

BHARAT HEAVY PLATE & VESSELS LIMITED.,
(A Subsidiary Bharat Heavy Electricals Limited)
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NOTICE INVITING TENDER(NIT)

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

**SUB: Tube Bending Machine
(CNC / PC based PLC Machine)**

Our Ref: **MM/2/10/3167/CAP/W-108/5112**

DATE: 10.08.2012

Sealed quotations in duplicate are invited from suppliers on or before **21.09.2012** **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.	Tube Bending Machine (CNC / PC based PLC Machine)	3 Nos
	Encl: 1. Qualifying Criteria PART A 4 pages 2. Technical Specifications PART B 17 Pages 3. Annexure – 1 6 Pages 4. General Terms/ commercial terms and conditions (INCLUDING CHECK LIST) 10 pages	

For BHARAT HEAVY PLATE & VESSELS LIMITED,

For Dy. GENERAL MANAGER (MM)

**QUALIFYING CRITERIA FOR THE SUPPLY OF
CNC / PC based PLC – TUBE BENDING MACHINE****SECTION – I**

The BIDDER is expected to give complete details against each clause in the table given below, with additional sheets those may be attached (giving clear reference number) to furnish and cover the requisite details / documents.

S. No.	PARTICULARS	VENDOR's RESPONSE
1	VENDOR to provide the Profile of their Company	
2	The BIDDER / VENDOR shall have a minimum of TEN Years of Continuous Experience in the Design, Manufacture & Supply of PROGRAMMABLE TYPE AUTOMATIC - TUBE BENDING MACHINES.	
3	List of customers to whom CNC Tube Bending Machines were supplied, installed and commissioned till date, highlighting the customers who are in the field of Industrial Boilers manufacturing (of High Pressure Ratings). The sizes of machines supplied may be furnished.	
4	Details on SERVICE-AFTER-SALES Set-Up in India including the Address of Agents / Service Centers in South India. [Details on the number of trained personnel with field of experience to handle the service needs of BHPV in time]	
5	Any Additional Data to supplement the manufacturing capability of the BIDDER for the subject equipment.	

SECTION – II

The BIDDER / VENDOR has to compulsorily meet the following requirements to get qualified for submitting an offer for the CNC TUBE BENDING MACHINE.

S. No.	REQUIREMENTS	VENDOR's RESPONSE
6.0	Only those vendors (OEMs), who have supplied and commissioned at least <u>ONE CNC / PC based PLC Tube Bending machine that can bend tubes upto OD 76.1mm</u> , 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.	
	The vendor should submit following information where similar machine has been supplied:	
6.1	Name and postal address of the customer or company where similar equipment is installed.	
6.2	Name and designation of the contact person of the customer.	
6.3	Phone, FAX no and email address of the contact person of the customer.	
6.4	Month and Year of commissioning of the equipment.	
6.5	Application for which the equipment is supplied	
6.6	Along with the Technical offer, the Vendor should submit the <u>Performance certificate from the customer for the satisfactory performance of the equipment supplied as per clause 6.0 above.</u> (For obtaining the Performance certificate, a suggestive format is provided in SECTION – IV)	
6.7	Offers of only those vendors who meet the above Qualifying Criteria will be considered for further evaluation.	
6.8	BHPV reserves the right to verify the information provided by vendor. In case the information provided by vendor is found to be false/ incorrect, the offer shall be rejected.	
7.0	DELIVERY - The bidder shall quote the best possible delivery. However the delivery period shall not exceed 10 months from the date of Purchase Order. A grace period of 2 months in addition is provided. The additional grace period will attract loading, which is explained in the commercial terms of the enquiry. The delivery period is reckoned from the date of purchase order to date of despatch from the vendor works. E&C shall be completed within 1 month from the date of intimation from BHPV (Receipt of machine at BHPV & readiness of foundation)	

SECTION – III

The BIDDER / VENDOR has to comply with the following, for accepting the Technical Offer for scrutiny by the Purchaser:

S. No.	REQUIREMENTS	VENDOR's COMPLIANCE
8	The BIDDER / VENDOR shall submit the offer in TWO PARTS-Technical [with PART A & PART B] & Commercial and Price Bid.	
9	The offer shall contain a comparative statement of Technical Specifications given by BHPV and the offered details submitted by the Bidder, against each clause. Merely stating 'YES' or 'NO' or similar words wherever 'Vendor to Specify' details in the 'Vendor's compliance statement may lead to disqualification.	
10	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.	
11	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 of the inclusion of all the accessories, toolings, attachments, auxiliary parts, spares, consumables, etc. with the main and basic equipment, to meet the technical specification requirements.	
12	BIDDER has to indicate the Country of Origin for the supply of equipment.	

SECTION – IV

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 for which machine is used :
5. Sizes of Jobs Performed in the machine
 - a. Tube diameter :
 - b. Tube thickness (maximum) :
 - c. Tube material :
6. Performance of the Machine : Satisfactory / Not Satisfactory
(Strike off whichever is not applicable)
7. After Sales Service : Satisfactory / Not Satisfactory
(Strike off whichever is not applicable)
8. Any other remarks :
9. 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 CNC/PC based PLC - TUBE BENDING MACHINE

S. No.	PARTICULARS		BHPV SPECIFICATIONS		Bidder's OFFER [With Complete Technical Details]
1.0	APPLICATION		A) The machine is meant for cold bending of seamless steel tubes / Tubes in multi-plane axes to form tubular coils for Power Boilers, Industrial Boilers and Process Industries. B) The bending system shall be of CLOCKWISE (2 Nos.) / ANTICLOCKWISE (1 No.) direction Draw-Bending type with PC based PLC or CNC mode of operation with booster.		
2.0	TUBE SPECIFICATIONS and RADII OF BENDS:				
2.1	TUBE OUTER DIAMETER AND THICKNESS: All are OD (Outer Diameter) Controlled tubes with thickness tolerance of Max.+12 %				
	Sl. No.	Tube OD, mm	Minimum Thick, mm	Maximum Thick, mm	
	1	31.8	3.2	5.0	
	2	38.1	3.2	6.3	
	3	44.5	4.0	10.0	
	4	47.63	5.0	10.0	
	5	51.0	3.6	12.0	
	6	54.0	3.6	12.0	
	7	57.0	5.0	10.0	
	8	63.5	4.8	13.5	
	9	76.1	7.1	13.5	
2.2	MATERIALS:				
a.	Carbon Steel	:	SA192, SA210A1, SA210C		
b.	Alloy Steel	:	SA209T1, SA213T11, SA213T22, SA213T91, T-23, T-92.		
c.	Stainless Steel	:	SA 213 TP304H, SA 213 TP321H, SA 213 TP347H		

TECHNICAL SPECIFICATION FOR CNC TUBE BENDING MACHINE – PART B

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S. No.	PARTICULARS		BHPV SPECIFICATIONS			Bidder's OFFER [With Complete Technical Details]
2.3	RADII OF BENDS:					
	S. No	TUBE OD, mm	Minimum Bend Radius, mm	Maximum Bend Radius, mm	Other bend radii	
	1	31.8	R 40	R 48		
	2	38.1	R 48	R 65	R 51	
	3	44.5	R 48	R 143		
	4	47.63	R 51	R 152	R 114	
	5	51.0	R 51	R 151		
	6	54.0	R 76.5	R 165		
	7	63.5	R 76.5	R 300	R 100, 160, 300	
	8	76.1	R 160	R 225		
2.4	JOB DETAILS: For Typical configuration of Job, Refer Annexure 1					
3.0	TOLERANCES FOR BENDS					
3.1	VISUAL DEFECTS					
3.1.1	It shall be free from harmful surface visual defects, such as scoring marks, wrinkles, tool marks and depressions, etc					
3.2	PERCENTAGE OVALITY					
3.2.1	% Ovality = {(Max.OD - Min.OD) / Nominal OD} x100			Maximum allowed ovality is 10%		
3.3	MINIMUM OD					
3.3.1	Minimum OD in any section of the bend should comply with this formula			Min. OD shall not be less than 0.895 x Nominal OD + 0.233 x Min. Wall thickness after bending		
3.4	PERCENTAGE THINNING					
3.4.1	% Thinning = {(t1–t2) / t1}x100, where, t1 – Actual wall thickness before bending t2 – Minimum wall thickness after bending			Maximum allowed Thinning is i) 10% max. for R/d ≥ 1.5 ii) 12.5% max. for R/d < 1.5		
3.5	FLATNESS					
3.5.1	Cold Bending operation			No flatness allowed		
3.6	Bending Angle			± 0.5°		
3.7	Bend Radius			± 3 mm		

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S. No.	PARTICULARS	BHPV SPECIFICATIONS	Bidder's OFFER [With Complete Technical Details]
4.0	OPERATING PARAMETERS:		
4.1	Tube Diameter	Minimum: 31.8 mm Maximum: 76.1mm	
4.2	Tube Wall Thickness	As given in the table (Sl. No. 2.1)	
4.3	Bend Radius	Minimum: 40mm Maximum: 300mm	
4.4	R/d Ratio (Bend Radius / Tube Diameter)	1.2 for all sizes	
		1.0 for tube OD \geq 51 and with minimum 10% wall thickness	
4.5	Tube length handled – Automatic tube feeding from tube rack	Minimum: 3000mm Maximum: 22000mm	
4.6	Tube length handled – Tube feeding manually done	Minimum: 950mm Maximum: 3000mm	
4.7	Preferable Tube Clamping Length required	50mm for tubes up to OD 51mm 1xD for tubes above OD 51mm	
4.8	End Limb Length	100mm for \leq 90 deg bends 200mm for 180 deg bends	
4.9	Bending Angle in Job	0° to 180°	
4.10	Multi Plane Turning Angle	360°	
4.11	Bending Direction	CLOCKWISE (2 Nos.) / ANTICLOCKWISE (1 No.)	
4.12	Tube batch quantity	Each lot will have max. of 40 to 50 tubes	
4.13	'S' bend configuration (zero distance between bends)	Machine to be capable of making 'S' bends	
5.0	PRODUCTIVITY		
5.1	No.of bends per shift on Tubes (Prove out will be done on tubes using the tools procured (Sl. No. 10.0) along with machine)	300 bends in one 8 hour shift	
6.0	MACHINE PARAMETERS		
6.1	Maximum Bending arm Bending Speed in rpm	Vendor to specify	
6.2	Maximum Bending arm Reverse Speed in rpm	Vendor to specify	

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S. No.	BHPV SPECIFICATIONS		Bidder's OFFER [With Complete Technical Details]
6.3	Clamp Jaw Stroke length in mm	Vendor to specify	
6.4	Pressure die Stroke length in mm	Vendor to specify	
6.5	Carriage travel feed stroke : 13000mm	Vendor to confirm	
6.6	Carriage bed length	Vendor to specify	
6.7	Creep speed to be provided for Bending arm during start and end of bending	Vendor to specify and confirm	
6.8	Creep speed to be provided for Clamp Jaw movement, Pressure Die forward / reverse stroke, Carriage movement.	Vendor to specify and confirm	
6.9	Traveling Speed of Carriage in m / min	Not less than 30 m / min. Speed shall be variable. Creep speed to be provided during start and end of the stroke. Vendor to specify range of speed	
6.10	Transfer mechanism of tube from tube rack to in feed roller stand to feed through carriage	Fast enough to feed tubes such that the required productivity is achieved as per 5.1	
6.11	Tube Working Height.	Maximum – 1000 – 1200mm from ground level	
6.12	Maximum Bending Torque	Vendor to specify	
6.13	Maximum Tube rotation torque	Vendor to specify	
6.14	Maximum Section Modulus of tube that can be bent in the machine.	Vendor to specify	
6.15	Maximum Operating Pressure	Vendor to specify	
6.16	Main Pump Motor capacity in kW	Vendor to specify	
6.17	Total Power Requirement in kVA	Vendor to specify	
6.18	Carriage drive motor power rating, kW	Vendor to Specify	
6.19	Tube rotation drive motor rating, kW	Vendor to Specify	
6.20	Hydraulic Tank Capacity	Vendor to specify	

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S. No.	BHPV SPECIFICATIONS	Bidder's OFFER [With Complete Technical Details]
7.0	MACHINE OPERATING SYSTEM SPECIFICATIONS:	
7.1	SPEEDS :	
7.1.1	Tube Feed/Transport Speed	Vendor to specify in Mtrs/min.
7.1.2	Tube Rotation Speed - Steplessly variable	Vendor to specify range in rpm
7.1.3	Bending Speed - Steplessly Variable	Vendor to specify range in rpm
7.2	RESOLUTION:	
7.2.1	Tube Feed/Transport	Vendor to specify
7.2.2	Tube Rotation	Vendor to specify
7.2.3	Bending	Vendor to specify
7.3	REPEATABILITY:	
7.3.1	Tube Feed/Transport	Vendor to specify
7.3.2	Tube Rotation	Vendor to specify
7.3.3	Bending	Vendor to specify
8.0	GENERAL DESIGN & CONSTRUCTIONAL FEATURES	
8.1	Foundation:	
8.1.1	Vendor to specify whether foundation is required for the quoted machine. If required, vendor to provide the Arrangement on foundation with load data to design the foundation of the machine by BHPV, in case of order. The shop floor at BHPV works has approx. 200mm thick concrete floor with M20 concrete mix. If there is no foundation, the machine shall be placed on anti-vibratory pads. Anti-vibratory pads to be provided by vendor.	
8.2	Controls:	
8.2.1	The three axis controls viz, bending angle, rotation angle and distance between bends of 3-Axes shall be PC based programmable type. Collet axis centering, in line with CLR of bend die shall also be through programming.	
8.2.2	Machine shall be operated in three modes viz., Manual, semi-Automatic and Automatic	
8.2.3	Boosting facility shall be available to control thinning. The extent of boosting shall be set through program by the operator.	
8.2.4	Operator Control panel shall be Self Standing - PC Based touch screen type control panel with 10m long cable having protective sheathing and plug-in connectors through closed cable ducts.	

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S. No.	BHPV SPECIFICATIONS	Bidder's OFFER [With Complete Technical Details]
8.2.5	The bending process auto and feed back field start and stop initiating field sensors, such as encoders, limit switches, feed back devices shall be suitably placed for easier accessibility.	
8.3	Carriage Construction:	
8.3.1	Carriage movement sensor shall be of non-contact type	
8.3.2	Carriage to be provided with a Tube Gripping Device - Collet Type, for feeding Tubes into the machine. Collet design should ensure anti-slip gripping of tubes.	
8.3.3	Collet shall be suitably designed to allow the weld butt joints between tubes, through the collet freely. A weld reinforcement of maximum 4mm per side (8mm on diameter) can be considered for designing collet.	
8.3.4	Vendor to give details of the different collet arrangements and their ranges that will be needed for various diameters as per our specification.	
8.3.5	The carriage size shall be such that the carriage does not foul / interfere with long end limb of 180 degree bends of close radius.	
8.3.6	Carriage shall be of rigid construction with capability of handling the entire range of tubes/ Tubes mentioned. The carriage shall receive the tube from the loading stand located at the rear side of the machine bed and position the tube through carriage collet to the bender. The collet shall open once the tube is clamped to the bending former. As the bend is under progress, the carriage shall reverse back and position automatically to the programmed length / hitching length for the following bend. This shall be repeated for all the bends.	
8.3.7	The sliding carriage guide way and the gripping arrangement of carriage over the slide way shall be rigid enough so that the carriage does not lift. The design details to be briefly explained by the vendor.	
8.3.8	Supports to prevent sagging of tube during tube feeding. Vendor to Specify with details of how this is achieved in their machine.	
8.4	Tube Loading Facility	
8.4.1	<p>Loading stand / Tube storage rack shall be provided and positioned behind the machine parallel to the machine bed.</p> <p>The flat portion stand shall be suitable for placing 2 tube bundles, each having 40 tubes of OD 51mm x 10mm thick of 22 meter length. The width of the flat portion shall be around 1200mm.</p> <p>One tube bundle from above is opened so that tubes spread out on the sloping rack. The width of the sloping rack shall be suitable for 30 tubes of OD 51mm x 10mm thick (Length of the slanted portion of sloping rack shall be around 1200mm)</p>	

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S. No.	BHPV SPECIFICATIONS	Bidder's OFFER [With Complete Technical Details]
8.4.2	<p>The following shall be provided in the machine:</p> <ul style="list-style-type: none"> a) Tube bending machine shall have automatic loading of tube. b) Tube kick off from the tubes storage rack on to the tube feed rollers for tubes of maximum 22 metre long and a minimum of 3 metres long. c) Tube kick off to be pneumatically operated. d) Automatic tube feeding with feed rollers along the bed. e) Tube feeding through the collet from the rear of the carriage. f) Automatic Tube end sensing and positioning of tube to the programmed length for the first bend. g) To reduce noise, Teflon beading to be provided on the loading tube storage supports. 	
8.5	Bend die construction	
8.5.1	Bend die mounting plate shall be designed such that there is no interference with multi- plane bends while bending multi-plane bend configurations.	
8.5.2	Split die actuation to be provided in the machine. Lift has to be more than 10mm and not more than 20mm.	
8.5.3	Split die actuation to be achieved only from the bottom of the machine and NOT overhead.	
8.5.4	Bend die mounting shall be of quick type with only hand tightening.	
8.5.5	Provision for bend to bend ('S' bends) clamping to be confirmed.	
8.5.6	All required BENDING FORMERS to meet the bends specified at Sl. No. 10.0 to be supplied by vendor.	
8.6	Follower jaw construction	
8.6.1	The length of the Follower jaw shall be in single piece suitable for making 180 degree bends in a single stroke.	
8.6.2	Independent Follower jaws for each diameter shall be quoted, for all diameters as given in Clause 10.0 under Toolings. There shall NOT be any pads to change over diameters.	
8.6.3	Follower jaws shall be easily removable and mountable. Provision for handling by crane to be provided like eye hooks.	
8.7	Booster Unit	
8.7.1	<div> <div>Type of Boosting</div> <div>Back boosting / Clamp boosting / Pressure die assist boosting. Vendor to specify</div> </div>	
8.7.2	<div> <div>Maximum Booster force</div> <div>Vendor to specify</div> </div>	

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S. No.	BHPV SPECIFICATIONS		Bidder's OFFER [With Complete Technical Details]
8.7.3	Boosting shall be programmable It should be possible to set the required boosting power in the program.	Vendor to Confirm - Details to be furnished	
8.8	Clamping and Clamp Jaw construction		
8.8.1	The bending machine shall have swing arm type of Tube bending arrangement. NO overhead clamping type.		
8.8.2	Clamp jaw shall be easily removable and mountable with least effort by the operator with quick clamping mechanism.		
8.8.3	Independent clamp jaws for each diameter shall be quoted, for all diameters as given in the specification. There shall NOT be any pads to change over diameters.		
8.8.4	The clamping by standard straight movement of clamp jaw for clamping		
8.8.5	Height adjustment for adjusting the clamp jaw height to be provided		
8.9	Sliding surfaces		
8.9.1	Sliding surfaces shall have metal to metal contact. NO pads or Hylam strips in between shall be used		
8.10	MACHINE OPERATING CONTROL SYSTEM FEATURES:		
8.10.1	To provide latest System - Details to be specified in the offer clearly. (with PC Based PLC Control).		
8.10.2	Control system shall be preferably PC with PLC.		
8.10.3	Real time bending to be displayed with details such as bending angle, distance of carriage movement, rotation angle etc.		
8.10.4	Recognition of collision point of the Tube rotation device with counter pressure rail, Carriage with Tube kick-off system etc.(optional)		
8.10.5	Auto-Display of machine positions on the screen during manual operation.		
8.10.6	Display in flat color monitor. Vendor to specify their standard Monitor size and furnish details such as make and model.		
8.10.7	Auto calculation of co-ordinate conversion from Cartesian co-ordinates into bending machine co-ordinates and vice-versa.		
8.10.8	Spring back and Stretch automatic calculation facility.		
8.10.9	Spring back and Stretch automatic compensation facility.		
8.10.10	Pre-programming and storage of number of different bending tool-data.		
8.10.11	Automatic diagnostic alarm feature with error code and message display.		

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S. No.	BHPV SPECIFICATIONS	Bidder's OFFER [With Complete Technical Details]
8.10.12	Storing and retrieval of all machine operating parameters including spring back applied, stretch compensation applied, bending speed, boosting parameters, tooling data etc with Program search facility sorted on various criteria of bending.	
8.10.13	System shall have the facility to display Memory details.	
8.10.14	Storage location of System Software to be specified by vendor.	
8.10.15	The supplier shall give software back up in CD ROM & USB pen drive.	
8.10.16	A standard RS 232 C (V 24) interface to connect IBM compatible computer.	
8.10.17	Remote access to the machine through network - internet for remote tele-diagnosis.	
8.10.18	USB Ports for connectivity to be provided.	
8.10.19	Additional external standard 104key Keyboard and Optical Mouse.	
8.10.20	The computer shall have DVD read and write drive.	
8.10.21	One additional hard disk fully (Minimum 80 GB) loaded with complete software and clearly written Instructions to take back-up and reloading of a new hard disk to be provided	
8.11	Hydraulics	
8.11.1	The System should be centralized, modular / stacked valve construction having minimum number of pipes / pipe joints and located at suitable location with easy accessibility of components for maintenance.	Vendor to Furnish Details
8.11.2	Pumps, valves, accessories etc shall be of Bosch-Rexroth / Vickers or equivalent reputed make acceptable to BHPV. (Details to be submitted). The seals used in cylinders shall be of Merkel / Parker / Bushak + Shamban / Hunger / Simrit make.	Vendor to confirm & furnish details
8.11.3	Each pump should have an independent motor. Tandem pumps shall be avoided.	Bidder to confirm
8.11.4	Suitable filtration system should be provided with Duplex / standby filter units. It is preferable to use re-usable type of filter elements in the system. The filter unit shall be of Hydac / Parker / Rexroth or equivalent reputed make acceptable to BHPV. (Details to be submitted).	Vendor to confirm & furnish details
8.11.5	The flexible hoses used in the system shall be of Gates / Aeroquip / Parker or any other reputed make acceptable to BHPV.	Vendor to specify
8.11.6	Failure indication for oil level, temperature, pressure, filter clogging should be provided	Vendor to confirm & furnish details

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S. No.	BHPV SPECIFICATIONS	Bidder's OFFER [With Complete Technical Details]
8.11.7	Automatic shut off provision during hose failures, chiller failure, low oil level etc. Pump unloading feature during idle running to be provided for energy conservation. Details should be submitted.	Vendor to specify
8.11.8	Cooling system of sufficient capacity to maintain complete Hydraulic System at a temperature not exceeding 50 deg C irrespective of the ambient conditions.	Vendor to confirm & furnish details
8.11.9	It should be possible to replace hydraulic elements like valves, manifolds etc without disturbing the associated pipelines. The positioning of hydraulic elements should allow easy maintenance	Vendor to furnish details
8.11.10	Maximum Operating Pressure of hydraulic system	Vendor to specify
8.11.11	Main Pump flow in lpm and Motor Power in kW	Vendor to specify
8.11.12	Reservoir capacity (in litres)	Vendor to specify
8.11.13	All oil pipelines shall be of seamless steel and should undergo pickling process.	Vendor to confirm
8.11.14	One hand held minimess pressure gauge of suitable range with minimess hose (1.0 to 1.5m length) to be supplied along with the power pack. Check points to be provided in the system.	Vendor to confirm
8.11.15	All cylinders used in the machine should have standard bore and rod sizes. The piston rod shall be hard chrome plated.	Vendor to furnish details
8.11.16	The Power pack should be designed taking into account the energy efficiency (Hi-low pump system, proper unloading during idling, etc.). The motor used for pumps shall be energy efficient ones.	Vendor to furnish details
8.11.17	All the pipe / hose end fittings shall be of standard weld nipple with O-ring seating type. No ferrule joints are to be used in the hydraulic system. All threaded connections shall be of metric sizes	Vendor to confirm
8.11.18	The oil to be used shall be of standard ISO Viscosity Grades – 32 / 46 / 68	Vendor to specify
8.11.19	The maximum pressure of the system should preferably not to exceed 310 bar	Vendor to specify
8.11.20	The control voltages for all the Solenoids of the valves shall be of 24-V DC and all solenoid operated DC valves should have manual over-ride provision and light indicating solenoids.	Vendor to specify

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S. No.	BHPV SPECIFICATIONS	Bidder's OFFER [With Complete Technical Details]
8.11.21	The pipelines to be painted with standard colours as per the colour coding accepted internationally for hydraulic systems.	Vendor to furnish details
8.11.22	All hydraulic pipelines, hoses and electrical control cables to be neatly laid out with proper clamps and flexible hose conveyors wherever required.	Vendor to confirm
8.11.23	Suitable leakage oil collection metallic tray to be provided wherever required.	Vendor to confirm
8.11.24	All the components in the hydraulic power pack shall be provided with identification numbers, as per the hydraulic circuit and should be pasted with metallic identification number plates.	Vendor to confirm
8.11.25	Hydraulic oil will be supplied by vendor during commissioning at BHPV works. Vendor to provide the oil during pre-dispatch inspection.	Vendor to confirm
8.12	Lubrication	
8.12.1	Machine lubrication : Automatic centralized lubrication system with timer control and suitable metering cartridges to be supplied.	Vendor to confirm
8.12.2	First filling of Lubrication Oil to be supplied by the supplier. Indian equivalent shall be mentioned.	Vendor to specify
8.12.3	First filling of Grease should be supplied by vendor. Indian equivalent shall be mentioned.	Vendor to specify
8.13	Electrical Points:	
8.13.1	Wiring: All electrical motors, limit switches etc, on the machine shall be Wired using PVC sheathed cable running in conduits to cable ducts to common terminal block. External wiring from / to control panel, control desk, external motors etc shall be by means of screened multi-core cables. All machine cables shall be of copper.	
8.13.2	Control circuit voltage should be 24 V DC.	
8.13.3	Control panel shall have built in 230V, 5 amps, 3 pin plug.	
8.13.4	Machine panel shall be adequately illuminated for maintenance purpose.	
8.13.5	Control Panels and Operating Panel shall be air-conditioned.	
8.13.6	Type of drives used for motors to be indicated.	

TECHNICAL SPECIFICATION FOR CNC TUBE BENDING MACHINE – PART B

Page 12 of 17

S. No.	BHPV SPECIFICATIONS	Bidder's OFFER [With Complete Technical Details]
8.13.7	The machine shall be suitable for 415V \pm 10%, 50 \pm 3% Hz, 3 Phase, 3 wire system	
8.13.8	Electrics shall be tropicalised & shall have IP 54 protection	
8.14	Components used:	
8.14.1	All motors shall be from makers like SIEMENS, ABB, Allen Bradley or any other internationally reputed makes conforming to IEC Standards, acceptable to BHPV.	
8.14.2	All hydraulic elements shall be of VICKERS / REXROTH or any internationally reputed make acceptable to BHPV.	
8.14.3	All hydraulic hoses shall be preferably of GATES / Parker Hannifin make or reputed makes acceptable to BHPV.	
8.14.4	All electrical items shall be of from SEW / ROCKWELL Allen Bradley/ Telemecanique / Delta or reputed makes acceptable to BHPV.	
8.14.5	All components/devices/terminals are to be incorporated with numbered ferrules.	
9.0	GENERAL POINTS	
9.1	Make and Model of the machine to be mentioned. Detailed catalogs of the machine to be sent with the offer.	
9.2	Complete description of all systems & sub-systems shall form part of the technical bid.	
9.3	Is the machine suitable for CAD/CAM interface / compatibility?	
9.4	A schematic diagram showing the layout of the machine & associated systems with salient dimensions shall be submitted along with the offer. Hydraulic system layout to be provided.	
9.5	The operating sequence of the machine with broad outline of various operations involved should be furnished with the offer.	
9.6	Standards for Design, Manufacture and testing of the machine shall be in accordance with internationally accepted standards.	

S. No.	BHPV SPECIFICATIONS	Bidder's OFFER [With Complete Technical Details]
10.0	TOOLINGS	
10.1	<p>List of tooling (Standard Clamp jaws, Bending formers, Follower jaw / Pressure die etc) for the sizes mentioned below to be quoted out item wise separately.</p> <p><u>Machine No. 1</u></p> <p>A) Tube dia. 38.1 mm / Bend Radius 38.1 mm. - 1 Complete set B) Tube dia. 47.63 mm / Bend Radius 152 mm - 1 Complete set</p> <p><u>Machine No. 2</u></p> <p>A) Tube dia. 38.1mm / Bend Radius 114.3 mm - 1 Complete set B) Tube dia. 44.5 mm / Bend Radius 48 mm - 1 Complete set</p> <p><u>Machine No. 3</u></p> <p>A) Tube dia. 44.5 mm / Bend Radius 57 mm - 1 Complete set B) Tube dia. 47.63 mm / Bend Radius 51 mm - 1 Complete set</p> <p>Note: Tooling supplied for the sizes mentioned above shall be designed such that all tooling's can be used in both Clockwise and Anti clockwise machines.</p> <p>Detailed Manufacturing drawings for toolings are to be provided for the ordered tools, in case of an order.</p>	
11.0	AMBIENT CONDITIONS	
11.1	The tube-bending machine shall be suitable for operation in an ambient temperature of +50 deg C and relative humidity of 93% respectively, but both do not occur simultaneously.	
11.2	The entire equipment shall be Tropicalized in Design and Construction	

TECHNICAL SPECIFICATION FOR CNC TUBE BENDING MACHINE (PART –A)

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S. No.	BHPV SPECIFICATIONS	Bidder's OFFER [With Complete Technical Details]
12.0	SAFETY	
12.1	Laser mechanism to be provided for safety, preferably of SICK make,	
12.2	All other safety features provided in the machine shall be specified by the vendor.	
13.0	PAINTING:	
13.1	Painting of Machine / Electrical Panels : RAL 6011 Apple Green (Polyurethane Paint)	
14.0	SPARES (to be recommended by the vendor)	
14.1	Spares for mechanical, hydraulic, electrical and electronic systems used in the machine required for running the machine on three shift continuous running for 2 years of trouble free operation should be offered by vendor, with item wise break up. (Unit Price of each item of spare should be offered)	
14.2	Mechanical & Hydraulic Spares: Pumps, Valves, Pressure Switches, Transducers, Flow Switches, Filters, Seals, O-rings, Hydraulic Hoses etc. <u>Essential Spares for vendor has to quote compulsorily:</u> Mechanical & Hydraulic spares: a) For Mechanical wearing components due to linear movements & rotation - 4 Sets b) For Hydraulic Power Pack, Complete Seal kit for the hydraulic cylinders and other components etc., - 4 Sets	
14.3	Electrical / Electronic / Control System Spares: Relays, Contactors, Proximity Switches, Push Buttons, Indicating Lamps, Semiconductor Fuses, Special Fuses, Circuit Breakers, Main Power Switch, Encoders, Spares for CNC, Servo Motors for Feed Drives, Drive and Power Module & Control Cards for Main Drive as well as Feed Drives etc. <u>Essential Spares for vendor has to quote compulsorily</u> a) CNC and PLC PCBs (I/O card, digital to analogue card, CPU card, power supply board etc.) display unit, etc., - 4 Nos each b) Field sensors, such as encoders, optical sensors, proximity switch, limit switches, push buttons, indicating lamps etc. - 4 Nos. each.	

TECHNICAL SPECIFICATION FOR CNC TUBE BENDING MACHINE (PART –A)

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S. No.	BHPV SPECIFICATIONS	Bidder's OFFER [With Complete Technical Details]
14.4	All types of spares for total machine and accessories should be available for at least seven years after supply of the machine. If machine or 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	
15.0	DOCUMENTATION:	
15.1	<p>The following documents in English language should be supplied along with the machine:</p> <p align="center">Hard Copies - 3 Sets In CD form - 1 Set</p> <p align="right">Vendor to confirm</p> <ol style="list-style-type: none"> 1. Operating manuals of Machine & its Control System 2. Programming manuals of Machine & its Control System 3. Maintenance manuals with drawings of machine assemblies / sub-assemblies with parts list 4. Electrical circuit diagrams with bill of materials 5. Hydraulic circuit diagrams with bill of materials 6. Pneumatic circuit diagrams with bill of materials 7. Maintenance & Interface manuals for Machine Control System 8. Manufacturing drawings for all toolings ordered with machine under clause 10.0 9. Catalogues, O&M manuals for all bought out items used in the machine. 10. Detailed specification of all rubber items / hydraulic / lubrication fittings 11. Program and data on CD. 12. Complete list of Alarm log, Error code, error messages & remedies and on line fault diagnostics to be provided by the vendor. 	
15.2	GA drawings, Machine detailed constructional drawings with dimensions, Civil Foundation layout drawings, Hydraulic / Pneumatic / Electrical / Electronic circuits with BOM, are to be submitted within 45 days from the date of ordering (in case of an order) for approval by BHPV.	

S. No.	BHPV SPECIFICATIONS	Bidder's OFFER [With Complete Technical Details]
16.0	PRE-DISPATCH INSPECTION AT SUPPLIER'S WORKS:	
16.1	<p>The Machine shall be offered for inspection and performance trials to test the design capabilities of the machine, by BHPV Engineers before Dispatch at Supplier's works.</p> <p>Acceptance Criteria during pre-dispatch inspection:</p> <ul style="list-style-type: none"> a) All the features of the machine construction shall be operated and shown in good working condition as per the Technical Specification and Drawings approved by BHPV. b) Prove-out trials shall be done on tubes. Tubes for the same shall be arranged by vendor. c) Quality tests are to be conducted by the supplier, on the bends made during prove - out trials and the results should be within the tolerance limits as per Clause 3.0. 	
17.0	ERECTION AND COMMISSIONING:	
17.1	The supplier shall depute his engineer(s) for supervising the erection and commissioning of the machine at BHPV.	
18.0	PROVE-OUT AND ACCEPTANCE AT BHPV WORKS:	
18.1	<p>After the machine has been erected and energized, a few idle runs have to be done to demonstrate the good working condition of the machine.</p> <p><u>Acceptance Criteria during commissioning:</u></p> <ul style="list-style-type: none"> a) Prove out trials to be conducted on the tubes given by BHPV with the toolings supplied along with the machine. b) Quality tests will be conducted by BHPV, on the bends made during prove-out trials at BHPV and the results should be within the tolerance limits as per Clause 3.0. c) Actual jobs shall be loaded to see the performance of the machine during continuous running for two 8 hr shifts. d) Productivity should be proven as per Clause 5.1 on actual jobs or test pieces. 	

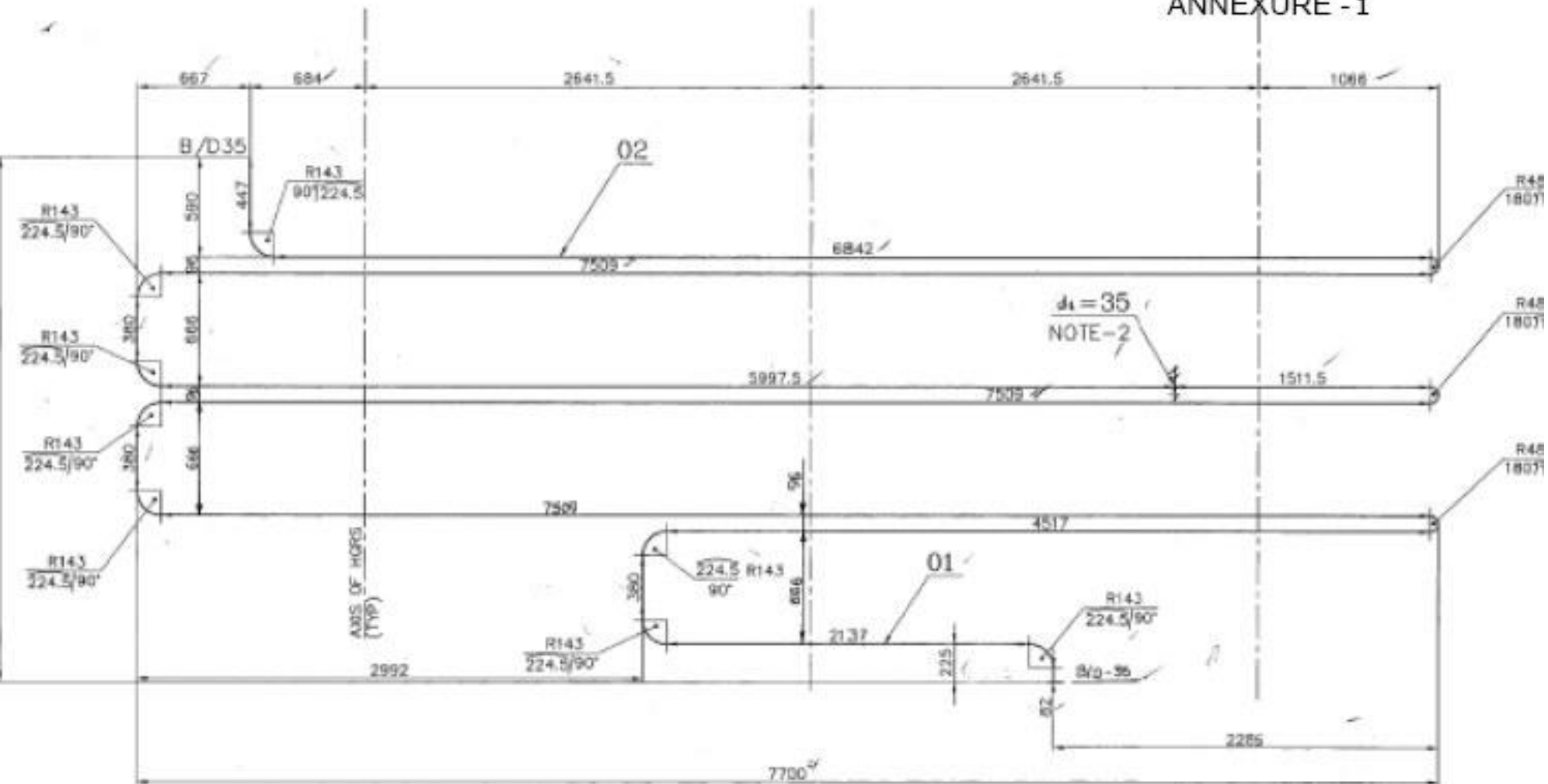
TECHNICAL SPECIFICATION FOR CNC TUBE BENDING MACHINE (PART –A)

Page 17 of 17

S. No.	BHPV SPECIFICATIONS	Bidder's OFFER [With Complete Technical Details]
19.0	TRAINING	
19.1	The supplier shall train TWO BHPV Engineers in Operation and Maintenance (Mechanical, Electrical / Electronics and Programming) of the Machine for FIVE working days at supplier's works.	
19.2	The supplier shall impart training to BHPV Machine Operators and Maintenance crew in Operation and Maintenance (Mechanical, Electrical/ Electronics and Programming) during Commissioning of the Machine at BHPV works for 5 working days.	
19.3	The training shall be in the following disciplines: <ul style="list-style-type: none">a. Safety,b. Operation of the machine,c. Machine Operation programming,d. Trouble-Shooting,e. Software Application,f. All special features of the machine to be explainedg. Electrical / Mechanical / Electronics systems	
20.0	GUARANTEE	
20.1	Performance Guarantee to be given for 12 months from the date of commissioning OR 18 months from the date of dispatch whichever is earlier.	

Enclosures:**a) Annexure-1 Bend Configurations**

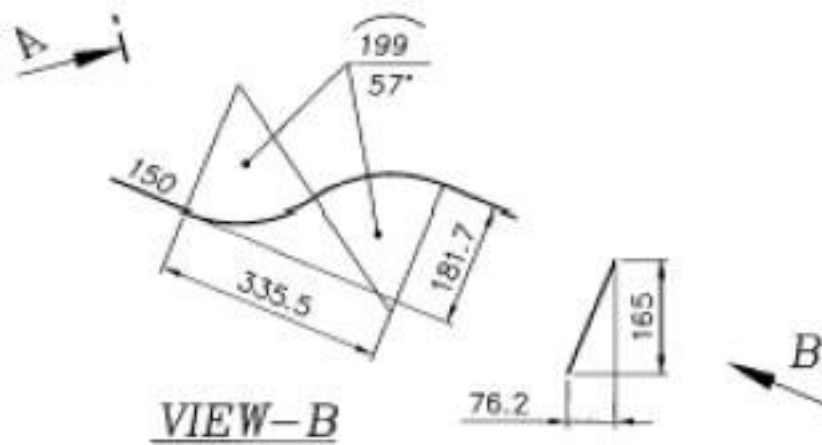
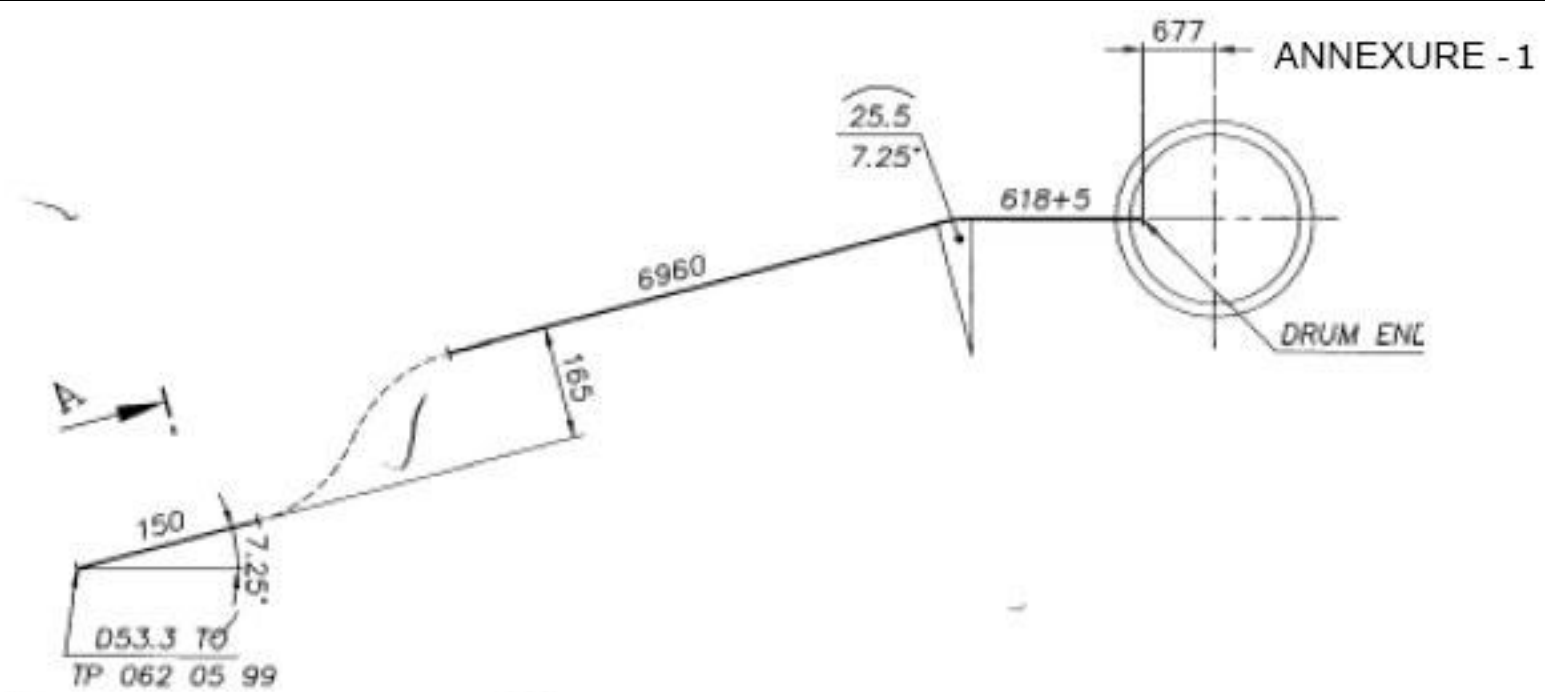
ANNEXURE - 1



LTSH bend

BEND CONFIGURATION - 1
Drg No : CABS-1-05-01

BHPV Visakhapatnam

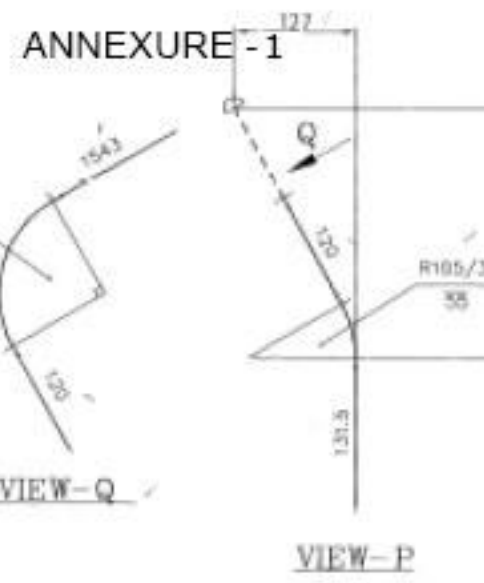
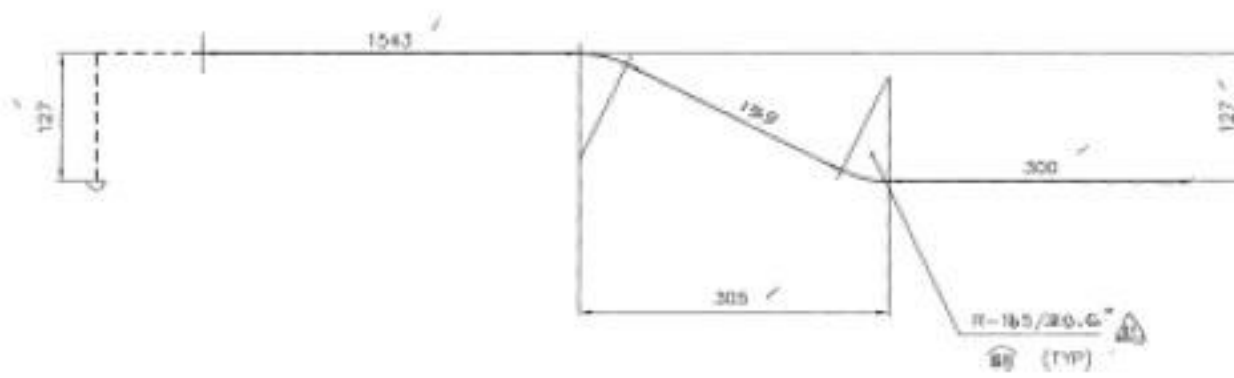


Roof tube bend

BEND CONFIGURATION - 2

Dwg No : CABS-1-05-02

BHPV Visakhapatnam

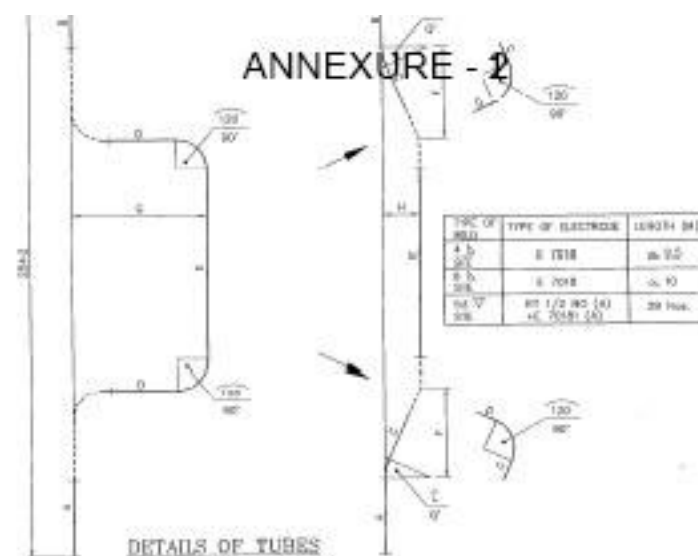


RH cross over tube bend

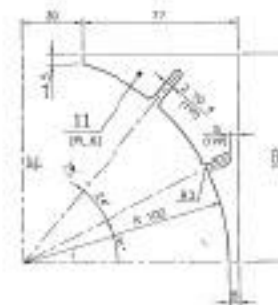
BEND CONFIGURATION - 3

Drg No : CABS-1-05-03

BHPV Visakhapatnam

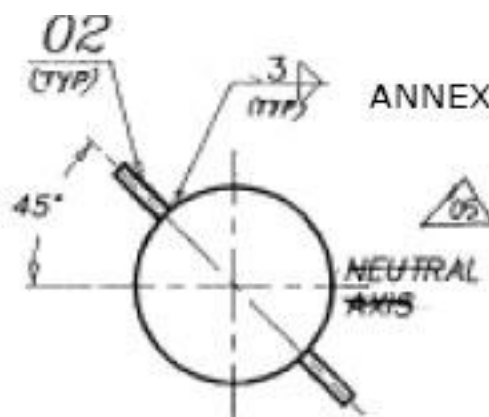


FILE	A	B	C	D	E	F	G	H	I	J	BECLONGTH
02	463	275	30	181.8	1289	988	444.5	114	20.5	28.20	3307
04	832	181	30	181.3	1609	938	444.0	111	20.5	30.70	3307
05	373	181	75	181.6	1523	938	444.5	114	52.5	28.20	3307
06	463	271	75.5	181	1283	170	254	57	38.5	30	2637
08	478	274	18.5	161	1408	170	254	57	38.5	30	2637
09	268	157	75.5	90	1823	170	254	57	38.5	30	2637
07	327	320	78.5	90	1837	170	254	57	38.5	30	2637



BHPV Visakhapatnam

Scaffoled door opening bends



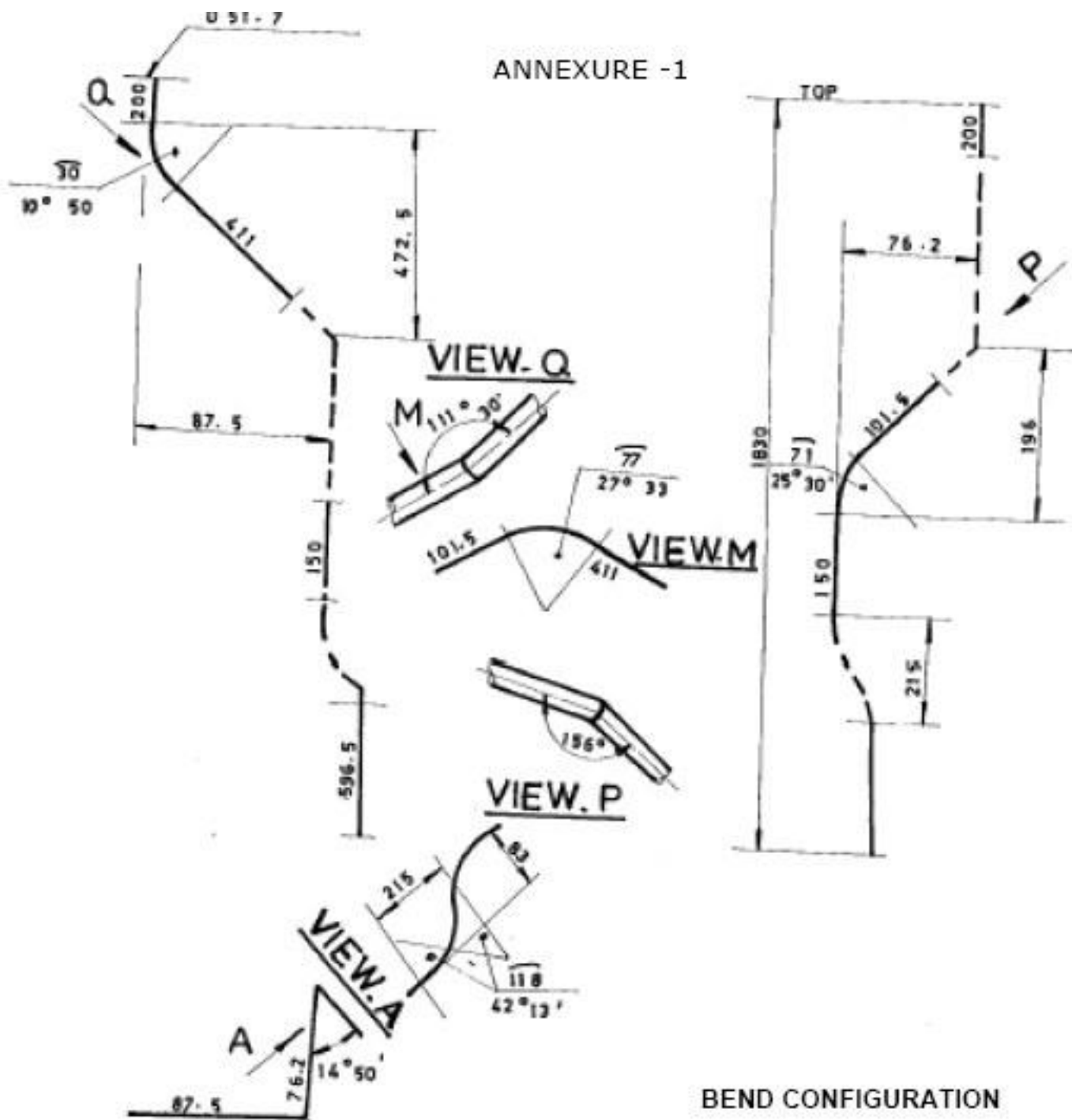
VIEW-P

DRG No : CABS-1-05-05

SECTION-NN

Lower corner transition bend

ANNEXURE -1



BEND CONFIGURATION

DRG No : CABS-1-05-06

BHPV Visakhapatnam

Burner panel bend

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 BHEL, Trichy on behalf of BHPV (Subsidiary of BHEL) will arrange for an irrevocable, usance Letter of Credit (60 days from date of dispatch) after receipt of Inspection release note and against presentation of documents for 80% of payment (80% of basic price + 100% Taxes). And balance 20% of payment will be made after acceptance of material/commissioning of the equipment at BHPV, Visakhapatnam and on submission of Performance Bank Guarantee.

5.7.1.2 Documents to be submitted by Indian Bidders for negotiating LC:

1. Original Invoice in triplicate in the name of BHPV.
2. Original LR in the name of the LC issuing Bank
3. Original packing list in triplicate in the name of BHPV.
4. Original Test certificate in triplicate in the name of BHPV.
5. Inspection release Note.
6. One original Bank guarantee, if applicable in favour of BHPV.
7. Certificate issued by the beneficiary certifying that the materials dispatched and shown in the packing list are not less than that invoiced.
8. Insurance for 100% of the commercial invoice value made out in the name of LC issuing bank, covering all risks.
9. Any other conditions/documents as mentioned in the Purchase Order.

5.7.1.3 Additional conditions for Indian Bidders:

1. **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.
2. In the event of delayed presentation of documents beyond the validity for negotiation(Subject to acceptance of documents by Applicant), 5% of invoice value will be retained towards demurrage and other charges and the difference if any between actual charges and recovery will be settled between BHPV and beneficiary outside the purview of LC terms.

5.7.2 Foreign Bidders

An Irrevocable letter of Credit shall be established by BHEL, Trichy on behalf of BHPV (Subsidiary of BHEL) for 80% of FOB/FCA/CFR/ (excluding Indian Agent's commission) 2 months prior to shipment with a validity of 3 months and negotiation after shipment against shipping documents. Letter of Credit shall be opened through an authorized bank of BHEL in India. 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.

5.7.2.1 Documents to be submitted by Foreign Bidders for negotiating LC:

1. Original Invoice in triplicate in the name of BHPV.
2. Original bill of lading in triplicate in the name of the LC issuing bank.
3. Original packing list in triplicate in the name of BHPV.
4. One original certificate of origin.
5. Original Test certificate in triplicate in the name of BHPV.
6. Inspection release Note.
7. One original Bank guarantee, if applicable in favour of BHPV.
8. Certificate issued by the beneficiary certifying that one copy of non-negotiable documents comprising Bill of Lading, Invoice, Packing List, Certificate of country of origin and Test certificate sent to Port consignee.
9. Certificate issued by the beneficiary certifying that the materials shipped and shown in the packing list are not less than that invoiced.
10. Insurance for 110% of the commercial invoice value made out in the name of LC opening bank, covering all risks, clearly mentioning the name of claim settling agent in India. The claims will be settled in the same currency as that of LC.
11. Any other conditions/documents as mentioned in the Purchase Order.

5.7.2.2 Additional conditions for Foreign Bidders:

1. **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.
2. In the event of delayed presentation of documents beyond the validity for negotiation (Subject to acceptance of documents by Applicant), 5% of invoice value will be retained towards demurrage and other charges and the difference if any between actual charges and recovery will be settled between BHPV and beneficiary outside the purview of LC terms.

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 + %, which shall be computed for the differential period between BHPV terms of payment and the offered payment terms by vendor.

- 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
Prices have been quoted on "FIRM PRICE" basis only.	Yes / No
Prices have been quoted on "F.O.R BHPV" basis only.	Yes / No
P & F and Freight (To be Included in Vendor's Scope)	
Insurance (Please confirm whether included or not)	
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 (As per Clause No. 5.7.1)	
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 guarantee period will be rejected)	Yes / No
Inspection (please Specify)	
Erection & Commissioning/ Installation/ Training (Please confirm whether charges are included in the total cost or not)	
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
Prices have been quoted on "FIRM PRICE" basis only.	Yes / No
Prices have been quoted on "F.O.R BHPV" basis only.	Yes / No
P & F and Freight	
Insurance (Please confirm whether included or not)	
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 (As per Clause No. 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
Inspection (please Specify)	
Erection & Commissioning/ Installation/ Training (Please confirm whether charges are included in the total cost or not)	
Approximate Net Weight of the total Consignment	
Approximate Gross Weight of the total Consignment	

Signature & Office Seal of the bidder