBT CBB 84, 1kV K 4uF [make: CFH] Mogora Item Code: INVAAARC M - 27 Mogora Part No: CBB84	
19	Capacitor, DC, 1uF/1kV Item: Capacitor, DC, 1uF/1kV for Mogora Invaarc-400 welding machine Welding Machine type: IGBT based Inverter type Details of the item: Capacitor - Input Diode Bridge: DC side 1uF/1kV Reference Make and Model: (as per Annexure-I enclosed with technical specification) Application: Mogora Invaarc-400 welding machine Item Description: Capacitor - Input Diode Bridge: DC side 1uF/1kV Mogora Item Code: INVAAARC M - 28	
20	Electrolytic Capacitor 1000uF/450VDC Item: Electrolytic Capacitor 1000uF/450VDC for Mogora Invaarc-400 welding machine Welding Machine type: IGBT based Inverter type Details of the item: Electrolytic Capacitor 1000uF/450VDC (KI02 450102)[make: IKEN] Reference Make and Model: (as per Annexure-I enclosed with technical specification) Application: Mogora Invaarc-400 welding machine Item Description: Electrolytic Capacitor 1000uF/450VDC (KI02 450102)[make: IKEN] Mogora Item Code: INVAAARC M - 14 Mogora Part No: KI02 450 102	

21	Filter Capacitors, 10nF/1000V Item: Filter Capacitors, 10nF/1000V for Mogora Invaarc-400 welding machine Welding Machine type: IGBT based Inverter type Details of the item: Filter Capacitors # Output 10nF/1000V Reference Make and Model: (as per Annexure-I enclosed with technical specification) Application: Mogora Invaarc-400 welding machine Item Description: Filter Capacitors # Output 10nF/1000V Mogora Item Code: INVAAARC 400 M - 39	
22	Single turn Potentiometer, 5k-Ohm, 3W Item: Single turn Potentiometer, 5kO, 3W for Mogora Invaarc-400 welding machine Welding Machine type: IGBT based Inverter type Details of the item: Single turn Potentiometer, 5kOhm, 3W Reference Make and Model: (as per Annexure-I enclosed with technical specification) Application: Mogora Invaarc-400 welding machine Item Description: Pot. - Hot Start, Arc Force, Welding Current, 5kO, 3W Mogora Item Code: INVAAARC M - 04, 05, 06	
23	Local/Remote Switch Item: Local/Remote Switch for Mogora Invaarc-400 welding machine Welding Machine type: IGBT based Inverter type Details of the item: Local/Remote Switch 4-Pole 2-Way toggle switch, 16A, 250VAC Reference Make and Model: (as per Annexure-I enclosed with technical specification) Application: Mogora Invaarc-400 welding machine Item Description: Local/Remote Switch 4-Pole 2-Way toggle switch, 16A, 250VAC Mogora Item Code: INVAAARC M - 13	
NOTE (for Items 1 to 23): 1. The item should be completely compatible with Mogora Invaarc-400 welding machine. 2. Bidder may visit BHEL works to understand the requirement. 3. One-year warranty to be provided from date of acceptance at BHEL works.		
24	Specification: Electrolytic Capacitor 4700uF/400VDC Operating Voltage: 400VDC SURGE: 500 VDC Termination Style: Screw Chassis Mount Case code: E13R Ripple Current: 57 Arms Dissipation factor 20 deg C , 120Hz: 0.20 ESRtyp: 23mohm Iac max:37A Dimension: Dia 76.9mm x 143mm Length Reference Make and Model: Application: Lenze 22kW Drive (E82ZN22334B230) PART No: B43564-S9478-M3 Make: EPCOS	
NOTE for Item SI No:24 1. Bidder may visit BHEL works to understand the requirement. 2. One-year warranty to be provided from date of acceptance at BHEL works. 3. The item should be completely compatible with Lenze 22kW Drive.		