

BHARAT HEAVY PLATE & VESSELS LIMITED.,
 (A Subsidiary Bharat Heavy Electricals Limited)
 A Government of India Enterprises
 Visakhapatnam – 530 012 INDIA.
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NOTICE INVITING TENDER(NIT)

**Category of Tender: TWO BID
 (PRICED + UN - PRICED)**

SUB: Pipe Butt Welding Stations

Our Ref: **MM/2/10/3012/CAP/W-465/5290**

DATE: 06.01.2012

Sealed quotations in duplicate are invited from suppliers on **or before 16.02.2012** **SUPERSCRIBING OUR REFERENCE AND CATEGORY OF TENDER** on the cover, for supply of the under mentioned stores within the above due date, otherwise send **REGRET LETTER**, strictly subject to the Terms & Conditions attached herewith.
LATE TENDERS ARE NOT ACCEPTABLE.

ITEM No.	DESCRIPTION / SPECN. / SIZE	QTY
1.	Pipe Butt Welding Stations	2 No 's
	<p>Encl:</p> <ul style="list-style-type: none"> 1. Qualifying Criteria 4 pages 2. Technical Specifications 21 Pages 3. Annexure-1 1 pages 4. Annexure-2 4 pages 5. Annexure-3 1 pages 6. Annexure-4 1 pages 7. Annexure-5 1 pages 8. General Terms/ commercial terms and conditions (INCLUDING CHECK LIST) 9 pages 	

For BHARAT HEAVY PLATE & VESSELS LIMITED,

For Dy. GENERAL MANAGER (MM)

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For BHARAT HEAVY PLATE & VESSELS LIMITED,

For Dy. GENERAL MANAGER (MM)

**QUALIFICATION CRITERIA FOR PIPE BUTT WELDING MACHINE – PART A
(PIPE TO PIPE/FITTING WELDING STATION)**

PIPE TO PIPE/FITTING WELDING STATION

SECTION – I : QUALIFYING CRITERIA

The BIDDER has to compulsorily meet the following requirements to get qualified for considering the technical offer:

Sl. No.	REQUIREMENTS	VENDOR'S RESPONSE
1.0	<p>Only those vendors (OEMs), who have supplied and commissioned at least ONE MECHANISED PIPE TO PIPE/FITTING WELDING STATION with job manipulator and wire feeder and Column and boom type Submerged Arc Welding machines for pipe diameter larger than 400mm in the past ten years (from the date of opening of Tender) and such equipment is presently working satisfactorily for more than one year after commissioning (from the date of opening of Tender) should quote.</p> <p>However, if such equipment had already been supplied to BHPV / BHEL, then that machine should be presently working satisfactorily for more than six months after it's commissioning and acceptance (from the date of opening of Tender).</p>	
	The vendor should submit following information where similar machine has been supplied for qualification of their offer.	
1.1	Name and postal address of the customer or company where similar equipment is installed.	
1.2	Name and designation of the contact person of the customer.	
1.3	Phone, FAX no and email address of the contact person of the customer.	
1.4	Month and Year of commissioning of the equipment.	
1.5	Application for which the equipment is supplied	
1.6	Along with the Technical offer, the Vendor should submit one Performance certificate from the customer for the satisfactory performance of the equipment supplied to them. For obtaining the Performance certificate, a suggestive format is provided in SECTION– IV .	
1.7	BHPV reserves the right to verify the information provided by vendor (including visit by a team of BHPV Officials to the Customer Works of the Vendor). In case the information provided by vendor is found to be false/ incorrect, the offer shall be rejected.	
2.0	<p>DELIVERY - The bidder shall quote the best possible delivery.</p> <p>However the delivery shall not exceed 8 months with an additional grace period of 2 months. The additional grace period will attract a penalty which is explained in the commercial terms of the enquiry.</p> <p>The delivery period shall be reckoned from date of purchase order to despatch from the vendor works.</p>	

**QUALIFICATION CRITERIA FOR PIPE BUTT WELDING MACHINE – PART A
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SECTION – I I

The BIDDER / VENDOR is requested to provide the following information:

Sl. No.	REQUIREMENTS	VENDOR'S RESPONSE
3.0	The BIDDER/VENDOR to furnish Reference List of Customers, with full address, details of contact person, where Mechanised Pipe welding station similar to offered have been supplied in the past.	
4.0	Details of Mechanised Pipe welding station supplied to other BHPV / BHEL units, if any. (Year of commissioning, max. diameter, Weight carrying capacity, Welding type)	
5.0	Details on SERVICE-AFTER-SALES Set-Up in India including the Addresses of Agents / Service Centers in India. [Details on the number of trained personnel with field of experience to handle the service needs of BHPV in time]	
6.0	Any Additional Data to supplement the manufacturing capability of the BIDDER for the subject equipment.	

**QUALIFICATION CRITERIA FOR PIPE BUTT WELDING MACHINE – PART A
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SECTION – III

The BIDDER to note:

Sl. No.	REQUIREMENTS	VENDOR'S RESPONSE
7.0	The BIDDER / VENDOR shall submit the offer in TWO PARTS. 1. Technical Offer [with PART A & PART B] & commercial offer 2. Price Bid.	
8.0	The Technical Offer shall contain a comparative statement of Technical Specifications demanded by BHPV and Offer Details submitted by the Bidder , against each clause. A just 'CONFIRMED' or 'COMPLIED' or 'YES' or 'NO-DEVIATION' or similar words in the technical comparative statement where specific details are required may lead to disqualification of the Technical Offer.	
9.0	The Technical Offer shall be supported by product Catalogues & Data Sheets and also technical details of Bought-Out-Items with copies of Product Catalogue to the extent possible.	
10.0	The Commercial Offer (given with the Technical Offer) shall contain the Scope of Supply and the Un-Priced Part of the Price-Bid, for confirmation.	

**QUALIFICATION CRITERIA FOR PIPE BUTT WELDING MACHINE – PART A
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SECTION – IV

The performance certificate should be produced **on Customer's Letter Head.**

**PERFORMANCE CERTIFICATE
(On Customer's Letter Head)**

1. Supplier of the machine :
2. Make & Model of the Equipment :
3. Month & Year of Commissioning :
4. Application :
5. a) Machine type : Pipe Butt Joint Welding Station
(Column & Boom Type)
- b) Max size of pipe (Dia X thick) :
6. Performance of the Machine : Satisfactory / Not Satisfactory
(Strike off whichever is not applicable)
7. Service after Sales : Satisfactory / Not Satisfactory
(Strike off whichever is not applicable)
8. Contact Details :
 Name of the Contact Person :
 Phone No. :
 Fax No. :
 E-mail ID :

Date :

Signature & Seal of the Authority
Issuing the Performance certificate

TECHNICAL SPECIFICATIONS FOR PIPE BUTT WELDING STATION - PART B (PIPE TO PIPE TO PIPE AND PIPE TO FITTINGS WELDING STATION)

Page 1 of 21

TECHNICAL SPECIFICATIONS FOR PIPE TO PIPE AND PIPE TO FITTINGS WELDING STATION

AA. JOB DESCRIPTION:

The welding station is intended to do circumferential butt-welding of steel pipes to steel pipes or steel pipes to fittings (like elbows, tees & Reducers) , using submerged arc welding process. The weld butt joint is formed by joining the free end of the pipes and fittings (details as per **ANNEXURE-2**), which are edge prepared to the styles as given in **ANNEXURE – 1**.

The root of the butt joint is welded by GTAW (TIG Welding) process and followed by minimum two layers of SMAW (Manual Arc Welding) or GMAW (Flux Cored Arc Welding) process for build up and to hold the work-piece on self-weight for further welding (by sub-merged arc welding process). The GTAW, SMAW and GMAW are not carried out in the proposed welding station and these are done separately at a different workstation.

BB. WELDING STATION CONFIGURATION:

The welding station shall have the following three distinct components: -

a. Job Manipulator

It is the device, which has to hold the work-piece and to rotate (with provision for variable speed of rotation) the work-piece with circular profile for welding operation. The manipulator will have to consist of one drive unit with hollow chuck arrangement for holding the work-piece and imparting the rotation and the other for job support at the free end. **ANNEXURE–3 & 4** give only the indicative and schematic sketch for the manipulator and roller support units. The *DIMENSIONS* given in the *DRAWINGS* have to be *IGNORED*.

b. Welding Machine

It is the equipment, which has to carry out the welding operation, and shall consist of one portable 1m x 1.5m - column & boom manipulator with ± 180 Deg column rotation and wheels on the base for movement on the ground and a submerged arc welding machine having a DC welding power source , controller and a welding head.

**TECHNICAL SPECIFICATIONS FOR PIPE BUTT WELDING STATION - PART B
(PIPE TO PIPE TO PIPE AND PIPE TO FITTINGS WELDING STATION)**

CC. DETAILED TECHNICAL SPECIFICATIONS

Sl. No.	PARTICULARS AND BHPV SPECIFICATION	BIDDER'S OFFER (with Technical Details)
1.0.0	PURPOSE & WORKPIECE MATERIAL	
1.1.0	<p>a. The butt welding station is required to clamp, rotate and weld</p> <ul style="list-style-type: none"> i. Pipes fitted together ii. One or more fittings (Tees / Reducers / Dished ends) fitted between pipe segments iii. Elbows fitted to the end of pipe OR iv. A combination of above <p>b. The header pipes, Tees and Elbows form high-pressure components of Power Boilers for Utilities & Industries, and Industrial boilers of Process Industries. The seams shall meet Radiographic Quality requirements as required by BHPV standards.</p> <p>c. The components are to be clamped and Rotation is in the horizontal axis for performing cir-seam welding at the required welding speed.</p> <p>d. The Tees & Elbows will have a radial over hang of maximum 500 mm and cause unbalance during rotation. Axial Over hang of the jobs will be maximum 5000 mm from the center of the clamp.</p> <p>e. The jobs will be clamped in the job rotator/manipulator and the welding junction is subjected to preheating up to the temperature of 300° C before welding.</p> <p>f. The welding may be done as close as 500 mm from the job rotator and hence the rotator should be designed to withstand the heat radiation due to preheating.</p>	
1.2.0	WORKPIECE MATERIAL	
1.2.1	<p>A) CARBON STEEL: SA 106 Gr B / Gr C (ASTM), AP15L Gr B (ASTM)</p> <p>B) ALLOY STEEL: SA 335 P11, P12 & P22, P91, SA 312 TP304H, SA 312 TP316 L</p>	
1.3.0	MATERIAL SIZES	
1.3.1	The equipment shall be suitable for handling the pipe with outer diameter ranging from 219mm to 812 mm.	
1.3.2	The standard sizes of Pipes, Tees & Elbows are furnished under ANNEXURE - 2 . Maximum Length of the job is 21,000 mm	
1.3.3	The weight of the single work-piece after the weld joints fit up (taken up for sub merged arc welding) will not exceed 20,000 kgs. (20 Metric Tons)	

**TECHNICAL SPECIFICATIONS FOR PIPE BUTT WELDING STATION - PART B
(PIPE TO PIPE TO PIPE AND PIPE TO FITTINGS WELDING STATION)**

Sl. No.	PARTICULARS AND BHPV SPECIFICATION		BIDDER'S OFFER (with Technical Details)
2.0.0	CONFIGURATION		
2.1.0	The Welding Station shall consist of a. A Job Rotator/Manipulator with Supports b. Column & Boom SAW Welding Machine	Vendor to confirm.	
3.0.0	JOB ROTATOR DETAILS		
3.1.0	JOB Clamping System:		
3.1.1	The system shall be suitable for centering and clamping jobs mentioned in straight pipes, bends, Tees, Elbows, reducers and Y-piece in horizontal axis.	Vendor to confirm.	
3.1.2	<ul style="list-style-type: none"> a. The Equipment shall have a hollow metallic housing mounted suitably on a rigid metallic base. b. The base shall have suitable anchoring provisions for fixing the equipment with the foundation arrangements on ground. c. A hollow metallic ring of required thickness/slewing ring with suitable job clamping arrangement shall be positioned concentric inside the above hollow housing. d. The arrangement between the housing and the ring should permit the ring to rotate inside the housing smooth without friction. e. The housing shall have provision for adjusting the clearance between the housing and the ring for smooth and concentric rotation. f. The job to be welded shall be held horizontally at the center, concentric with the hollow ring. g. The Job clamping arrangement should establish good contact area with the job to avoid job slipping during rotation. h. The job-clamping members shall be independently operated manually. Only square thread to be used. j. The job clamping arrangement shall have graduations in 'mm' on the sliding members to indicate the diameter of the job to be held inside for job setting. 	Vendor to confirm the details of configuration and material in the GA drawing to be submitted by vendor along with offer	

**TECHNICAL SPECIFICATIONS FOR PIPE BUTT WELDING STATION - PART B
(PIPE TO PIPE TO PIPE AND PIPE TO FITTINGS WELDING STATION)**

Sl. No.	PARTICULARS AND BHPV SPECIFICATION		BIDDER'S OFFER (with Technical Details)
	k. Earth clamp for connecting welding current return cables to be provided on this unit suitably. l. If roller arrangement is used for job rotation, the rollers should be hardened		
3.1.3	Job Rotation - The Rotation at constant welding speed for the job held in the hollow metallic ring shall be provided in horizontal axis through suitable A.C Digital variable drive mechanism of suitable capacity on the ring. The mechanical elements should be suitably designed for the maximum load condition.		
3.1.4	Minimum & Maximum job diameter to be held by the metallic ring.	219 mm to 812mm	
3.1.5	Height of center point from ground [NOTE: 1200 mm]	Vendor to confirm	
3.1.6	Maximum weight of the job to be rotated.	15,000 Kgs.	
3.1.7	Axial clearance to avoid interference by job, from the periphery of the manipulator/its drives/machine element	Minimum 500 mm	
3.1.8	Axial overhang of the job (without support) from M/c.	Maximum 5000 mm	
3.1.9	Speed Range (Infinitely variable) - To suit welding speed of 300 to 700 mm/min. for all sizes of jobs.	Vendor to confirm	
3.1.10	Speed range mode of Selection- Digitally programmable	Vendor to Specify	
3.1.11	Power Rating of AC Induction Motor (S1 Duty) in kW.	Vendor to Specify	
3.1.12	Torque of the A.C. induction motor for rotator	Vendor to specify with calculation.	
3.1.13	MACHINE BASE:		
3.1.14	Width and Length	Vendor to specify	
3.1.15	Material Details for all elements	Vendor to specify	
3.1.16	Type of power transmission: Power transmission from motor to the job rotator. (Complete description of the aforesaid mechanism including dimensional details , to be furnished in the offer)		Vendor to specify

**TECHNICAL SPECIFICATIONS FOR PIPE BUTT WELDING STATION - PART B
(PIPE TO PIPE TO PIPE AND PIPE TO FITTINGS WELDING STATION)**

Sl. No.	PARTICULARS AND BHPV SPECIFICATION	BIDDER'S OFFER (with Technical Details)
3.2.0	OPERATION AND CONTROL SYSTEM - OPERATOR'S PANEL	
3.2.1	a. One Panel on the equipment controller side and other with Remote Pendant along with 25m cable, having complete machine control system with required configuration, shall be provided for convenient operation. b. All switches shall be within reach of Operator. All displays / indications shall also be conveniently located (Schematic Layout with details to be submitted with the offer)	Vendor to confirm
3.3.0	DRIVE SYSTEM & FEATURES	
3.3.1	Make: Siemens / ABB / Eurotherm / Danfoss	Vendor to specify
3.3.2	Type & Model: AC Digital Variable Speed Drive [latest version] (as available at the time of ordering, shall be supplied)	Vendor to specify
3.3.3	Details of Standard Features	Vendor to specify
3.3.4	Details of Optional Features, recommended by vendor.	Vendor to specify
3.3.5	a. The drive for the equipment shall be of AC Motor with Digital Controller. b. The Motor & Controller shall be of suitable capacity (kW rating) to control the job rotating speed infinitely adjustable from minimum to maximum. c. The controller should be able to control the motor speed precisely rated for rotating 30,000 kgs weight job. d. The controller shall able to be operated either from control panel or from remote station through hand held unit. e. Drive Controller Software is to be furnished. For Downloading / Up loading	Vendor to confirm
3.3.6	The control panel of the JOB Rotator shall be provided with the following features: 1. Stop & Emergency Stop 2. Speed selection: digitally programmable 3. Inching Mode / Continuous Mode Selector Switch 4. Forward Start & Reverse Start 5. Rotator speed Indicator / Digital Type.	

**TECHNICAL SPECIFICATIONS FOR PIPE BUTT WELDING STATION - PART B
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Sl. No.	PARTICULARS AND BHPV SPECIFICATION	BIDDER'S OFFER (with Technical Details)
3.4.0	REMOTE CONTROL UNIT	
3.4.1	A portable Remote control unit having all functions as listed in clause 3.3.6 above shall be provided with 25m interfacing cable.	Vendor to specify
3.5.0	Job Support Roller Stand: - 1 No a) Motorized vertically adjustable job supports (with rollers) for supporting the pipes and bends for welding. b) The supports shall have the facility to accommodate the entire pipe range mentioned as per Clause 1.0.0 and also permit free rotation of the jobs supported on them. c) The support unit shall able to be moved conveniently to accommodate different lengths of pipes & bends, using crane. Suitable hook arrangements to be provided for lifting by cranes. d) Earth clamp for connecting welding current return cables to be provided on this unit suitably. e) These support roller stand to be provided with Up / Down inching switch mounted on the structure of the stand and detachable plug-in type connections for loose cables with metallic hoses on the floor, from the view point of safety.	Vendor to confirm
4.0.0	SUBMERGED ARC WELDING MACHINE	
	Purpose: The equipment is intended for circumferential welding of Jobs as detailed in Specification Clause 1.0.0 in association with the Job Rotator.	
4.1.0	EQUIPMENT CONFIGURATION	
4.1.1	Machine Elements: The offered equipment shall consist of the following: a. Portable Column & Boom type Welding Manipulator. b. Fully Thyristorized DC Welding Power source & controller. c. Submerged Arc Welding Head – with Torch Positioning slides mounted on the Boom. d. Operator Controller. e. Set of Inter-Connecting Power, Earth & Control Cables.	

**TECHNICAL SPECIFICATIONS FOR PIPE BUTT WELDING STATION - PART B
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Sl. No.	PARTICULARS AND BHPV SPECIFICATION	BIDDER'S OFFER (with Technical Details)
4.2.0	PORTABLE COLUMN & BOOM TYPE WELDING MANIPULATOR.	
4.2.1	<p>Construction Type: The Manipulator shall be of the Column & Boom type with a movable boom and welding head mounted at the end of the boom. The combined purpose of the Column & Boom type Welding Manipulator and the welding head is to position the welding torch in relation to the Circumferential Butt Joint in Jobs as detailed in Clause 1.0.0.</p> <p>Swiveling of the horizontal boom about the vertical column through $\pm 180^\circ$ is intended.</p>	Vendor to Confirm
4.2.2	<p>Carriage (Base): The column shall be mounted on the base which is required to move manually on ground by means of suitable wheels. Suitable locking arrangement at required location of the carriage to be provided. The dead weight of the carriage to be designed to prevent toppling of the machine.</p>	Vendor to provide details.
4.2.3	Vertical travel of the Boom on the Column (motorized)	Vendor to Confirm
	Maximum Height under Welding Tip (Weld head in mid stroke position)	2200 mm
	Minimum Height under Welding Tip (Weld head in mid stroke position)	1200 mm
	Effective stroke :	1000 mm
	Boom vertical travel speed (fixed speed):	Bidder to specify.
4.2.4	Horizontal travel of the Boom (Motorized – Variable speed)	Vendor to Confirm
	Minimum Boom extension (from center of column to welding torch tip). It may be noted that the welding torch tip will lie in line with the axis of the job rotator when the boom is at the mid position of the horizontal stroke.	Bidder to specify.
	Maximum Boom extension (from centre of column to welding torch tip)	Bidder to specify.
	Effective stroke :	1500 mm
	Boom Horizontal travel speed:	100 – 700 mm/min
	Speed holding Accuracy :	Within $\pm 2\%$

**TECHNICAL SPECIFICATIONS FOR PIPE BUTT WELDING STATION - PART B
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Sl. No.	PARTICULARS AND BHPV SPECIFICATION	BIDDER'S OFFER (with Technical Details)
4.2.5	Maximum sag at the end of boom: Max. 2 mm for the full stroke in the horizontal direction.	Vendor to Specify
4.2.6	Vibration Level: Maximum 1.0 mm during the traverses	Vendor to Specify
4.2.7	Clamps for Boom (for vertical & horizontal movements)	Vendor to provide details.
4.2.8	Rotation of Column (about the vertical axis): Manually adjustable $\pm 180^\circ$ rotation with mechanical stoppers.	Vendor to confirm and provide details.
4.2.9	Clamping / locking mechanism for Column rotation – manual clamping arrangement.	Vendor to provide details.
4.2.10	Clamping mechanism for Vertical movement of the boom in position to ensure that it is securely held during welding without vibration.	Vendor to provide details.
4.2.11	Clamping mechanism for Horizontal movement of the boom in position to ensure that it is securely held during circumferential welding without vibration. It may be noted that it should be possible to move the boom in the horizontal direction (up to ± 50 mm) during welding to adjust the Torch Offset setting in inching mode.	Vendor to provide details.
4.3.0	WELDING POWERSOURCE and Controller	
4.3.1	Current Range: 100 to 1200 Amps.	Vendor to Confirm
4.3.2	Duty Cycle: Continuous – 100 % at 1200 Amps	Vendor to Confirm
4.3.3	O C V: Minimum 51 V DC	Vendor to Confirm
4.3.4	Welding Voltage: 21 to 45 Volts DC	Vendor to Confirm
4.3.5	Welding current: Maximum variation +/- 30 amps	Vendor to Confirm
4.3.6	Power Rating (input) of the equipment	Vendor to specify
4.3.7	Characteristics: Full Wave Constant Potential	Vendor to Confirm
4.3.8	Make: ESAB / LINCOLN	Vendor to specify
4.3.9	Input Power Supply: 415 $\pm 10\%$ V, 50 \pm Hz, 3-phase AC, 3 - wire system [4 th Wire for PE/Earthing]	Vendor to Confirm
4.3.10	Insulation: Class H	Vendor to Confirm
4.3.11	Design Feature: Fully Thyristorised with six SCRs	Vendor to Confirm

**TECHNICAL SPECIFICATIONS FOR PIPE BUTT WELDING STATION - PART B
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Sl. No.	PARTICULARS AND BHPV SPECIFICATION		BIDDER'S OFFER (with Technical Details)
4.3.12	Transformer Windings: The transformer coils in the power and control transformers shall be of 100 % copper or superior quality aluminum windings (copper winding is preferable)	Vendor to Confirm	
4.3.13	Parameter Reading Meters: Factory installed Ammeter & Voltmeter on front panel with easy removal and replacement from front-side for meter calibration purpose.	Bidder to specify the make & size of meters.	
4.3.14	Welding process controller -Remote Control Unit: A Remote control unit for pre setting of welding current & voltage to be provided.	Vendor to Confirm	
4.3.15	Output Terminal shall be of Bolt & Nut type with Nickel Coating	Vendor to Confirm	
4.3.16	Design to take care of protection (by tripping) due to electric short-circuit, single/two phase power input instead of three phase, thermal overload/overheating, etc.	Vendor to Confirm	
4.3.17	Auxiliary Power: Two numbers of tapping sockets/plug points for connecting hand-lamps of rating 24 V/40W with MCBs for protection, to be provided	Vendor to Confirm	
4.3.18	Cooling Fans: The power source shall be 'force air cooled' with one/two fans of suitable rating, to withstand the continuous welding operation in the peak ambient conditions, especially in the tropical environment of 45 to 50 Deg. C.	Vendor to Confirm	
4.3.19	Two numbers of lifting hook to be provided at suitable locations, for handling by EOT Crane	Vendor to Confirm	
4.4.0	PROCESS CONTROLLER FOR WELDING POWER SOURCE		
4.4.1	Current Range: 100 to 1200 Amps. (Infinitely variable with presetting)	Vendor to Confirm	
4.4.2	Welding Voltage: 21 to 45 Volts DC (Infinitely variable with presetting)	Vendor to Confirm	
4.4.3	Wire feed speed: 1.0 to 4.0 m/min. (infinitely variable)	Vendor to Confirm	
4.4.4	Wire diameter :3.2/4.0/4.8 mm	Vendor to Confirm	

**TECHNICAL SPECIFICATIONS FOR PIPE BUTT WELDING STATION - PART B
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Sl. No.	PARTICULARS AND BHPV SPECIFICATION		BIDDER'S OFFER (with Technical Details)
4.4.5	The thyristor controller shall be suitable to operate on the input voltage of 42 Volts or 110 Volts with necessary power and control PCBs for wire feed	Vendor to Confirm	
4.4.6	Location: The control panel shall be mountable on the welding head.	Vendor to Confirm	
4.4.7	Controls / Display: The control panel shall incorporate the following: a) Presetting of welding current & voltage. b) Meters for display of welding current and voltage. c) Inching of wire forward & reverse. d) Setting of burn back time e) Switches for Start and Stop of welding. f) Manual over-ride of pre-set parameters. g) Indication Lamp for Welding 'ON' h) Emergency OFF switch.	Vendor to Confirm	
4.5.0	INTER-CONNECTING CABLES		
4.5.1	The control cables, welding and earth cables of required length for connecting the power source to the welding head/control panel to be provided.	Vendor to Confirm	
4.5.2	Protection: Suitable sheathing to be provided for the cables for withstanding the rough use in shop floor.	Vendor to Confirm	
4.5.3	End-Connectors: All the cables shall be provided with suitable end-connectors for easy fixing up.	Vendor to Confirm	
4.6.0	BOOM MOUNTED WELDING HEAD		
	A welding head mounted at the end of a movable boom is intended.		
4.6.1	Welding Head slides. The welding head shall be fixed to the Boom through horizontal – vertical and rotary slides enabling movement of the welding torch as follows:		
	Horizontal : 200 mm by Manual Adjustment during welding (Hand wheel) for bead positioning in the joint.	Vendor to Confirm	
	Vertical : 200 mm motorized for Torch upward movement during welding for next layer.	Vendor to Confirm	
	Rotary : ± 90° in vertical plane by Manual Adjustment (Hand Wheel) for Torch angle adjustment during welding.	Vendor to Confirm	

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Sl. No.	PARTICULARS AND BHPV SPECIFICATION		BIDDER'S OFFER (with Technical Details)
4.6.2	Wire feed Head. The wire feed motor shall be of make ESAB or LINCOLN make for direct interfacing with ESAB or LINCOLN Power sources and controllers.	Vendor to confirm and provide details	
	The straightening and feed rollers in the Feed head shall ensure wire issues straight from the Contact tip/Nozzle to a length of 500 mm with sufficient number of straightening rollers and minimal setting.	Vendor to confirm and provide details	
4.6.3	Wire spool Holder: Arrangement for holding a 25 Kg standard wire spool holder in appropriate orientation to the Feed head shall also be provided in the Welding Head. The position and arrangement shall ensure easy loading of Wire coils by the operator.	Vendor to confirm and provide details	
4.6.4	Flux Hopper: Capacity of Flux Container: 10 kg. Open / Shut-Off Manual Control Valve and heat resistant Flux Feed Tube to be provided. The position and arrangement shall ensure easy loading of Flux by the operator. Flux collector with sieve to be provided to collect the flux.	Vendor to confirm and provide details	
4.7.0	OPERATOR CONTROL PANEL		
4.7.1	Controller Operations: a. Movement of motorized vertical slide in the head. b. Boom Horizontal & vertical movements. c. All controls of Welding Process controller as per clause 4.4.7 d. Speed indicator for horizontal travel of boom. e. All controls of Job Rotator as per clause 3.3.6	Vendor to confirm and provide details	
5.0	ELECTRICAL		
5.1	415 V with fluctuation of $\pm 10\%$, 50 ± 1.5 Hz, 3 Phase AC power supply will be provided by BHPV at a single point near the machine, as per layout recommended by Vendor	Vendor to Note	

**TECHNICAL SPECIFICATIONS FOR PIPE BUTT WELDING STATION - PART B
(PIPE TO PIPE TO PIPE AND PIPE TO FITTINGS WELDING STATION)**

Sl. No.	PARTICULARS AND BHPV SPECIFICATION	BIDDER'S OFFER (with Technical Details)
5.2	All types of cables, connections, circuit breakers etc. required for connecting BHPV's power supply during construction of foundation to be delivered before start of foundation work.	Vendor to confirm
5.3	Tropicalization : All electrical / electronic equipment shall be tropicalized.	Vendor to confirm
5.4	All electrical/electronic control cabinets & panels shall be dust & vermin proof and shall have IP 54 protection	Vendor to confirm
5.5	a. All electrical and electronic panels including operator's panel should be provided with fluorescent lamps for sufficient illumination and power receptacles of 220V, 5/15 Amp AC. b. All adapters /receptacles should have compatibility with Indian equivalents. c. All cables to be of copper core and protected with Flexible PVC hose.	Vendor to confirm
5.6	Vendor shall ensure proper earthing for the machine and its peripherals.	Vendor to confirm
5.7	Motors & other electrical components shall conform to IEC or Indian Standards. Motors shall be of SIEMENS/ABB / CROMPTON. All switches and control elements shall be of Seimens / L&T / GEC / Alston / Telemecanique.	Vendor to specify the make of components used.
5.8	MACHINE LIGHTING SYSTEM	
5.8.1	A fluorescent machine lamp with drip proof protective cover to be provided for the welding area visibility.	Vendor to confirm
5.8.2	A spot light with sufficiently long cable should also be provided with 24V AC supply	Vendortoconfirm
5.8.3	Flashing/Rotary type machine lamp to denote Machine ON, Working, Alarm/Tripping Condition, etc. as per Industry Standards, to be provided	Vendortoconfirm
6.0	MECHANICAL CONSTRUCTIONAL FEATURES	
6.1	The base frame, column & boom carriage shall be of fully welded construction and built in closed construction.	Vendor to confirm
6.2	If heat-treatment is required for the fabricated structure, proper heat-treatment shall be carried out prior to taking up machining or grinding works. Bidder to mention/give heat treatment details.	Vendor to confirm

**TECHNICAL SPECIFICATIONS FOR PIPE BUTT WELDING STATION - PART B
(PIPE TO PIPE TO PIPE AND PIPE TO FITTINGS WELDING STATION)**

Sl. No.	PARTICULARS AND BHPV SPECIFICATION	BIDDER'S OFFER (with Technical Details)
6.3	The guide ways (sliding surface) shall be suitably hardened and ground to give a smooth traversing.	Vendor to confirm
6.4	Suitable bellow covers with metallic / anti-tear materials are to be provided to protect the weld head slides from the dust, welding flux/slag, wastes, etc.	Vendor to confirm
6.5	Since the jobs are welded with preheating to a temperature of 450° C, all the machine parts shall be designed to suit this working environment	Vendor to confirm
6.6	Wipers are to be fitted to machine parts to clean/remove the dirt collected on guide-way	Vendor to confirm
6.7	Metallic guards are to be provided for all rotating couplings.	Vendor to confirm
6.8	A lifting hook shall be provided at the top of the column, to lift the column & boom with carriage structure, by use of a Crane in case of need.	Vendor to confirm
6.9	All gears used in the machine are to be hardened and ground.	Vendor to confirm
6.10	A operator platform to be provided near the welding head (fitted on the carriage) so as to monitor the welding, have access to all controls and loading of wire & flux when carrying out circumferential weld seam joints.	Vendor to confirm
6.11	The wire spool shall have the facility for adjusting brake on wire coil	Vendor to confirm
6.12	The welding wire conduit (welding torch made of copper) to which the contact tip is screwed on shall not be more than 20 mm in diameter, as it may foul with the side walls of the weld-groove during welding	Vendor to confirm
6.13	The supply shall also include the return current (earth) cables of suitable rating DC power source. The length of cable set shall be suitable to connect the job of length around 21 m at the maximum.	Vendor to confirm
6.14	The flux feeding hose or tubing from the flux hopper shall withstand the temperature of 350°C in continuous duty application with reasonable long life.	Vendor to confirm
6.15	Suitable Centralised lubrication units for Job rotator and Column & Boom welding machine (independently) to be provided with required no. of metering cartridges for dosing.	Vendor to confirm

**TECHNICAL SPECIFICATIONS FOR PIPE BUTT WELDING STATION - PART B
(PIPE TO PIPE TO PIPE AND PIPE TO FITTINGS WELDING STATION)**

Sl. No.	PARTICULARS AND BHPV SPECIFICATION	BIDDER'S OFFER (with Technical Details)
6.16	All lubricated parts like drive gears shall have provision for collecting / preventing the used Lubrication oil from spilling over on to the ground.	Vendor to confirm
6.17	An access ladder& platform shall be provided for the maintenance staff to attend to fault in the boom vertical up and down movement mechanism / Counter balance & Pulley arrangement. Approach holes on the column to support the counter Wt, during maintenance	Vendor to confirm
7.0	LEVELING & ANCHORING SYSTEM	
7.1.0	Complete anchoring system including foundation bolts, anchoring materials, fixators, levelling shoes etc should be Supplied.	Vendor to Confirm
8.0	SAFETY ARRANGEMENT	
8.1	Machine shall have adequate and reliable safety interlocks / devices to avoid damage to the machine, work piece and the operator due to mistakes or the malfunctioning	Vendor to Confirm
8.2	A detailed list of all alarms/indications provided on machine should be submitted by the Vendor.	Vendor to Confirm
8.3	All the pipes, cables etc. on the machine should be well Supported and protected. These should not create any hindrance to machine operator, for effective use of machine.	Vendor to Confirm
8.4	Emergency Switches at suitable locations as per International Norms should be provided	Vendor to Confirm
8.5	Enclosures or protective covers shall be provided for the moving parts (either linear or rotary), as a safety measure, as per industry standards	Vendor to Confirm
8.6	Counter-balance and Safety device for holding the boom and the welding head against rope breakage. Offer details to be elaborated	Vendor to Confirm
8.7	All the rotating parts used on machine should be statically & dynamically balanced to avoid undue vibrations, Noise and suitably guarded	Vendor to Confirm

**TECHNICAL SPECIFICATIONS FOR PIPE BUTT WELDING STATION - PART B
(PIPE TO PIPE TO PIPE AND PIPE TO FITTINGS WELDING STATION)**

S.No.	PARTICULARS AND BHPV SPECIFICATION	BIDDER'S OFFER (with Technical Details)
9.0.0	ENVIRONMENTAL PERFORMANCE OF THE MACHINE	
9.1.0	<p>The Machine should confirm to following factors related to environment:</p> <ul style="list-style-type: none"> a) Maximum noise level shall be 85 dB(A) at normal load condition, 1meter away from the machine with correction factor for back ground noise. b) There shall not be any emissions from the machine except fumes of welding during welding operation. c) If any safety / environmental protection enclosure is required it should be built in the machine by the vendor. d) Paint of the machine should be oil / coolant resistant and should not peel off and mix up with coolant. e) The machine shall be suitable for an ambient temperature of +50 ° C and relative humidity of 93 %respectively, but both do not occur simultaneously 	Vendor to confirm
10.0.0	TOOLS FOR ERECTION, OPERATION & MAINTENANCE	
10.1.0	The Vendor shall bring special tools and equipment required for erection of the machine. Necessary tools like Torque Wrench, Spanners, Keys, grease guns etc. for operation and maintenance of the machine shall be supplied. List of such tools shall be submitted with offer	Vendor to confirm
11.0.0	MACHINE SPARES AND CONSUMABLES:	
11.1.0	Electrical and Mechanical spares for two years of trouble free operation shall be quoted. List to cover items listed in ANNEXURE - 5 , enclosed	Vendor to confirm
11.2.0	All types of spares for total station and accessories should be available for at least ten years after supply of the equipment. If equipment / control is likely to become obsolete in this period, the vendor should inform BHPV sufficiently in advance and provide drawings of parts / details of spares & suppliers to enable BHPV to procure these in advance, if required	Vendor to confirm

**TECHNICAL SPECIFICATIONS FOR PIPE BUTT WELDING STATION - PART B
(PIPE TO PIPE TO PIPE AND PIPE TO FITTINGS WELDING STATION)**

S.No.	PARTICULARS AND BHPV SPECIFICATION		BIDDER'S OFFER (with Technical Details)
11.3.0	Consumable spares like contact tip/nozzles/nozzle extension for 3.2 mm, 4.0 mm, and 4.8 mm dia. wires shall be quoted separately. Hardened feed and straightening rollers suitable for the above said dia wires also may be quoted	Vendor to confirm	
12.0.0	DOCUMENTATION:		
12.1.0	Set of Documents to be submitted along with the Offer for technical evaluation:		
12.1.1	General Lay-out of the machine with major and critical dimensions in line with the specification	Vendor to confirm	
12.1.2	General Assembly drawing of the following assemblies with bill of materials and critical dimensions: a) Job rotator. b) Job support roller stand. c) Column & Boom welding machine.	Vendor to confirm	
12.1.3	Sub-assembly / Arrangement drawings with bill of materials and critical dimensions for the following: a) Drive & clamping arrangement of job rotator. b) Column rotation / clamping arrangement. c) Boom vertical drive arrangement. d) Boom Horizontal drive arrangement. e) Job support roller stand vertical drive arrangement. f) Weld head slide (vertical & Horizontal) arrangement. g) Wire straightening roller arrangement. h) Wire brake hub drawing & wire spool / coil dimension	Vendor to confirm	
12.1.4	List of bought out items with make and specification along with catalog: Welding Power source, controllers, Drives, Motors, Gear boxes, Wire straightened,	Vendor to confirm	
12.1.5	Hydraulic / Pneumatic Circuit with Bill of Materials (if proposed in the system).	Vendor to confirm	
12.1.6	Electrical Circuit with Bill of Materials.	Vendor to confirm	

**TECHNICAL SPECIFICATIONS FOR PIPE BUTT WELDING STATION - PART B
(PIPE TO PIPE TO PIPE AND PIPE TO FITTINGS WELDING STATION)**

S.No.	PARTICULARS AND BHPV SPECIFICATION	BIDDER'S OFFER (with Technical Details)
12.1.7	Video images on CD /Hard copy of literature with photographs & drawings explaining the technical features.	Vendor to confirm
12.2.0	Set of Documents to be submitted after placement of order for approval / verification before manufacturing:	
12.2.1	General Lay-out of the machine with major and critical dimensions in line with the specification and Preliminary Foundation drawing.	Vendor to confirm
12.2.2	General Assembly drawing of the following assemblies with bill of materials and critical dimensions: a) Job rotator. b) Job support roller stand. c) Column & Boom welding machine.	Vendor to confirm
12.2.3	Sub-assembly / Arrangement drawings with bill of materials and critical dimensions for the following: a) Drive & clamping arrangement of job rotator. b) Column rotation / clamping arrangement. c) Boom vertical drive arrangement. d) Boom Horizontal drive arrangement. e) Job support roller stand vertical drive arrangement. f) Weld head slide (vertical & Horizontal) arrangement. g) Wire straightening roller arrangement.	Vendor to confirm
12.2.4	Hydraulic / Pneumatic Circuit with Bill of Materials (if available in the system)	Vendor to confirm
12.2.5	Electrical Circuit with Bill of Materials.	Vendor to confirm
12.2.6	Quality plan.	Vendor to confirm
12.3.0	Set of Documents to be submitted along with machine:	
12.3.1	Three sets of following documents as Hard copies and 1 set of all documents including bought out item catalogues – soft copy in CD in English Language should be supplied along with the machine.	Vendor to confirm
12.3.2	One set of complete documents as Hard copy and complete documents in CD / Pen drive to be submitted during inspection at supplier's works for verification.	Vendor to confirm

**TECHNICAL SPECIFICATIONS FOR PIPE BUTT WELDING STATION - PART B
(PIPE TO PIPE TO PIPE AND PIPE TO FITTINGS WELDING STATION)**

S.No.	PARTICULARS AND BHPV SPECIFICATION	BIDDER'S OFFER (with Technical Details)
12.3.3	Operating Manuals of equipments.	Vendor to confirm
12.3.4	Programming Manuals if any for the station.	Vendor to confirm
12.3.5	Detailed Maintenance manual of machine with all drawings of machine assemblies / sub-assemblies / parts including Electrical / PCB circuit diagrams / Pneumatic / Hydraulic Circuit Diagrams. All Assembly / Sub Assembly Drawings shall be supplied with the part list / Bill of Materials giving complete specification and make of components / brake hub / wire coil / spool dimension.	Vendor to confirm
12.3.6	Maintenance, Interface & Commissioning Manuals for speed drives.	Vendor to confirm
12.3.7	Manufacturing drawings for all wearing components like bushes, pulleys, gears, etc.	Vendor to confirm
12.3.8	Catalogues, O&M Manuals of all bought out items including Drawings, wherever applicable highlighting the specific model used in the supplied machine.	Vendor to confirm
12.3.9	Detailed specification of all rubber items, hoses, fittings, etc. List of bearings, belts used to be provided.	Vendor to confirm
12.3.10	Operating Manuals, Maintenance Manuals & Catalogues for all supplied Accessories.	Vendor to confirm
12.3.11	Complete Master List of parts used in the equipment.	Vendor to confirm
12.3.12	Complete list of spares for equipments and accessories, along with item part no / specification / type / model, and name & address of the spare supplier shall be furnished.	Vendor to confirm
13.0.0	ERECTION & COMMISSIONING	
13.1.0	<ul style="list-style-type: none"> a. Vendor to take full responsibility for supervision of the erection & commissioning, testing of the machine, carrying out welding of test pieces etc. b. Service requirement like power, air & water shall be provided by BHPV at only one point to be indicated by Vendor in their foundation/layout drawings. c. Other requirements like crane and helping personnel shall also be provided by BHPV. 	<p>Details of these Requirements should be informed by Vendor in advance</p>

**TECHNICAL SPECIFICATIONS FOR PIPE BUTT WELDING STATION - PART B
(PIPE TO PIPE TO PIPE AND PIPE TO FITTINGS WELDING STATION)**

S.No.	PARTICULARS AND BHPV SPECIFICATION	BIDDER'S OFFER (with Technical Details)
13.2.0	Tools, Tackles, instruments and other necessary equipment Required to carry out all above activities should be brought by the Vendor.	Vendor to confirm
13.3.0	The Vendor on returnable basis shall bring commissioning spares, required for commissioning of the machine within Stipulated time.	Vendor to confirm
13.4.0	Portion, if any, of the equipment, accessories and other supplied items where paint has rubbed off or peeled during transit or erection should be repainted and merged with the original surrounding paint by the vendor. For this purpose, the Vendor should supply sufficient quantity of touch-up paint of various colours of paint used.	Vendor to confirm
13.5.0	Schedule of Erection and Commissioning shall be submitted With the offer.	Vendor to confirm
13.6.0	Vendor should furnish charges, duration, terms & conditions for E&C in detail separately along with offer.	Vendor to confirm
14.0.0	AMBIENT CONDITIONS & THERMAL STABILITY	
14.1.0	Weather conditions are tropical, Atmosphere may be dust laden during some part of the year. The equipment shall be kept in the normal shop floor condition	Vendor to confirm
14.2.0	Thermal Stability of the complete equipment keeping in view specified Ambient Conditions and accuracy requirements of BHPV components and vendor should ensure trouble free operation of the equipment.	Vendor to confirm
14.3.0	The equipment, including attachments and accessories, Should be suitable for 24 hrs. Continuous operation to its full capacity for 24 hour a day and 7 days a week throughout.	Vendor to confirm
15.0.0	ACCEPTANCE TESTS AT VENDORS WORKS:	
15.1.0	Demonstration of all features of the machine, control system & accessories	Vendor to confirm
15.2.0	Verification of all material test certificates.	Vendor to confirm
15.3.0	Verification of complete O&M manuals and documents as per clause 12.2.0	Vendor to confirm

**TECHNICAL SPECIFICATIONS FOR PIPE BUTT WELDING STATION - PART B
(PIPE TO PIPE TO PIPE AND PIPE TO FITTINGS WELDING STATION)**

S.No.	PARTICULARS AND BHPV SPECIFICATION		BIDDER'S OFFER (with Technical Details)
15.4.0	Bead on pipe welding at the following conditions <ul style="list-style-type: none"> • With Ø 4.00 mm SAW wire Coil – 25 Kg continuously welded. • Minimum & Maximum current range of Power source. • Minimum & Maximum speed range of Rotator. • Maximum extension of the Boom in Horizontal Axis. • Adjustment of Horizontal, vertical & rotary torch slides during welding. 	Vendor to confirm	
16.0.0	PROVE-OUT OF BHPV COMPONENTS		
16.1.0	Tests / Activities to be carried out at BHPV works while commissioning the equipment:		
16.2.0	Full load test to demonstrate the maximum power & specified speed range of the equipment, welding prove out, operation of the flux recovery unit as per specification.	Vendor to confirm	
16.3.0	Demonstration of all features of the equipment, control system & accessories to the satisfaction of BHPV for efficient and effective use of the equipment	Vendor to confirm	
16.4.0	Demonstration by actual use of all supplied attachments and accessories to their full capacity.	Vendor to confirm	
16.5.0	Supervision by vendors of independent operation of each system of the equipment by BHPV after job prove out.	Vendor to confirm	
16.6.0	Satisfactory welding of 3 Production Joints continuously.	Vendor to confirm	
17.0.0	MACHINE PACKING		
17.1.0	Sea worthy & rigid packing for all items of complete equipment System, all accessories and other supplied items to avoid any damage/loss in transit. When the equipment is dispatched in containers, all small loose items shall be suitably packed in boxes.	Vendor to confirm	
18.0.0	PERFORMANCE GUARANTEE		
18.1.0	Performance Guarantee for a minimum period of 12 months (for the machine in total and sub-systems or bought-out items in particular) from the date of commissioning of the machine or 18 months from the date of supply whichever is Earlier.	Vendor to confirm	

**TECHNICAL SPECIFICATIONS FOR PIPE BUTT WELDING STATION - PART B
(PIPE TO PIPE TO PIPE AND PIPE TO FITTINGS WELDING STATION)**

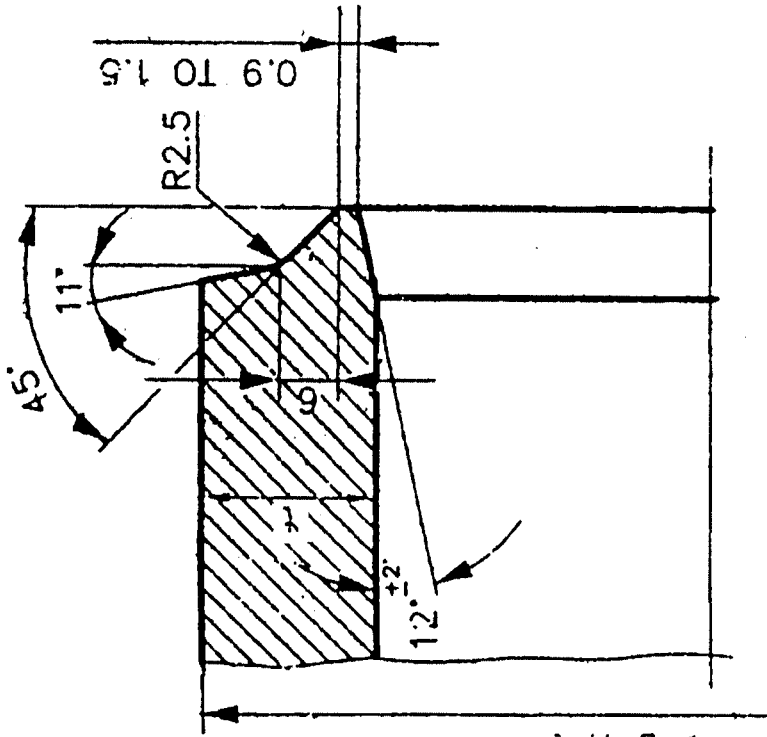
S.No.	PARTICULARS AND BHPV SPECIFICATION	BIDDER'S OFFER (with Technical Details)
19.0.0	GENERAL POINTS	
19.1.0	Equipment Model No	Vendor to specify
19.2.0	Total connected load (KVA):	Vendor to specify
19.3.0	Floor area required (Length, Width, Height) for complete equipment & accessories	Vendor to specify
19.4.0	Painting of Equipment / Electrical Panels using RAL 6011 Apple Green Colour.	Vendor to confirm
19.5.0	All gears are to be hardened and ground	Vendor to specify
19.6.0	Total weight of the individual systems of equipment	Vendor to specify
19.7.0	Weight of heaviest part of machine	Vendor to specify
19.8.0	Weight of the heaviest assembly / sub-assembly of the equipment	Vendor to specify
19.9.0	Dimensions of largest part / sub-assembly / assembly of the equipment	Vendor to specify
19.10.0	Vendor to submit, along with offer, reference list of customers where similar equipments have been supplied mentioning broad specifications of the supplied equipment i.e. Model, Load Carrying Capacity, Main Drive Rating, etc	Vendor to confirm
19.11.0	Hydraulic, pneumatic & lubrication piping should be preferably metallic except places where flexible piping is essential	Vendor to confirm
19.12.0	All hydraulic components, if used shall be of Bosch Rexroth / Vickers Sperry. (Details to be submitted)	Vendor to specify
19.13.0	All hydraulic hoses shall be of GATES / Aeroquip / Parker Hannifin make.	Vendor to specify
19.14.0	All Gear boxes used shall be of standard makes like Greaves / Elecon / Bonfiglioli.	Vendor to specify

ENCLOSURES:

- ANNEXURE –1** : Edge Preparation Styles for Butt Welding Operation
- ANNEXURE – 2** : Standard Sizes of Pipes, Tees (Equal & Unequal) and Elbows.
- ANNEXURE – 3 & 4** : Indicative Schematic Sketch for Manipulator Drive and Roller Support Units
- ANNEXURE – 5** : List of Spares for Sub-merged Arc Welding Machine

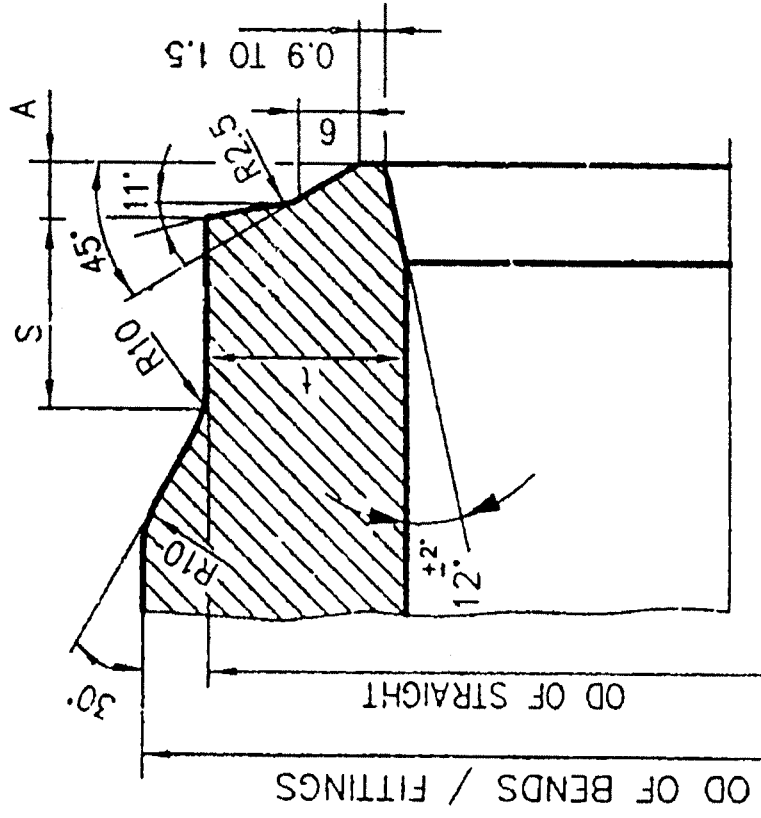
ANNEXURE - 1
 Drg No. CABS-1-16 - 01
 BHEL, Tiruchirappalli

O2. WHEN $l < 65$ $S+A = 65$ Min. & $t > 65$, $S=65$ Min.
 WHERE $t = \text{THK OF CONN. PIPE (STRAIGHT)}$.



USE WHEN $t \geq 14.2$ mm.

STYLE - P

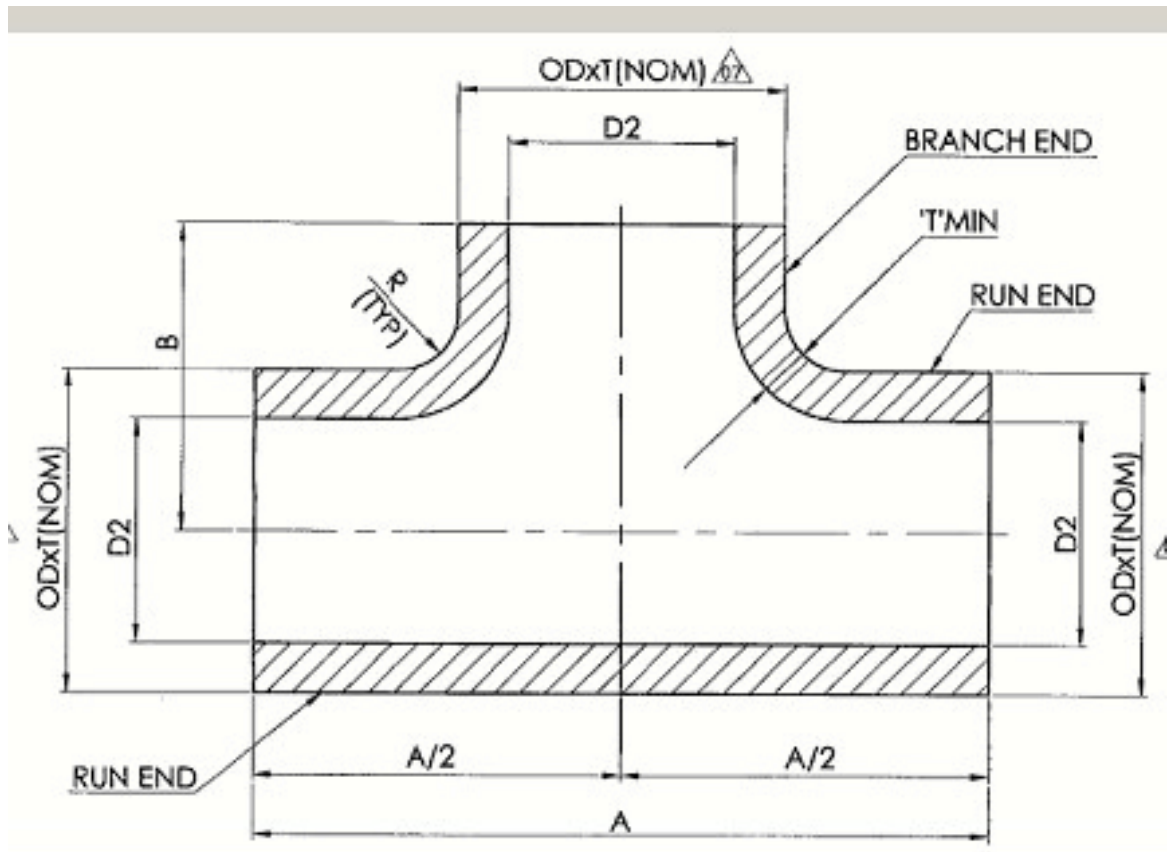


STYLE - Pa

PIPE SIZES

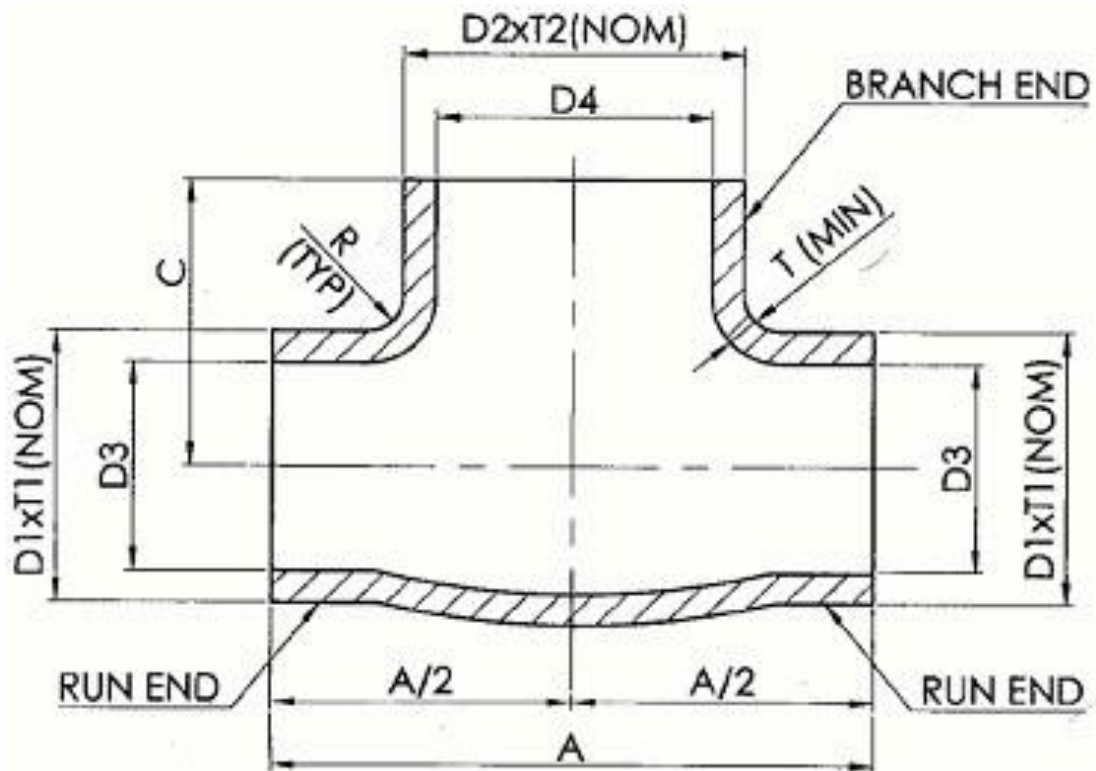
SL. NO.	PIPE DIAMETER	PIPE THICKNESS
1	219.1	28 to 40
2	273.0	25 to 50
3	323.9	36 to 65
4	355.6	40 to 92
5	368.0	50
6	406.4	50 to 93.4
7	457.2	28 to 79.4
8	508.0	25 to 110
9	558.8	40
10	609.6	38.2 to 123.8
11	660.4	45
12	711.0	20 to 45
13	762.0	80 - 95
14	812.0	45 - 60
15	864.0	27 - 62
16	965.0	35
17	1016.0	35 - 65

FITTINGS : ‘ T ’ ees



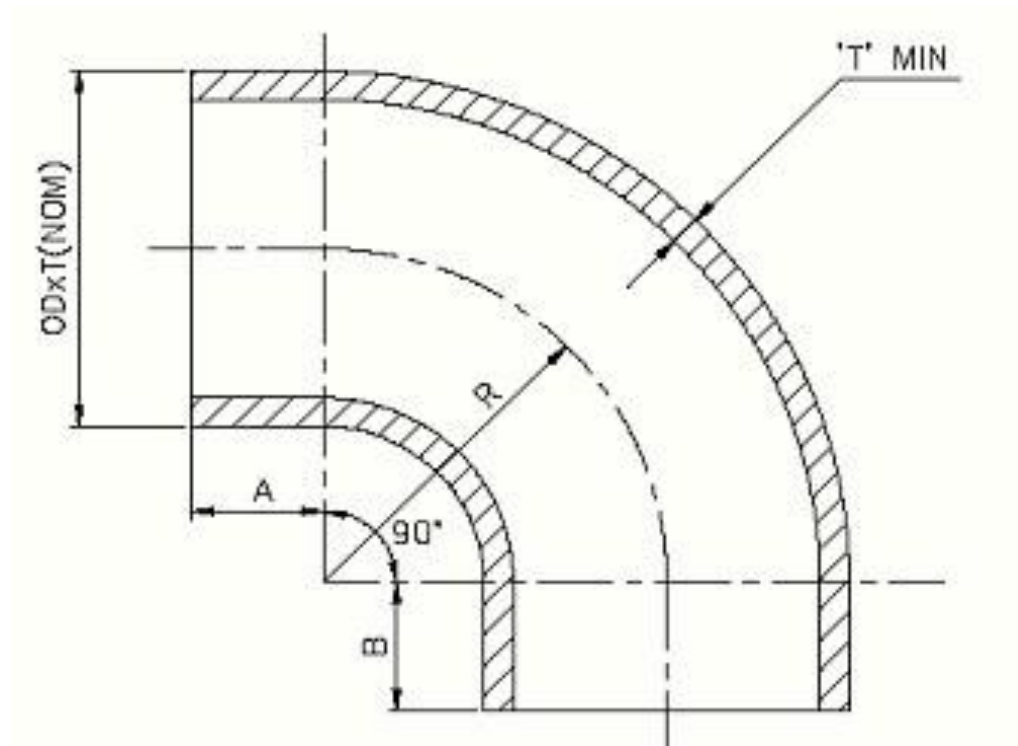
Sl. No.	OD, mm	T (Nom) Thickness, mm	(A) Length, in mm	B in mm
1	219.1	18.2, 28.5, 32, 36, 40	340	170
2	244.5	42.2	600	200
3	273	32, 36, 36.5, 40, 45, 45.7	635	215
4	323.9	36, 36.5, 37.1, 38.8, 40, 45.7	710	255
5	355.6	45.7, 59	760	280
6	368	28.5, 54.85, 59, 60.57, 68.57	760, 820	280
7	406.4	51.4, 62.85, 74.2, 85.7	870	305
8	457.2	25, 80	1090	338
9	508	28, 40, 71, 137.1	1090, 1100	385
10	558.8	28, 40	1100	425

FITTINGS : 'T' ees

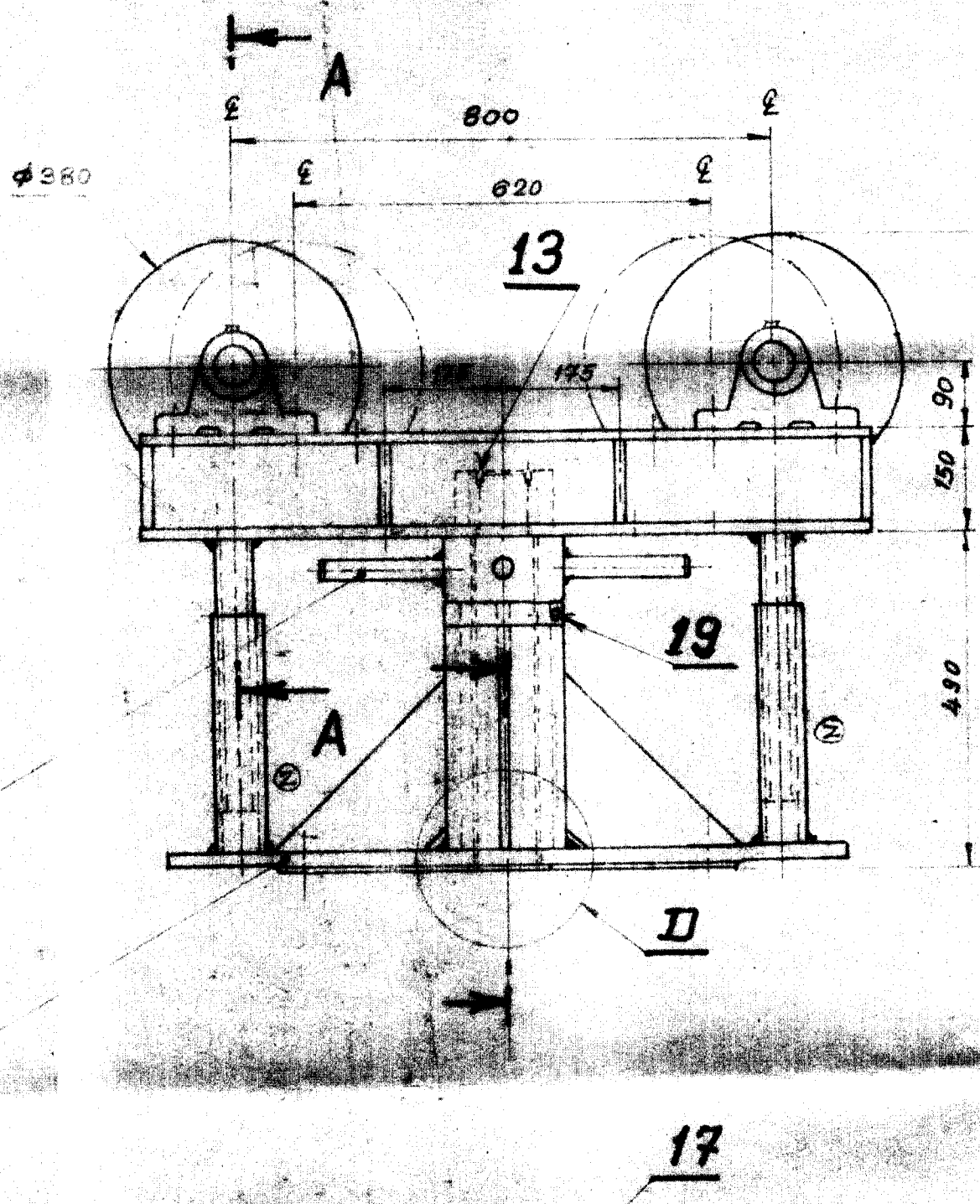


Sl. No.	D1/D2 in mm	T1 & T2 (Nom) Thickness in mm	(A) Length, in mm	C in mm
1	219.1/273	34.2	990	216
2	273/323.9	34.8, 36.5	990	254
3	323.9/368	57, 68.5	790	280
4	323.9/406.4	51, 68.5, 80	870	310
5	368/406.4	62.5	870	310
6	406.4/508	68.5, 74, 85.7	1100	385
7	406.4/457.2	68.5	1090	338
8	457.2/508	80	1200	381
9	457.2/558.8	28.5	1230	415
10	508/558.8	28.5	1230	425

FITTINGS : ELBOWS



Sl. No.	OD, In mm	T (Nom) Thick, in mm
1	219.1	18.28, 22.85, 25, 28, 30, 32, 40
2	273	32, 35.4, 36, 36.5, 40, 45
3	323.9	29.14, 34.28, 36, 40, 42.28, 45.7, 51.42
4	355.6	35, 40, 50, 55
5	368	36.57, 40, 41.14, 48, 50, 51.42, 59
6	406.4	25, 32.5, 45.7, 51.42, 57.14, 62.85, 68.57
7	457.2	25, 45.7, 51.42, 57.1, 65.1
8	508	25, 62.85, 71
9	558.8	28, 40
10	609.6	30, 40



ANNEXURE – 5

LIST OF SPARES & CONSUMABLES

Sl. No.	DESCRIPTION	QTY.
AA	POWERSOURCE SPARES	
1	All types of Printed Circuit Boards (PCB) in the power source – with part no. and description – 1 No in each.	1 Set
2	Cooling Fan Assembly	1 No.
3	Diodes – make and type no	2 Nos.
4	Indicator Lamps – 3 Nos. in each type	1 Set
5	SCR module	3 Nos.
BB	TRACTOR/WELDING HEAD /CONTROL PANEL SPARES	
6	A.C. Motor with gear box for boom travel	1 No.
7	Pressure Roller Assembly	1 No.
8	Straightening Roller Assembly	1 No.
9	Guide Roller Assembly	1 No.
10	Tightening Knob Assembly	1 No.
11	Wire Guide House with Spiral	1 No.
12	Wire Guide Tube with Spiral	1 No.
13	Wirefeed Roll (3.20 mm dia. Wire)	2 Nos.
14	Wirefeed Roll (4.00 mm dia. Wire)	3 Nos.
15	Wirefeed Roll (4.80 mm dia. Wire)	1 No.
16	Contact Tip 3.20 mm	5 Nos.
17	Contact Tip 4.00 mm	35 Nos.
18	Contact Tip 4.80 mm	5 Nos.
19	Contact tip extension pieces for different Job thickness to cover range. 1no/type	1 Set
20	Wire Spool Holder (25 kg.)	1 No.
21	Switches – 1 No. in each type	1 Set
22	Ammeter for Process Controller	1 No.
23	Voltmeter for Process Controller	1 No.
24	Boom Speed indicator	1 No.
25	Control Transformer	1 No.
26	Control PCB for wire feeder – complete – 1 No in each type.	1 Set
27	Vertical slide motor	1 No.
CC	JOB ROTATOR SPARES	
28	VVVF drive for rotator	1 No.
29	Rotator Speed indicator	1 No.

COMMERCIAL TERMS AND CONDITIONS FOR SUBMISSION OF OFFER**1.0 QUOTATIONS**

Bidders shall submit the offer in TWO INNER ENVELOPES as indicated below which shall be sealed in one outer envelope.

Envelope I: This sealed envelope should contain all the copies of technical bid together with un-priced commercial bid. This envelope should be clearly marked “**Part I – Technical and Un-priced commercial bid**” Indicating Tender No., Due Date and Address & Reference of the Bidder.

Envelope II: This sealed envelope should contain price details this envelope should be clearly marked “**Part II - Price bid**” indicating Tender No., Due Date and Address & Reference of the Bidder.

Both the envelopes (Part I & II) shall be put in one cover, duly sealed, super scribing as Part I and Part II of Tender No., due date of opening and the address and reference of the Bidder

The above offer should reach this office on or before the due date by 14.00 Hrs (IST)
Tender should not be addressed to any Individuals name but only designation to

Dy. General Manager (MM)
BHARAT HEAVY PLATE & VESSELS LIMITED
VISAKHAPATNAM - 530 012 (A P), INDIA.

Tenders should be free from CORRECTION AND ERASURES. Corrections if any must be attested. All amounts shall be indicated both in words as well as in figures. Where there is difference between amount quoted in words and figures, amount quoted in words shall prevail.

Offers should be in ENGLISH and accompanied by technical literature catalogue and detailed dimensional drawings in ENGLISH or otherwise the offers will not be considered.

2.0 PART I (TECHNICAL & UN-PRICED COMMERCIAL BID)**2.1 Technical**

This part shall include / indicate the following:

- 2.1.1. Offer should contain complete scope of supply with all technical details, specifications, delivery and other commercial terms and conditions.
- 2.1.2. Point by point confirmation for the Technical Specification enclosed is to be provided. If there are any deviations the same should be clearly specified. Offers received without conformation to our specification will be rejected.
- 2.1.3. List of customers to whom same or similar equipment have been supplied along with performance certificates to be enclosed.
- 2.1.4. Relevant catalogue to be attached.
- 2.1.5. List of spares parts (with part numbers) for two years operation and maintenance should be attached.

2.1.6. Information on shipping weight and cubage (length, width & height) to be provided

2.1.7. In case of foreign bidder offer, the Principal's technical offer only should be enclosed.

2.2 Un-Priced Commercial

This part shall include / indicate the following

2.2.1. Port of shipment / Station of dispatch

2.2.2. Terms of payment

2.2.3. FOB/FCA price along with freight charges up to Chennai port (for foreign bidders) Ex-works/FOR Dispatch Station price along with freight charges up to BHPV Visakhapatnam (for Indian bidders)

2.2.4. Taxes, Service tax & duties including Cess applicable.

2.2.5 Delivery Schedule

2.2.6. Filled-in check list to be enclosed

2.2.7. Offer validity

2.2.8. Country of origin

2.2.9. Percentage of agency commission if any along with a copy of Agency agreement The FOB/FCA/CFR Prices quoted shall include the agency commission.

2.2.10. A copy of "Un-Priced Part II 'i.e., a copy of the Price Bid without the price details to be enclosed.

2.2.11 BHPV is eligible for availing CENVAT / VAT credit on both inputs and capital inputs. The suppliers invoice should separately indicate the amount of duty / taxes and should invariably mention the following details:

1. The Central excise registration number, range division and commission rate of the supplier's jurisdiction.
2. The rate of duty and 8 digit central excise tariff heading of the item supplied.
3. The TIN, VAT, CST registration number of the supplier.

The duplicate copy of the invoice is required for availing CENVAT credit and original copy for availing VAT credit, if purchased within the state.

In case of foreign bidders the duplicate copy of the electronic Bill of Entry along with TR6 challan should be made available for availing CENVAT credit on CVD, Cess (S) and SAD.

3.0 **PART II (PRICE –BID)**

This part should contain the schedule of price particulars and to be co-related to the technical details provided in Part-I

4.0 **OPENING OF TENDERS**

The Part I – Technical & un-priced commercial bid alone would be opened on the Tender opening date.

The Part II – Price bid of technically suitable Bidders alone would be opened. The Technically suitable Bidders would be informed about the Price Bid opening date. Clarifications if any required by BHPV FOR Technical evaluation / commercial evaluation would be sought from Bidders before opening of Part II – price bid.

GENERAL

5.1 Incomplete offers will not be considered.

5.2 **Fixed priced:** Prices quoted by the bidder shall be fixed and not subject to any escalation whatsoever during the period of bid validity and execution of the Purchase Order A bid submitted with an adjustable price will be treated as non- responsive and rejected Prices shall be written in words and figures. In the event of difference, the price in words shall be valid and binding. Unit prices shall be considered correct in the event of any discrepancy with regards to total price.

5.3 **Bid currency:** Indian bidders should submit the prices only in Indian Rupees. Foreign bidders may submit their bid in their home currency, which should be clearly indicated in the un-priced commercial bid as well as in the price bid.

- 5.4 **Terms of Delivery:** Bidders are required to quote their best delivery period. Foreign Bidders should submit their offer for net FOB/ FCA – Nearest Sea Port / Air Port as well as CFR / Chennai Seaport/ Airport. Freight charges up to Chennai port to be indicated separately. Indian Bidders should submit their offer for Dispatching station as well as FOR BHPV Visakhapatnam basis. Freight charges from works to BHPV Visakhapatnam to be indicated separately. Delivery from the date of Letter of Intent to be mentioned in the offer.
- 5.5 **Taxes and Duties:** All Taxes and Duties payable as extra to the quoted price should be specifically stated in offers along with CST & TIN No/ Tariff No. etc, failing which the purchaser will not be liable for payment of such Taxes and Duties (Our TIN No.28280189432, APGST No. VSP/04/1/1023 dated 24.08.1968. CST No.VSP/04/1/1012 dated 24.08.1968 & BHPV ECC No AAA CB 7076 N-XM001. Assessment circle Visakhapatnam.)
- 5.6 **Validity:** The offers for main equipment and spares shall be kept open for acceptance for a period of 120 days (one hundred and twenty days) from the dates of opening of the tender (part I)
- 5.7 **Terms of Payment:**
- 5.7.1 **Indian Bidders:**
- 5.7.1.1 90% payment (90% of basic price + 100% Taxes) will be made within 45 days of receipt of material and balance 10% will be made after acceptance of material/commissioning of the equipment at BHPV, Visakhapatnam and on submission of Performance Bank Guarantee.
- 5.7.2 **Foreign Bidders**
An Irrevocable letter of Credit shall be established for 80% of FOB/FCA/CFR/ (excluding Indian Agent's commission) 2 months prior to shipment and valid for 3 months for negotiation against shipment Letter of Credit shall be opened through a branch of State Bank of India in the country where order shall be placed. In case, in the country where order is placed, State Bank of India is not there, Letter of Credit will be confirmed by foreign banker. Balance 20% of FOB/FCA/CFR value shall be paid through sight draft on Commissioning & acceptance of the equipment at BHPV Visakhapatnam, against submission of 10% performance bank guarantee. All Bank charges outside India are to supplier's account. Lump sum erection and commissioning charges if any, shall be payable after satisfactory erection & commissioning of the equipment by sight draft against certificate issued by the competent authority.
- 5.7.3 **Common to both India & Foreign Bidders.**
Erection & Commissioning (E&C) charges will be released after deduction of Income Taxes as per the Govt. of India rules. The TDS certificate will be issued by BHPV. Applicable service tax on E&C charges will be payable extra. The liability of depositing the same to the Govt. will be of the supplier.
- 5.7.4 **Loading criteria common to both Indian and foreign bidders:** Vendor should accept the payment terms specified above. However for any deviation to the payment terms offered with reference to the above criterion will be loaded with prime lending rate of SBI prevailing on date of opening of price bid + 2%, which shall be computed for the differential period between BHPV terms of payment and the offered basic price.
- 5.8 DUNS number (allotted by M/s. DUN & Bradstreet) shall be mentioned in your offer.
- 5.9 **Guarantee:** The equipment shall be guaranteed for a period of 18 months from the date of supply or 12 months from the date of commissioning and acceptance whichever is earlier.
Offers from vendors not accepting to the requested guarantee period will be rejected.

5.10 **Contract Execution Bank Guarantee (CEBG):** The successful tenderer shall furnish a Bank Guarantee from any Nationalized Bank for 5% of Purchase Order value (FOR Dispatching station value – Excluding taxes, duties, freight & insurance – for Indian bidders) & (FOB/FCA value – excluding freight & insurance – for foreign bidders) confirming that the order will be executed as per the terms and conditions and this should be valid till final dispatch date (LR/GR/BL/AWB) with additional 2 months claim period. Letter of Credit will be processed only after receipt of CEBG. The CEBG is to be furnished within 3 weeks from the date of Purchase order.

Offers from vendors not accepting to submit CEBG will be rejected.

5.11 **Performance Bank Guarantee (PBG):** The supplier shall furnish a Bank guarantee from any Indian Nationalized Bank approved by BHPV in the format, given by BHPV along with purchase order for 10% of the Purchase Order value (FOR Dispatching station value – Excluding taxes, duties, freight & insurance – for Indian bidders) & (FOB/FCA value – excluding freight & insurance – for foreign bidders) valid for period of guarantee with additional claim period of 2 months.

Offers from vendors not accepting to submit PBG will be rejected.

The CEBG & PBG shall be obtained from any Indian Nationalized Bank

5.12 **Liquidated damages:** Delivery of the goods specified in the purchase order should be made within the time prescribed. Failure to dispatch the materials in the time as per the delivery quoted in our Purchase Order would make the supplier liable to an un-conditional penalty at the rate of ½% of the value of goods for each week of delay subject to a maximum of 10% of the Purchase Order value.

5.12.1 **Loading Criteria for Liquidated Damages:** Any deviation from above LD Clause to the extent for which LD is not agreed by the vendor i.e., differential % value will be loaded on basic price, e.g. If some vendor agrees for say maximum of 6% LD then his price will be loaded by 4% (10 – 6) of his quoted basic price.

5.13 **Risk purchase:** If the supplier fails to deliver the goods within the delivery specified in the Purchase Order, BHPV will be entitled to terminate the contract and to purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the supplier has failed to deliver or dispatch within the delivery period mentioned in the Purchase Order.

Offers from vendors not accepting the above Risk Purchase terms will be rejected.

5.14 **Indian Agent & Agency commission:** An Indian Agent can represent only one Foreign Manufacturer against a particular Tender. The FOB/FCA/CFR price quoted by the Foreign bidder shall include the agency commission. However, the agency commission component payable to their Indian Agents shall be shown separately in the offer. This will be paid by BHPV in India Rupees, on satisfactory commissioning & acceptance of the equipment. Copies of current Agency Agreement / Authorization Letter in respect of Agency Commission shall be furnished along with offer. For calculation of Rupee equivalent of Agency Commission exchange rate as prevailing on the date of Purchase Order will be taken.

5.15 **Short shipment / Warranty replacement:** In case of any short shipment in the main equipment / spares, customs duty levied on such supplies, shall be borne by the supplier. Any warranty replacement during the warrantee period shall be on FOR, BHPV - Visakhapatnam, basis.

- 5.16 **Inspection & Testing:** All goods shall be subject to inspection by BHPV or its authorized representatives at supplier's works or at BHPV stores. The supplier will not charge for the facilities provided for inspection of goods. In case of machine tools the machine would be inspected and proved at supplier's works prior to dispatch however, final inspection and acceptance of the machine will be carried after installation of the machine at BHPV, Visakhapatnam.
- 5.17 **Operating and Maintenance manuals:** The Bidders shall clearly mention in their offer that Operating Maintenance Manuals as called for in the Technical Specification in the required number of copies will be provided.
- 5.18 **Cenvat & VAT credit. (for Indian Bidders only):** The quotation must indicate Tariff item number and rate of Excise Duty applicable. The original Excise Duty Gate Pass will be required to be furnished in case charges to us. If the bidder is availing Cenvat credit for his input materials, the effect of proforma credit should be passed on to the purchaser.
- 5.19 **Packing:** The Supplier shall arrange for packing suitably in all respects considering the peculiarity of the material involves for normal transport by sea / air / rail road and suitably protected against effect of tropical salt laden atmosphere in the event of shipment being delayed at ports.
- 5.20 **Salient Points of HSE** (Health, Safety & Environment) that are to be considered while submissions of offer are:
- 5.20.1 Consumption benchmarks related to output shall be provided wherever applicable for key input resources (energy/fuels/chemicals)
- 5.20.2 Competency requirements for operation, maintenance and calibration, if any, shall be communicated
- 5.20.3 If any Hazardous chemicals as per MSIHC (Manufacturing, Storage and import of Hazardous Chemicals) Rules 1989/94/2000 are used, the MSDS shall be provided, along with on site & OFF site emergency plan (as applicable).
- 5.20.4 The noise level at operator level shall be within 90 Dba
- 5.20.5 OH&S (Occupational Health and Safety) control measures for safe working of machine as applicable shall be specified
- 5.20.6 The machine/equipment shall be fitted with guard for rolling and moving parts and shall comply with applicable OH&S legislations and Factories Act 1948
- 5.20.7 The supplier shall submit the layout drawing of operating controls, displays etc and operating instructions to enable ergonomics evaluation and approval
- 5.20.8 The recommended PPE (Personal Protective Equipment) for the equipment shall be furnished
- 5.20.9 Alarm System (both visual and audible) and Automatic switch off of the equipment shall be provided for any intrusion, overloading, short circuiting or any malfunctioning of the equipment.
- 5.20.10 Details of all hazardous / harmful substances discharges as by-products / wastes during operations of the machine / equipment, such as fumes, gases, dust particles, aerosols UV./IR (Ultra violet / Infra red) radiations, etc shall be furnished, along with their concentrations and their TLV, (Threshold Limit Value)

- 5.20.11 Appropriate pollution control measures shall be proposed to keep the emissions from the machinery / processes within the prescribed limit as stated in Environment Protection Rules 1986.
- 5.20.12 All furnaces, process units, DG sets, paint booths, shot blasting chambers, etc shall be provided with stack(s) of sufficient height as per guidelines laid down in the Environment Protection Rules 1986.
- 5.20.13 wherever industry specific standards are not available for control of pollutants, general emission standards shall be used
- 5.20.14 Chemicals banned due to their negative impact on the environment shall not be used on the process
- 5.20.15 Fuels with sulphur content less than 0.05% shall be proposed.
- 5.20.16 Details regarding nature of waste generated and appropriate disposal practices available shall be provided, along with the operation procedure of the plant / process.
- 5.20.17 Hazardous chemicals and flammable substances shall be transported only through authorized transporters and all safety practices as laid down in applicable legislative requirements such as Central Motor Vehicle Rules, Manufacture, Storage and Import of Hazardous Chemical 1989, etc. shall be followed.
- 5.20.18 Primary materials used in the equipment shall be specified and they shall be eco - friendly.
- 5.21 Evaluation of offers shall be on the basis of delivered cost (Net cash outflow to BHPV).
- 5.22 BHPV also reserves its right to allow to the Public Sector Enterprises ordering and price preference facilities as admissible under the existing policy.
- 5.23 BHPV reserves its right to reject a tender due to unsatisfactory past performance in the execution of a contract at another project / unit.
- 5.24 BHPV shall be at liberty to reject or accept any tender, part or in full, at their own discretion and any such action is not liable for any question or claim against BHPV.
- 5.25 BHPV reserves the right to go for a Reverse Auction (RA) instead of opening the submitted sealed bid, which will be decided after technical evaluation. Information and general terms and conditions governing RA are given below.

GENERAL TERMS AND CONDITIONS OF RA (REVERSE AUCTION)

Against this enquiry for the subject item/system with detailed scope of supply as per enquiry specifications. BHPV may resort to "REVERSE AUCTION PROCEDURE" i.e., ON LINE BIDDING ON INTERNET.

1. For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate.
2. BHPV will engage the services of a service provider who will provide all necessary training and assistance before commencement of on line bidding on internet.
3. BHPV will inform the vendor in writing in case of reverse auction, the details of service provider to enable them to contact & get trained.

4. Business rules like event date, time, start price, bid decrement, extensions etc. also will be communicated through service provider for compliance.
 5. Vendors have to fax the Compliance form in the prescribed format (provided by Service provider) before start of Reverse auction. Without this, the vendor will not be eligible to participate in the event.
 6. BHPV will provide the calculation sheet (e.g., EXCEL sheet) which will help to arrive at “Total Cost to BHPV like Packing & Forwarding charges, taxes and Duties, Freight charges, Insurance, Service Tax for Services and loading factors (for non-compliance to BHPV standard Commercial terms & conditions) for each of the vendor to enable them to fill-in the price and keep it ready for keying in during the Auction.
 7. Reverse auction will be conducted on scheduled date & time.
 8. At the end of Reverse Auction event, the lowest bidder value will be known on the network.
 9. The lowest bidder has to Fax the duly signed Filled-in prescribed format as provided on case-to-case basis to BHPV through Service provider within 24 hours of Auction without fail.
 10. Any variation between the on-line bid value and the signed document will be considered as sabotaging the tender process and will invite disqualification of vendor to conduct business with BHPV as per prevailing procedure.
 11. In case BHPV decides not to go for Reverse Auction procedure for this tender enquiry, the Price bids and price impacts, if any, already submitted and available with BHPV shall be opened as per BHPV’s standard practice.
- 5.26 **Force Majeure clause:** If at the time during the continuance of this contract the performance in whole or in part by either party of any obligations under this contract shall be prevented or delayed by reason, of any war, hostilities, acts of the public enemy, civil commotion, sabotage, fires, explosions epidemics, quarantine, restrictions or acts of GOD (hereinafter referred to as events) then provided notice of happening of any such events is given by either party to other within twenty one days from the date of occurrence thereof neither party shall reason of such events be entitled to terminate this contract nor shall either party have any such non performance and delay is resumed as soon as practicable after such events has come to an end or ceased to exist, if the performance in whole or part of any obligation under this contract is prevented or delayed by reason or any such event claims for extension of time shall be granted for period considered reasonable by the purchaser subject to prompt notification by the seller to the purchaser of the particulars of the events and supply to the purchaser if required of any supporting evidence. Any waiver of time in respect of partial installment shall not be deemed to be a waiver of time in respect of remaining deliveries.

CHECK LIST

Bidder's acceptance to BHPV's Standard Commercial Terms & Conditions.

Applicable for Indian bidders

(To be submitted along with the offer – please do not change the format)

BHPV Tender No: & Date:	Bidders Confirmation / response
Technical Confirmation to BHPV's Specification	Furnished /Not Furnished
Prices have been quoted on "FIRM PRICE" basis only.	Yes / No
Prices have been quoted on "F.O.R BHPV" basis only.	Yes / No
Validity of offer (we require a minimum period of 120 days from the date of Tender Opening – please Specify)	
Sales Tax (please Specify)	
Excise Duty (please Specify)	
Delivery period from the date of Purchase Order (please Specify). A loading @ ½ % of the Purchase Order value per week will be done for the grace period requested. For evaluation 4 weeks will be considered as one month. Vendors quoting a delivery period beyond the 'the requested delivery plus the allowed grace period' is liable for rejection.	
Liquidated damages as per clause 5.12 (we require acceptance to @ ½% per week subject to a maximum of 10%).	
Risk Purchase as per clause 5.13 (Offers from vendors not accepting the Risk Purchase terms will be rejected)	Yes / No
Payment terms : 90% payment will be made within 45 days of receipt of material and balance 10% will be made after acceptance of material/commissioning of the equipment at BHPV Visakhapatnam and on submission of Performance Bank Guarantee.	
Contract Execution Bank Guarantee (CEBG) as per Clause 5.10 (Offers from vendors not accepting to submit CEBG will be rejected)	Yes / No
Performance Bank Guarantee (PBG) as per Clause 5.11 (Offers from vendors not accepting to submit PBG will be rejected)	Yes / No
Guarantee as per clause 5.9 (The equipment shall be guaranteed for a period of 18 months from the date of supply or 12 months from the date of commissioning and acceptance whichever is earlier). (Offers from vendors not accepting to the requested guarantee period will be rejected)	Yes / No
Approximate Net Weight of the total Consignment	
Approximate Gross Weight of the total Consignment	

Signature & Office Seal of the bidder

CHECK LIST

Bidder's acceptance to BHPV's Standard Commercial Terms & Conditions.

Applicable for foreign bidders (To be submitted along with the offer – please do not change the format)

BHPV Tender No: & Date:	Bidders Confirmation / response
Technical Confirmation to BHPV's Specification	Furnished / Not Furnished
Prices have been quoted on "FIRM PRICE" basis only.	Yes / No
Prices have been quoted on "F.O.R BHPV" basis only.	Yes / No
Validity of offer (we require a minimum period of 120 days from the date of Tender Opening – please Specify)	
Currency in which quoted (please Specify)	
Port of loading (please Specify)	
Country of Origin (please Specify)	
Sales Tax (please Specify)	
Excise Tax (please Specify)	
Delivery period from the date of Letter of Intent (please Specify)	
Liquidated damages as per clause 5.12 (we require acceptance to @ ½% per week subject to a maximum of 10%)	
Risk Purchase as per clause 5.13 (Offers from vendors not accepting the Risk Purchase terms will be rejected)	Yes / No
Payment terms (An irrevocable Letter of Credit shall be established for 80% of FOB/FCA/CFR (excluding Indian Agent's Commission) 2 months prior to shipment and valid for 3 months for negotiation against shipment. Letter of Credit shall be Opened through a branch of State Bank of India in the country where Order shall be Placed. In case, in the Country where order is placed State Bank of India is not there, Letter of credit will be opened through our bankers or as permitted by Government of India. Letter of Credit will not be confirmed by foreign banker. Balance 20% of FOB/FCA/CFR value shall be paid through sight draft on Commissioning. & acceptance of the equipment at BHPV, Visakhapatnam against submission of 10% performance Bank Guarantee. All Bank charges outside India are to Supplier's account. Lump sum erection and Commissioning charges, if any shall be payable after satisfactory erection and Commissioning of the Equipment by sight draft against Certificate issued by the competent authority as per clause 5.7.2)	
Agency commission (refer clause 5.14)	Acceptable / Not acceptable
Contract Execution Bank Guarantee (CEPG) as per Clause 5.10 (Offers from vendors not accepting to submit CEBG will be rejected)	Yes / No
Performance Bank Guarantee (PBG) as per Clause 5.11 (Offers from vendors not accepting to submit PBG will be rejected)	Yes / No
Guarantee as per clause 5.9 (The equipment shall be guaranteed for a period of 18 months from the date of supply or 12 months from the date of commissioning and acceptance whichever is earlier). (Offers from vendors not accepting to the requested guarantee period will be rejected)	Yes / No
Approximate Net Weight of the total Consignment	
Approximate Gross Weight of the total Consignment	

Signature & Office Seal of the bidder