



# Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirappalli – 620014, TAMIL NADU, INDIA

CAPITAL EQUIPMENT / MATERIALS MANAGEMENT

An ISO 9001  
Company

<b>ENQUIRY</b>	Phone: +91 431 257 76 53 Fax : +91 431 252 00 31 Email : <a href="mailto:skaruna@bheltry.co.in">skaruna@bheltry.co.in</a> Web : <a href="http://www.bhel.com">www.bhel.com</a>
<b>NOTICE INVITING TENDER</b>	

<b>TWO PART BID</b>	<b>Enquiry Number:</b> 2851300010	<b>Enquiry Date:</b> 31.08.2013	<b>Due date for submission of quotation:</b> 30.09.2013
Tender to be submitted in two Parts			

You are requested to quote the Enquiry number date and due date in all your correspondence. This is only a request for quotation and not an order.

Please note that under any circumstances both delayed offer and late offers will not be considered. Hence vendors are requested to ensure that the offer is reaching physically our office before 14.00 hrs on the Date of tender opening.

Item	Description	Quantity	Delivery Schedule
10	Portable Hand Held Pneumatically Operated Tube End Bevelling Machine - Straight as per the technical specification & commercial conditions applicable (to be downloaded from web site <a href="http://www.bhel.com">www.bhel.com</a> or <a href="http://tenders.gov.in">http://tenders.gov.in</a> )	3 Nos	January 2015 (for BHEL, Bhandara)
20	Portable Hand Held Pneumatically Operated Tube End Bevelling Machine - Angular as per the technical specification & commercial conditions applicable (to be downloaded from web site <a href="http://www.bhel.com">www.bhel.com</a> or <a href="http://tenders.gov.in">http://tenders.gov.in</a> )	2 Nos	
30	Portable Hand Held Pneumatically Operated Tube End Bevelling Machine - Straight as per the technical specification & commercial conditions applicable (to be downloaded from web site <a href="http://www.bhel.com">www.bhel.com</a> or <a href="http://tenders.gov.in">http://tenders.gov.in</a> )	10 Nos	31.01.2014 (for BHEL, Trichy)
40	Portable Hand Held Pneumatically Operated Tube End Bevelling Machine - Angular as per the technical specification & commercial conditions applicable (to be downloaded from web site <a href="http://www.bhel.com">www.bhel.com</a> or <a href="http://tenders.gov.in">http://tenders.gov.in</a> )	5 Nos	
50	Portable Hand Held Electrically Operated Tube End Bevelling Machine - Straight as per the technical specification & commercial conditions applicable (to be downloaded from web site <a href="http://www.bhel.com">www.bhel.com</a> or <a href="http://tenders.gov.in">http://tenders.gov.in</a> )	7 Nos	31.12.2013 (for BHEL, Trichy)
60	Portable Hand Held Electrically Operated Tube End Bevelling Machine - Angular as per the technical specification & commercial conditions applicable (to be downloaded from web site <a href="http://www.bhel.com">www.bhel.com</a> or <a href="http://tenders.gov.in">http://tenders.gov.in</a> )	5 Nos	

### Important points to be taken care during submission of offer

- Checklist No. BND/IND/02A & BND/IMP 02 to be filled and enclosed along with the offer failing which, the Offer will not be considered for evaluation.
- Material shall be delivered to
  - For Item SI.No.10 & 20 (5 Nos.): F.O.R, BHEL Stores, POWER EQUIPMENT FABRICATION PLANT, BHARAT HEAVY ELECTRICALS LIMITED, Mundipar- 441804, Taluka: Sakoli, District: Bhandara, Maharashtra State.
  - For Item SI. No. 30 to 60 (27 Nos.): F.O.R ,BHEL Stores, HIGH PRESSURE BOILER PLANT, BHARAT HEAVY ELECTRICALS LIMITED, Tiruchirappalli- 620014, Tamilnadu State.
- Offer shall be evaluated (SI.Nos.10 to 40 together) as a Single Package (over all L1 basis). Hence, the items (10 to 40) should be quoted without fail, otherwise the offer will not be considered
- Offer shall be evaluated (SI.Nos.50 & 60 together) as a Single Package (over all L1 basis). Hence, both the items (50 & 60) should be quoted without fail, otherwise the offer will not be considered
- Erection & Commissioning period required 10 days for all the Items SI.No.10 to 60 from the date of intimation by BHEL to Vendor for deputation of their Engineers for E&C.
- EMD for this Tender will be Rs. 2,00,000.00
- All updates, amendments, corrigenda, etc., (if any), for each tender will be posted only on the above websites from time to time, as and when required, until each tender is opened. There will be no publication of such updates, amendments, corrigenda, etc., through newspapers or any other media.

BHEL's General guidelines / instructions (refer MM / CE / GENL / 001 - EMD) including bank guarantee formats and list of consortium banks, commercial terms check-list can be downloaded from BHEL web site <http://www.bhel.com> or from the Government tender website <http://tenders.gov.in> (public sector units > Bharat Heavy Electricals Limited page) under Enquiry reference "2851300010".

Tenders should reach us before 14:00 hours on the due date Tenders will be opened at 14:30 hours on the due date Tenders would be opened in presence of the tenderers who have submitted their offers and who may like to be present	Yours faithfully, For <b>BHARAT HEAVY ELECTRICALS LIMITED</b>  Sr. Manager / Capital Equipment / MM
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**S. KARUNANIDHY**  
Senior Manager  
MM / Capital Equipment  
BHEL, TRICHY - 620 014

**PORTABLE HAND HELD PNEUMATICALLY OPERATED TUBE END BEVELLING MACHINE**  
**STRAIGHT TYPE**  
**PART -A**

S.No	BHEL Specification	Vendor's Offer
<b>1.0</b>	<b>QUALIFYING CRITERIA</b>	
1.1	The BIDDER / VENDOR (OEM) shall have a minimum of FIVE Years of Continuous Experience in the Design, Manufacture & Supply of Special Purpose / Custom Built Pneumatically operated portable machines for metalworking.	
1.2	Only those vendors ( <b>OEMs</b> ), who have supplied and commissioned <b>atleast TWO numbers of Pneumatically operated hand held type portable tube end bevelling machines</b> similar to the machine specified under Part B, in the past ten years (as on date of opening of Tender) and such machine is presently working satisfactorily for more than one year after commissioning (as on date of opening of Tender) should quote.	
1.3	Vendor has to submit atleast one Performance Certificate from their customers, for satisfactory performance of <b>Pneumatically operated hand held type portable tube end bevelling machines</b> similar to the machine specified under Part B, for a minimum period of one year (as on date of opening tender). For obtaining the Performance certificate, a suggestive format is provided.	

<b>2.0</b>	<b>INFORMATION TO BE PROVIDED BY VENDOR</b>	
2.1	The BIDDER/VENDOR to furnish Reference List of Customers, with full address, details of contact person, where Special Purpose / Custom Built Pneumatically operated portable machine (for metalworking) have been supplied in the past.	
2.2	Details of Special Purpose / Custom Built Pneumatically operated portable machines for metalworking supplied to other BHEL units, if any. (Year of commissioning, Application, Type )	
2.3	Details on SERVICE-AFTER-SALES set-up in India including the Address of Agents /Service Centres in India.	
2.4	Any Additional Data to supplement the manufacturing capability of the BIDDER for the subject equipment.	

Suggestive Format of Performance Certificate:

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

**PERFORMANCE CERTIFICATE**

- |   |  |   |
|---|--|---|
| 1 | Supplier of the machine  |   |
| 2 | Make & Model of the M/C  |   |
| 3 | Month & Year of Commissioning  |   |
| 4 | Application for which M/C is used                                      |   |
| 5 | a. Application<br>b. Machining capability                              |   |
| 6 | Performance of the Machine<br>(Strike off whichever is not applicable) | Satisfactory / Good / Average / NotSatisfactory |
| 7 | After sales service<br>(Strike off whichever is not applicable)        | Satisfactory / Good / Average / NotSatisfactory |
| 8 | Any Other remarks  |   |


Date:

Signature & Seal of the Authority  
Issuing the Performance Certificate

**PORTABLE, HAND-HELD PNEUMATICALLY OPERATED TUBE END BEVELING MACHINES**

**TECHNICAL SPECIFICATION - PART-B**

**STRAIGHT TYPE Qty :03 Nos.**

<b>S.No.</b>	<b>FEATURE</b>	<b>BHEL SPECIFICATION</b>	<b>VENDOR'S OFFER</b> (with complete Technical Details)
1.0	<b>PURPOSE/FUNCTION</b>	<p>The equipment is to be used for the edge preparation of Alloy Steel / Stainless Steel TUBE Ends for butt-joint fit-up and welding. The tubes are part of membrane wall Panels or Tubular Coils of Super Critical Boilers. The machine should be of compact size to allow machining of Spiral Wall Tube Panels for tube and pitch dimensions given below.</p> <p>Tube dia. 38.1mm and Pitch 50.8mm,            Tube dia. 41.3mm and Pitch 54mm in tubular panel            (Pitch: between center of tubes)</p> 	
1.1	O.D.Chamfering	Outside Beveling to 37.5° angle edge preparation with a land of 1.0 mm to 2.0 mm.	
1.2	Facing	End Facing of Tubes.	
1.3	ID Boring	ID straight boring minimum 25 mm depth and minimum Tube inner dia is 13.1mm (38.1 mm - Th. 3.6mm to 10.67mm)	
1.4	Machining Mode	Tool holder to be suitable for any of the above two operations are to be done simultaneously.	

S.No.	FEATURE	BHEL SPECIFICATION	VENDOR'S OFFER (with complete Technical Details)
2.0	<b>MACHINE OPERATION</b>	Pneumatically Operated	
2.1	Air Supply pressure	60 to 70 psi	
2.2	Input Hose size	The air inlet pneumatic hose shall be of $\frac{3}{4}$ inch Vendor to specify the inlet connector size. The connectors shall be quick connecting coupling type.	
2.3	Noise Level	Not more than 85 dB, at a distance of one meter from the work spot.	
3.0	<b>JOB DETAILS</b>		
3.1	Tube dimensions	38.1 mm - Th. 3.6mm to 10.67mm 41.3 mm - Th. 4.0mm to 8.2mm 42.4 mm - Th. 4.0mm to 8.6mm 44.5 mm - Th. 4.0mm to 8.7mm 51.0 mm - Th. 4.0mm to 11.0mm 54.0 mm - Th. 3.6mm to 13.49mm 63.5 mm - Th. 4.0mm to 7.1mm	
3.2	Material	SA 213 T11, SA 213 T12, SA 213 T22, SA 213 T91, SA 213 T92, SA 213 TP 347H and SA 213 TP S304H.	
4.0	<b>MACHINE CONFIGURATION</b>		
4.1	Weight	Not more than 10 kg. Vendor to specify the wt.	
4.2	Overall dimensions (For straight type)	Body Width – less than or equal to 60mm Height – Vendor to specify Length – not more than 500mm. Vendor to specify	
4.3	Job Clamping	O.D. Clamping with a Locking Lever (suitable Jaws for varying job diameter to be provided)	

S.No.	FEATURE	BHEL SPECIFICATION	VENDOR'S OFFER (with complete Technical Details)
4.4	Air Motor Output Power	Not less than 700 W. Vendor to Specify	
4.5	Air Motor Output Toque	Vendor to Specify	
4.6	Tool holder rpm	100 to 150 rpm.Vendor to Specify.	
4.7	Cutting speed	15 to 20 m/min.	
4.8	Tool Feed(Manual)	Minimum 25 mm.Vendor to Specify.	
4.9	Construction	The equipment shall be made of impact resistant and corrosion resistant metal alloys with suitable coatings.	
4.10	Hook for suspension	Machine shall be provided with a hook to suspend. Vendor to confirm.	
5.0	<b>TOOLINGS</b>		
5.1	O D Clamping Bases (to clamp on to the outer diameter of tubes)	The machine should be capable of clamping tubes with 38.1mm/41.3mm /42.4mm / 44.5mm / 51.0mm/54.0mm/63.5mm (Total :7 sizes)	
5.2	Cutting Tool	HSS 3 / Carbide Tool Bits (HSS with COBALT inclusion)	
5.3	Cutters and Tool Bits	1) 37.5° for O.D.Beveling 2) Facing 3) 'J' style for weld EP 4) ID Boring Tool	
6.0	<b>SPARES</b>		
6.1	Main Equipment	Complete List of Spares including Air Motor, Bearings, Bushes, etc. to be <b>LISTED ITEMWISE</b> with quantity.	
6.2	Cutting Tools	For each machine Tool Holders /Cutting Heads to hold tool bits Two nos and Tool Bits 20 nos each as per clause 5.3 are required.	

S.No.	FEATURE	BHEL SPECIFICATION	VENDOR'S OFFER (with complete Technical Details)
<b>7.0</b>	MANUALS		
7.1	No of Copies	2 (Two) for Each Machine	
7.2	Language	English	
7.3	O & M Manual Details :	Manual shall contain BLOW-UP details on assembly / dismantling, part numbers with part description for Maintenance, Safety Instructions while using, and Operating Sequence for using the equipment for Beveling, Trouble Shooting Chart.	
<b>8.0</b>	<b>GENERAL</b>		
8.1	Cost Details	Price break-up shall be given separately for main equipment, accessories, cutting tools, spares, etc.	
8.2	Inspection/Testing	The equipment shall be inspected and tested for performance evaluation prior to dispatch. Test Certificate shall be given.	
8.3	Commissioning	Detailed Instruction Sheet shall be given for easy commissioning of the equipment at BHEL works.	
8.4	Guarantee	The equipment shall be guaranteed for a minimum of twelve months from the date of commissioning or eighteen months from the date of dispatch.	
8.5	Catalogue	The offer shall be accompanied with ORIGINAL Catalogues of the offered equipment.	

**PORTABLE HAND HELD PNEUMATICALLY OPERATED TUBE END BEVELLING MACHINE**  
**ANGULAR TYPE**  
**PART -A**

S.No	BHEL Specification	Vendor's Offer
<b>1.0</b>	<b>QUALIFYING CRITERIA</b>	
1.1	The BIDDER / VENDOR (OEM) shall have a minimum of FIVE Years of Continuous Experience in the Design, Manufacture & Supply of Special Purpose / Custom Built Pneumatically operated portable machines for metalworking.	
1.2	Only those vendors ( <b>OEMs</b> ), who have supplied and commissioned <b>atleast TWO numbers ofPneumatically operatedhand held typeportable tube end beveling machines</b> similar to the machine specified under Part B, in the past ten years (as on date of opening of Tender) and such machine is presently working satisfactorily for more than one year after commissioning (as on date of opening of Tender) should quote.	
1.3	Vendor has to submit atleast one Performance Certificate from their customers, for satisfactory performance of <b>Pneumatically operatedhand held type portable tube end beveling machiness</b> similar to the machine specified under Part B, for a minimum period of one year (as on date of opening tender). For obtaining the Performance certificate, a suggestive format is provided.	

<b>2.0</b>	<b>INFORMATION TO BE PROVIDED BY VENDOR</b>	
2.1	The BIDDER/VENDOR to furnish Reference List of Customers, with full address, details of contact person, where Special Purpose / Custom Built Pneumatically operated portable machine (for metalworking) have been supplied in the past.	
2.2	Details of Special Purpose / Custom BuiltPneumatically operated portable machines for metalworking supplied to other BHEL units, if any. (Year of commissioning, Application, Type )	
2.3	Details on SERVICE-AFTER-SALES set-upin India including the Address of Agents /Service Centres in India.	
2.4	Any Additional Data to supplement themanufacturing capability of the BIDDERfor the subject equipment.	

Suggestive Format of Performance Certificate:

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

**PERFORMANCE CERTIFICATE**

- 1 Supplier of the machine
- 2 Make & Model of the M/C
- 3 Month & Year of Commissioning
- 4 Application for which M/C is used
- 5
  - a. Application
  - b. Machining capability
- 6 Performance of the Machine  
(Strike off whichever is not applicable) Satisfactory / Good / Average / NotSatisfactory
- 7 After sales service  
(Strike off whichever is not applicable) Satisfactory / Good / Average / NotSatisfactory
- 8 Any Other remarks

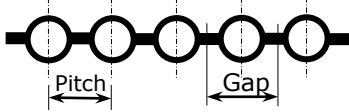
Date:

Signature & Seal of the Authority  
Issuing the Performance Certificate

## PORTABLE, HAND-HELD PNEUMATICALLY OPERATED TUBE END BEVELING MACHINES

### TECHNICAL SPECIFICATION PART-B

#### ANGULAR TYPE Qty : 2 Nos.

S.No.	FEATURE	BHEL SPECIFICATION	VENDOR'S OFFER (with complete Technical Details)
1.0	<b>PURPOSE/FUNCTION</b>	<p>The equipment is to be used for the edge preparation of AlloySteel / Stainless Steel TUBE Ends for butt-joint fit-up and welding. The tubes are part of membrane wall Panels or Tubular Coils of Super Critical Boilers. The machine should be of compact size to allow machining of Spiral Wall Tube Panels for tube and pitch dimensions given below.</p> <p>Tube dia. 38.1mm and Pitch 50.8mm, Tube dia. 41.3mm and Pitch 54mm in tubular panel(Pitch: between center of tubes)</p> <div style="text-align: center;">  <p style="margin-left: 100px;">Minimum gap : 61 mm</p> </div>	
1.1	O.D.Chamfering	Outside Beveling to 37.5° angle or 'J' style edge preparation. All styles with a land of 1.0 mm to 2.0 mm.	
1.2	Facing	End Facing of Tubes.	
1.3	ID Boring	ID straight boring only to 25mm in depth. No taper boring is required; in bore dia is 13.1mm (38.1 mm - Th. 3.6mm to 12.5mm)	
1.4	Machining Mode	Tool holder to be suitable for any of the above two operations are to be done simultaneously.	

S.No.	FEATURE	BHEL SPECIFICATION	VENDOR'S OFFER (with complete Technical Details)
<b>2.0</b>	<b>MACHINE OPERATION</b>	Pneumatically Operated	
2.1	Air Supply pressure	60 to 70 psi	
2.2	Input Hose size	The air inlet pneumatic hose shall be of $\frac{3}{4}$ inch Vendor to specify the inlet connector size. The connectors shall be quick connecting coupling type.	
2.3	Noise Level	Not more than 85 dB, at a distance of one meter from the work spot.	
<b>3.0</b>	<b>JOB DETAILS</b>		
3.1	Tube dimensions	38.1 mm - Th. 3.6mm to 10.67mm 41.3 mm - Th. 4.0mm to 8.2mm 42.4 mm - Th. 4.0mm to 8.6mm 44.5 mm - Th. 4.0mm to 8.7mm 51.0 mm - Th. 4.0mm to 11.0mm 54.0 mm- Th. 3.6mm to 13.49mm 63.5 mm - Th. 4.0mm to 7.1mm	
3.2	Material	SA 213 T11, SA 213 T12, SA 213 T22, SA 213 T91, SA 213 T92, SA 213 TP 347H and SA 213 TP S304H.	
<b>4.0</b>	<b>MACHINE CONFIGURATION</b>		
4.1	Weight	Not more than 10 kg. Vendor to specify the weight.	
4.2	Overall dimensions (For angular type)	Width – less than or equal to 60mm Height – Vendor to specify Length – less than or equal to 360mm	

S.No.	FEATURE	BHEL SPECIFICATION	VENDOR'S OFFER (with complete Technical Details)
4.3	Job Clamping	O.D. Clamping with a Locking Lever (suitable Jaws for varying job diameter to be provided)	
4.4	Air Motor Output Power	Not less than 700 W. Vendor to Specify	
4.5	Air Motor Output Toque	Vendor to Specify	
4.6	Tool holder rpm	100 to 150 rpm.Vendor to Specify.	
4.7	Cutting speed	15 to 20 m/min.	
4.8	Tool Feed (Manual)	Minimum 25 mm.Vendor to Specify.	
4.9	Construction	The equipment shall be made of impact resistant and corrosion resistant metal alloys with suitable coatings.	
4.10	Hook for suspension	Machine shall be provided with a hook to suspend. Vendor to confirm.	
<b>5.0 TOOLINGS</b>			
5.1	O D Clamping Bases (to clamp on to the outer diameter of tubes)	The machine should be capable of clamping tubes with OD38.1mm/41.3mm /42.4mm / 44.5mm / 51.0mm/54.0 and 63.5mm (Total : 7sizes)	
5.2	Cutting Tool	HSS 3 / Carbide Tool Bits (HSS with COBALT inclusion)	
5.3	Cutters and Tool Bits	1) 37.5°for O.D.Beveling2) Facing 3) 'J' style for weld EP 4) ID Boring	

S.No.	FEATURE	BHEL SPECIFICATION	VENDOR'S OFFER (with complete Technical Details)
<b>6.0 SPARES</b>			
6.1	Main Equipment	Complete List of Spares including Air Motor, Bearings, Bushes, etc. to be <b>LISTED ITEMWISE</b> with quantity.	
6.2	Cutting Tools	For each machine Tool Holders /Cutting Heads to hold tool bits Two nos and Tool Bits 20 nos each as per clause 5.3 are required.	
<b>7.0 MANUALS</b>			
7.1	No of Copies	2 (Two) for Each Machine	
7.2	Language	English	
7.3	O & M Manual Details	Manual shall contain BLOW-UP details on assembly / dismantling, part numbers with part description for Maintenance, Safety Instructions while using, and Operating Sequence for using the equipment for Beveling, Trouble Shooting Chart.	
<b>8.0 GENERAL</b>			
8.1	Cost Details	Price break-up shall be given separately for main equipment, accessories, cutting tools, spares, etc.	
8.2	Inspection/Testing	The equipment shall be inspected and tested for performance evaluation prior to dispatch. Test Certificate shall be given.	
8.3	Commissioning	Detailed Instruction Sheet shall be given for easy commissioning of the equipment at BHEL works.	
8.4	Guarantee	The equipment shall be guaranteed for a minimum of twelve months from the date of commissioning or eighteen months from the date of dispatch.	
8.5	Catalogue	The offer shall be accompanied with ORIGINAL Catalogues of the offered equipment.	

**PORTABLE HAND HELD PNEUMATICALLY OPERATED TUBE END BEVELLING MACHINE**  
**STRAIGHT TYPE**  
**PART -A**

S.No	BHEL Specification	Vendor's Offer
<b>1.0</b>	<b>QUALIFYING CRITERIA</b>	
1.1	The BIDDER / VENDOR (OEM) shall have a minimum of FIVE Years of Continuous Experience in the Design, Manufacture & Supply of Special Purpose / Custom Built Pneumatically operated portable machines for metalworking.	
1.2	Only those vendors ( <b>OEMs</b> ), who have supplied and commissioned <b>atleast TWO numbers of Pneumatically operated hand held type portable tube end bevelling machines</b> similar to the machine specified under Part B, in the past ten years (as on date of opening of Tender) and such machine is presently working satisfactorily for more than one year after commissioning (as on date of opening of Tender) should quote.	
1.3	Vendor has to submit atleast one Performance Certificate from their customers, for satisfactory performance of <b>Pneumatically operated hand held type portable tube end bevelling machines</b> similar to the machine specified under Part B, for a minimum period of one year (as on date of opening tender). For obtaining the Performance certificate, a suggestive format is provided.	

<b>2.0</b>	<b>INFORMATION TO BE PROVIDED BY VENDOR</b>	
2.1	The BIDDER/VENDOR to furnish Reference List of Customers, with full address, details of contact person, where Special Purpose / Custom Built Pneumatically operated portable machine (for metalworking) have been supplied in the past.	
2.2	Details of Special Purpose / Custom Built Pneumatically operated portable machines for metalworking supplied to other BHEL units, if any. (Year of commissioning, Application, Type )	
2.3	Details on SERVICE-AFTER-SALES set-up in India including the Address of Agents /Service Centres in India.	
2.4	Any Additional Data to supplement the manufacturing capability of the BIDDER for the subject equipment.	

Suggestive Format of Performance Certificate:

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

**PERFORMANCE CERTIFICATE**

- 1 Supplier of the machine
- 2 Make & Model of the M/C
- 3 Month & Year of Commissioning
- 4 Application for which M/C is used
- 5
  - a. Application
  - b. Machining capability
- 6 Performance of the Machine  
(Strike off whichever is not applicable) Satisfactory / Good / Average / NotSatisfactory
- 7 After sales service  
(Strike off whichever is not applicable) Satisfactory / Good / Average / NotSatisfactory
- 8 Any Other remarks


Date:

Signature & Seal of the Authority  
Issuing the Performance Certificate

**PORTABLE, HAND-HELD PNEUMATICALLY OPERATED TUBE END BEVELING MACHINES**

**TECHNICAL SPECIFICATION - PART-B**

**STRAIGHT TYPE Qty :10 Nos.**

<b>S.No.</b>	<b>FEATURE</b>	<b>BHEL SPECIFICATION</b>	<b>VENDOR'S OFFER</b> (with complete Technical Details)
1.0	<b>PURPOSE/FUNCTION</b>	<p>The equipment is to be used for the edge preparation of Alloy Steel / Stainless Steel TUBE Ends for butt-joint fit-up and welding. The tubes are part of membrane wall Panels or Tubular Coils of Super Critical Boilers. The machine should be of compact size to allow machining of Spiral Wall Tube Panels for tube and pitch dimensions given below.</p> <p>Tube dia. 38.1mm and Pitch 50.8mm,            Tube dia. 41.3mm and Pitch 54mm in tubular panel            (Pitch: between center of tubes)</p> 	
1.1	O.D.Chamfering	Outside Beveling to 37.5° angle edge preparation with a land of 1.0 mm to 2.0 mm.	
1.2	Facing	End Facing of Tubes.	
1.3	ID Boring	ID straight boring minimum 25 mm depth and minimum Tube inner dia is 13.1mm (38.1 mm - Th. 3.6mm to 10.67mm)	
1.4	Machining Mode	Tool holder to be suitable for any of the above two operations are to be done simultaneously.	

S.No.	FEATURE	BHEL SPECIFICATION	VENDOR'S OFFER (with complete Technical Details)
<b>2.0</b>	<b>MACHINE OPERATION</b>	Pneumatically Operated	
2.1	Air Supply pressure	60 to 70 psi	
2.2	Input Hose size	The air inlet pneumatic hose shall be of $\frac{3}{4}$ inch Vendor to specify the inlet connector size. The connectors shall be quick connecting coupling type.	
2.3	Noise Level	Not more than 85 dB, at a distance of one meter from the work spot.	
<b>3.0</b>	<b>JOB DETAILS</b>		
3.1	Tube dimensions	38.1 mm - Th. 3.6mm to 10.67mm 41.3 mm - Th. 4.0mm to 8.2mm 42.4 mm - Th. 4.0mm to 8.6mm 44.5 mm - Th. 4.0mm to 8.7mm 51.0 mm - Th. 4.0mm to 11.0mm 54.0 mm - Th. 3.6mm to 13.49mm 63.5 mm - Th. 4.0mm to 7.1mm	
3.2	Material	SA 213 T11, SA 213 T12, SA 213 T22, SA 213 T91, SA 213 T92, SA 213 TP 347H and SA 213 TP S304H.	
<b>4.0</b>	<b>MACHINE CONFIGURATION</b>		
4.1	Weight	Not more than 10 kg. Vendor to specify the wt.	
4.2	Overall dimensions (For straight type)	Body Width – less than or equal to 60mm Height – Vendor to specify Length – not more than 500mm. Vendor to specify	
4.3	Job Clamping	O.D. Clamping with a Locking Lever (suitable Jaws for varying job diameter to be provided)	

S.No.	FEATURE	BHEL SPECIFICATION	VENDOR'S OFFER (with complete Technical Details)
4.4	Air Motor Output Power	Not less than 700 W. Vendor to Specify	
4.5	Air Motor Output Toque	Vendor to Specify	
4.6	Tool holder rpm	100 to 150 rpm.Vendor to Specify.	
4.7	Cutting speed	15 to 20 m/min.	
4.8	Tool Feed(Manual)	Minimum 25 mm.Vendor to Specify.	
4.9	Construction	The equipment shall be made of impact resistant and corrosion resistant metal alloys with suitable coatings.	
4.10	Hook for suspension	Machine shall be provided with a hook to suspend. Vendor to confirm.	
5.0	<b>TOOLINGS</b>		
5.1	O D Clamping Bases (to clamp on to the outer diameter of tubes)	The machine should be capable of clamping tubes with 38.1mm/41.3mm /42.4mm / 44.5mm / 51.0mm/54.0mm/63.5mm (Total :7 sizes)	
5.2	Cutting Tool	HSS 3 / Carbide Tool Bits (HSS with COBALT inclusion)	
5.3	Cutters and Tool Bits	1) 37.5° for O.D.Beveling 2) Facing 3) 'J' style for weld EP 4) ID Boring Tool	
6.0	<b>SPARES</b>		
6.1	Main Equipment	Complete List of Spares including Air Motor, Bearings, Bushes, etc. to be <b>LISTED ITEMWISE</b> with quantity.	
6.2	Cutting Tools	For each machine Tool Holders /Cutting Heads to hold tool bits Two nos and Tool Bits 20 nos each as per clause 5.3 are required.	

<b>S.No.</b>	<b>FEATURE</b>	<b>BHEL SPECIFICATION</b>	<b>VENDOR'S OFFER</b> (with complete Technical Details)
<b>7.0</b>	<b>MANUALS</b>		
7.1	No of Copies	2 (Two) for Each Machine	
7.2	Language	English	
7.3	O & M Manual Details :	Manual shall contain BLOW-UP details on assembly / dismantling, part numbers with part description for Maintenance, Safety Instructions while using, and Operating Sequence for using the equipment for Beveling, Trouble Shooting Chart.	
<b>8.0</b>	<b>GENERAL</b>		
8.1	Cost Details	Price break-up shall be given separately for main equipment, accessories, cutting tools, spares, etc.	
8.2	Inspection/Testing	The equipment shall be inspected and tested for performance evaluation prior to dispatch. Test Certificate shall be given.	
8.3	Commissioning	Detailed Instruction Sheet shall be given for easy commissioning of the equipment at BHEL works.	
8.4	Guarantee	The equipment shall be guaranteed for a minimum of twelve months from the date of commissioning or eighteen months from the date of dispatch.	
8.5	Catalogue	The offer shall be accompanied with ORIGINAL Catalogues of the offered equipment.	

**PORTABLE HAND HELD PNEUMATICALLY OPERATED TUBE END BEVELLING MACHINE**  
**ANGULAR TYPE**  
**PART -A**

S.No	BHEL Specification	Vendor's Offer
<b>1.0</b>	<b>QUALIFYING CRITERIA</b>	
1.1	The BIDDER / VENDOR (OEM) shall have a minimum of FIVE Years of Continuous Experience in the Design, Manufacture & Supply of Special Purpose / Custom Built Pneumatically operated portable machines for metalworking.	
1.2	Only those vendors ( <b>OEMs</b> ), who have supplied and commissioned <b>atleast TWO numbers ofPneumatically operatedhand held typeportable tube end beveling machines</b> similar to the machine specified under Part B, in the past ten years (as on date of opening of Tender) and such machine is presently working satisfactorily for more than one year after commissioning (as on date of opening of Tender) should quote.	
1.3	Vendor has to submit atleast one Performance Certificate from their customers, for satisfactory performance of <b>Pneumatically operatedhand held type portable tube end beveling machiness</b> similar to the machine specified under Part B, for a minimum period of one year (as on date of opening tender). For obtaining the Performance certificate, a suggestive format is provided.	

<b>2.0</b>	<b>INFORMATION TO BE PROVIDED BY VENDOR</b>	
2.1	The BIDDER/VENDOR to furnish Reference List of Customers, with full address, details of contact person, where Special Purpose / Custom Built Pneumatically operated portable machine (for metalworking) have been supplied in the past.	
2.2	Details of Special Purpose / Custom BuiltPneumatically operated portable machines for metalworking supplied to other BHEL units, if any. (Year of commissioning, Application, Type )	
2.3	Details on SERVICE-AFTER-SALES set-upin India including the Address of Agents /Service Centres in India.	
2.4	Any Additional Data to supplement themanufacturing capability of the BIDDERfor the subject equipment.	

Suggestive Format of Performance Certificate:

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

**PERFORMANCE CERTIFICATE**

- 1 Supplier of the machine
- 2 Make & Model of the M/C
- 3 Month & Year of Commissioning
- 4 Application for which M/C is used
- 5
  - a. Application
  - b. Machining capability
- 6 Performance of the Machine  
(Strike off whichever is not applicable) Satisfactory / Good / Average / NotSatisfactory
- 7 After sales service  
(Strike off whichever is not applicable) Satisfactory / Good / Average / NotSatisfactory
- 8 Any Other remarks

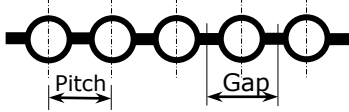
Date:

Signature & Seal of the Authority  
Issuing the Performance Certificate

## PORTABLE, HAND-HELD PNEUMATICALLY OPERATED TUBE END BEVELING MACHINES

### TECHNICAL SPECIFICATION PART-B

#### ANGULAR TYPE Qty : 5 Nos.

S.No.	FEATURE	BHEL SPECIFICATION	VENDOR'S OFFER (with complete Technical Details)
1.0	<b>PURPOSE/FUNCTION</b>	<p>The equipment is to be used for the edge preparation of AlloySteel / Stainless Steel TUBE Ends for butt-joint fit-up and welding. The tubes are part of membrane wall Panels or Tubular Coils of Super Critical Boilers. The machine should be of compact size to allow machining of Spiral Wall Tube Panels for tube and pitch dimensions given below.</p> <p>Tube dia. 38.1mm and Pitch 50.8mm, Tube dia. 41.3mm and Pitch 54mm in tubular panel(Pitch: between center of tubes)</p> <div style="text-align: center;">  <p style="margin-left: 100px;">Minimum gap : 61 mm</p> </div>	
1.1	O.D.Chamfering	Outside Beveling to 37.5° angle or 'J' style edge preparation. All styles with a land of 1.0 mm to 2.0 mm.	
1.2	Facing	End Facing of Tubes.	
1.3	ID Boring	ID straight boring only to 25mm in depth. No taper boring is required; in bore dia is 13.1mm (38.1 mm - Th. 3.6mm to 12.5mm)	
1.4	Machining Mode	Tool holder to be suitable for any of the above two operations are to be done simultaneously.	

<b>S.No.</b>	<b>FEATURE</b>	<b>BHEL SPECIFICATION</b>	<b>VENDOR'S OFFER</b> (with complete Technical Details)
<b>2.0</b>	<b>MACHINE OPERATION</b>	Pneumatically Operated	
2.1	Air Supply pressure	60 to 70 psi	
2.2	Input Hose size	The air inlet pneumatic hose shall be of $\frac{3}{4}$ inch Vendor to specify the inlet connector size. The connectors shall be quick connecting coupling type.	
2.3	Noise Level	Not more than 85 dB, at a distance of one meter from the work spot.	
<b>3.0</b>	<b>JOB DETAILS</b>		
3.1	Tube dimensions	38.1 mm - Th. 3.6mm to 10.67mm 41.3 mm - Th. 4.0mm to 8.2mm 42.4 mm - Th. 4.0mm to 8.6mm 44.5 mm - Th. 4.0mm to 8.7mm 51.0 mm - Th. 4.0mm to 11.0mm 54.0 mm- Th. 3.6mm to 13.49mm 63.5 mm - Th. 4.0mm to 7.1mm	
3.2	Material	SA 213 T11, SA 213 T12, SA 213 T22, SA 213 T91, SA 213 T92, SA 213 TP 347H and SA 213 TP S304H.	
<b>4.0</b>	<b>MACHINE CONFIGURATION</b>		
4.1	Weight	Not more than 10 kg. Vendor to specify the weight.	
4.2	Overall dimensions (For angular type)	Width – less than or equal to 60mm Height – Vendor to specify Length – less than or equal to 360mm	

S.No.	FEATURE	BHEL SPECIFICATION	VENDOR'S OFFER (with complete Technical Details)
4.3	Job Clamping	O.D. Clamping with a Locking Lever (suitable Jaws for varying job diameter to be provided)	
4.4	Air Motor Output Power	Not less than 700 W. Vendor to Specify	
4.5	Air Motor Output Toque	Vendor to Specify	
4.6	Tool holder rpm	100 to 150 rpm.Vendor to Specify.	
4.7	Cutting speed	15 to 20 m/min.	
4.8	Tool Feed (Manual)	Minimum 25 mm.Vendor to Specify.	
4.9	Construction	The equipment shall be made of impact resistant and corrosion resistant metal alloys with suitable coatings.	
4.10	Hook for suspension	Machine shall be provided with a hook to suspend. Vendor to confirm.	
<b>5.0 TOOLINGS</b>			
5.1	O D Clamping Bases (to clamp on to the outer diameter of tubes)	The machine should be capable of clamping tubes with OD38.1mm/41.3mm /42.4mm / 44.5mm / 51.0mm/54.0 and 63.5mm (Total : 7sizes)	
5.2	Cutting Tool	HSS 3 / Carbide Tool Bits (HSS with COBALT inclusion)	
5.3	Cutters and Tool Bits	1) 37.5°for O.D.Beveling2) Facing 3) 'J' style for weld EP 4) ID Boring	

S.No.	FEATURE	BHEL SPECIFICATION	VENDOR'S OFFER (with complete Technical Details)
<b>6.0 SPARES</b>			
6.1	Main Equipment	Complete List of Spares including Air Motor, Bearings, Bushes, etc. to be <b>LISTED ITEMWISE</b> with quantity.	
6.2	Cutting Tools	For each machine Tool Holders /Cutting Heads to hold tool bits Two nos and Tool Bits 20 nos each as per clause 5.3 are required.	
<b>7.0 MANUALS</b>			
7.1	No of Copies	2 (Two) for Each Machine	
7.2	Language	English	
7.3	O & M Manual Details	Manual shall contain BLOW-UP details on assembly / dismantling, part numbers with part description for Maintenance, Safety Instructions while using, and Operating Sequence for using the equipment for Beveling, Trouble Shooting Chart.	
<b>8.0 GENERAL</b>			
8.1	Cost Details	Price break-up shall be given separately for main equipment, accessories, cutting tools, spares, etc.	
8.2	Inspection/Testing	The equipment shall be inspected and tested for performance evaluation prior to dispatch. Test Certificate shall be given.	
8.3	Commissioning	Detailed Instruction Sheet shall be given for easy commissioning of the equipment at BHEL works.	
8.4	Guarantee	The equipment shall be guaranteed for a minimum of twelve months from the date of commissioning or eighteen months from the date of dispatch.	
8.5	Catalogue	The offer shall be accompanied with ORIGINAL Catalogues of the offered equipment.	

**PORTABLE HAND-HELD ELECTRICALLY OPERATED TUBE - END BEVELING EQUIPMENT**  
**STRAIGHT TYPE**  
**PART -A**

S.No	BHEL Specification	Vendor's Offer
<b>1.0</b>	<b>QUALIFYING CRITERIA</b>	
1.1	The BIDDER / VENDOR (OEM) shall have a minimum of FIVE Years of Continuous Experience in the Design, Manufacture & Supply of Special Purpose / Custom Built Pneumatically operated portable machines for metalworking.	
1.2	Only those vendors ( <b>OEMs</b> ), who have supplied and commissioned <b>atleast TWO numbers of electrically operated hand held type portable tube end chamfering machines</b> similar to the machine specified under Part B, in the past ten years (as on date of opening of Tender) and such machine is presently working satisfactorily for more than one year after commissioning (as on date of opening of Tender) should quote.	
1.3	Vendor has to submit atleast one Performance Certificate from their customers, for satisfactory performance of <b>electrically operated hand held type portable tube end chamfering machiness</b> similar to the machine specified under Part B, for a minimum period of one year (as on date of opening tender). For obtaining the Performance certificate, a suggestive format is provided.	

<b>2.0</b>	<b>INFORMATION TO BE PROVIDED BY VENDOR</b>	
2.1	The BIDDER/VENDOR to furnish Reference List of Customers, with full address, details of contact person, where Special Purpose / Custom Built electrically operated portable machine (for metalworking) have been supplied in the past.	
2.2	Details of Special Purpose / Custom Built electrically operated portable machines for metalworking supplied to other BHEL units, if any. (Year of commissioning, Application, Type )	
2.3	Details on SERVICE-AFTER-SALES set-up in India including the Address of Agents /Service Centres in India.	
2.4	Any Additional Data to supplement the manufacturing capability of the BIDDER for the subject equipment.	

Suggestive Format of Performance Certificate:

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

**PERFORMANCE CERTIFICATE**

- |   |  |   |
|---|--|---|
| 1 | Supplier of the machine  |   |
| 2 | Make & Model of the M/C  |   |
| 3 | Month & Year of Commissioning  |   |
| 4 | Application for which M/C is used                                      |   |
| 5 | a. Application<br>b. Machining capability                              |   |
| 6 | Performance of the Machine<br>(Strike off whichever is not applicable) | Satisfactory / Good / Average / NotSatisfactory |
| 7 | After sales service<br>(Strike off whichever is not applicable)        | Satisfactory / Good / Average / NotSatisfactory |
| 8 | Any Other remarks  |   |

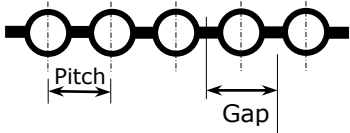
Date:

Signature & Seal of the Authority  
Issuing the Performance Certificate

## PORTABLE, HAND-HELD ELECTRICALLY OPERATED TUBE - END BEVELING EQUIPMENT

### TECHNCAL SPECIFICATION PATR-B

#### STRAIGHT TYPE Qty : 7 Nos.

S.No.	FEATURE	BHEL SPECIFICATION	VENDOR'S OFFER (with complete Technical Details)
1.0	<b>PURPOSE/FUNCTION</b>	<p>The equipment is to be used for the edge preparation of Alloy Steel / Stainless Steel TUBE Ends for butt-joint fit-up and welding. The tubes are part of membrane wall Panels or Tubular Coils of Super Critical Boilers. The machine should be of compact size to allow machining of Spiral Wall Tube Panels for tube and pitch dimensions given below.</p> <p>Tube dia. 38.1mm and Pitch 50.8mm,            Tube dia. 41.3mm and Pitch 54mm in tubular panel            (Pitch: between center of tubes)</p> <div style="text-align: center;">  <p style="margin-left: 150px;">Minimum gap : 61 mm</p> </div>	
1.1	O.D.Chamfering	Outside Beveling to 37.5° angle edge preparation with a land of 1.0 mm to 2.0 mm.	
1.2	Facing	End Facing of Tubes.	
1.3	ID Boring	ID straight boring minimum 25 mm depth and minimum Tube inner dia is 13.1mm (38.1 mm - Th. 3.6mm to 10.67mm)	
1.4	Machining Mode	Tool holder to be suitable for any of the above two operations are to be done simultaneously.	

S.No.	FEATURE	BHEL SPECIFICATION	VENDOR'S OFFER (with complete Technical Details)
2.0	<b>MACHINE OPERATION</b>	Electrically Operated	
2.1	Power Supply	230 +/- 10% V, 50 +/-3 Hz, Single Phase AC Supply, through a 3-Wire System (3rd wire for protective earthing).	
2.2	Input Power Cable	The input heavy duty power cable shall be of 15 meters length with suitable end connector for 3-Pin Socket (Indian standard).	
2.3	Noise Level	Not more than 85 dB, at a distance of one meter from the work spot.	
3.0	<b>JOB DETAILS</b>		
3.1	Tube dimensions	38.1 mm - Th. 3.6mm to 10.67mm 41.3 mm - Th. 4.0mm to 8.2mm 42.4 mm - Th. 4.0mm to 8.6mm 44.5 mm - Th. 4.0mm to 8.7mm 51.0 mm - Th. 4.0mm to 11.0mm 54.0 mm - Th. 3.6mm to 13.49mm 63.5 mm - Th. 4.0mm to 7.1mm	
3.2	Material	SA 213 T11, SA 213 T12, SA 213 T22, SA 213 T91, SA 213 T92, SA 213 TP 347H and SA 213 TP S304H.	
4.0	<b>MACHINE CONFIGURATION</b>	Compact Design, Portable, Handheld and Straight type. (Motor axis to be parallel to the spindle axis)	
4.1	Weight	Not more than 10 kg. Vendor to specify the wt.	
4.2	Overall dimensions (For straight type)	Body Width – less than or equal to 60mm Height – Vendor to specify Length – not more than 500mm. Vendor to specify	
4.3	Job Clamping	O.D. Clamping with a Locking Lever (suitable Jaws for varying job diameter to be provided)	

S.No.	FEATURE	BHEL SPECIFICATION	VENDOR'S OFFER (with complete Technical Details)
4.4	Electric Motor Output Power	Not less than 1200W.Vendor to Specify.	
4.5	Electric Motor Output Toque	Vendor to Specify.	
4.6	Tool holder rpm	100 to 150 rpm. Vendor to Specify.	
4.7	Cutting speed	15 to 20 m/min.	
4.8	Tool Feed(Manual)	Minimum 25 mm. Vendor to Specify.	
4.9	Construction	The equipment shall be made of impact resistant and corrosion resistant metal alloys with suitable coatings.	
4.10	Hook for suspension	Machine shall be provided with a hook to suspend. Vendor to confirm.	
<b>5.0</b>	<b>TOOLINGS</b>		
5.1	O D Clamping Bases (to clamp on to the outer diameter of tubes)	The machine should be capable of clamping tubes with 38.1mm/41.3mm /42.4mm / 44.5mm / 51.0mm/54.0mm/63.5mm (Total :7 sizes)	
5.2	Cutting Tool	HSS 3 / Carbide Tool Bits (HSS with COBALT inclusion)	
5.3	Cutters and Tool Bits	1) 37.5° for O.D.Beveling 2) Facing 3) 'J' style for weld EP 4) ID Boring Tool	
<b>6.0</b>	<b>SPARES</b>		
6.1	Main Equipment	Complete List of Spares including Motor - Armature, Bearings, Contactors, Bushes, etc. to be <b>LISTED ITEMWISE</b> with quantity.	
6.2	Cutting Tools	For each machine Tool Holders /Cutting Heads to hold tool bits Two nos and Tool Bits 20 nos each as per clause 5.3 are required.	

S.No.	FEATURE	BHEL SPECIFICATION	VENDOR'S OFFER (with complete Technical Details)
<b>7.0</b>	MANUALS		
7.1	No of Copies	2 (Two) for Each Machine	
7.2	Language	English	
7.3	O & M Manual Details :	Manual shall contain BLOW-UP details on assembly / dismantling, part numbers with part description for Maintenance, Safety Instructions while using, and Operating Sequence for using the equipment for Beveling, Trouble Shooting Chart.	
<b>8.0</b>	<b>GENERAL</b>		
8.1	Cost Details	Price break-up shall be given separately for main equipment, accessories, cutting tools, spares, etc.	
8.2	Inspection/Testing	The equipment shall be inspected and tested for performance evaluation prior to dispatch. Test Certificate shall be given.	
8.3	Commissioning	Detailed Instruction Sheet shall be given for easy commissioning of the equipment at BHEL works.	
8.4	Guarantee	The equipment shall be guaranteed for a minimum of twelve months from the date of commissioning or eighteen months from the date of dispatch.	
8.5	Catalogue	The offer shall be accompanied with ORIGINAL Catalogues of the offered equipment.	

**PORTABLE HAND HELD ELECTRICALLY OPERATED TUBE END BEVELING EQUIPMENT  
ANGULAR TYPE**

S.No	BHEL Specification	Vendor's Offer
1.0	<b>QUALIFYING CRITERIA</b>	
1.1	The BIDDER / VENDOR (OEM) shall have a minimum of FIVE Years of Continuous Experience in the Design, Manufacture & Supply of Special Purpose / Custom Built Pneumatically operated portable machines for metalworking.	
1.2	Only those vendors ( <b>OEMs</b> ), who have supplied and commissioned <b>atleast TWO numbers of electrically operated hand held type portable tube end chamfering machines</b> similar to the machine specified under Part B, in the past ten years (as on date of opening of Tender) and such machine is presently working satisfactorily for more than one year after commissioning (as on date of opening of Tender) should quote.	
1.3	Vendor has to submit atleast one Performance Certificate from their customers, for satisfactory performance of <b>electrically operated hand held type portable tube end chamfering machines</b> similar to the machine specified under Part B, for a minimum period of one year (as on date of opening tender). For obtaining the Performance certificate, a suggestive format is provided.	

<b>2.0</b>	<b>INFORMATION TO BE PROVIDED BY VENDOR</b>	
2.1	The BIDDER/VENDOR to furnish Reference List of Customers, with full address, details of contact person, where Special Purpose / Custom Built Electrically operated portable machine (for metalworking) have been supplied in the past.	
2.2	Details of Special Purpose / Custom Built Electrically operated portable machines for metalworking supplied to other BHEL units, if any. (Year of commissioning, Application, Type )	
2.3	Details on SERVICE-AFTER-SALES set-up in India including the Address of Agents /Service Centres in India.	
2.4	Any Additional Data to supplement the manufacturing capability of the BIDDER for the subject equipment.	

Suggestive Format of Performance Certificate:

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

PERFORMANCE CERTIFICATE

- |   |  |   |
|---|--|---|
| 1 | Supplier of the machine  |   |
| 2 | Make & Model of the M/C  |   |
| 3 | Month & Year of Commissioning  |   |
| 4 | Application for which M/C is used                                      |   |
| 5 | a. Application<br>b. Machining capability                              |   |
| 6 | Performance of the Machine<br>(Strike off whichever is not applicable) | Satisfactory / Good / Average / NotSatisfactory |
| 7 | After sales service<br>(Strike off whichever is not applicable)        | Satisfactory / Good / Average / NotSatisfactory |
| 8 | Any Other remarks  |   |

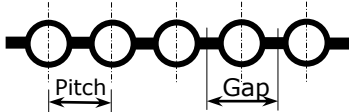
Date:

Signature & Seal of the Authority  
Issuing the Performance Certificate

## PORTABLE, HAND-HELD ELECTRICALLY OPERATED TUBE - END BEVELING EQUIPMENT

### TECHNICAL SPECIFICATION PART-B

#### ANGULAR TYPE – Qty : 5 Nos.

S.No.	FEATURE	BHEL SPECIFICATION	VENDOR'S OFFER (with complete Technical Details)
1.0	<b>PURPOSE/FUNCTION</b>	<p>The equipment is to be used for the edge preparation of AlloySteel / Stainless Steel TUBE Ends for butt-joint fit-up and welding. The tubes are part of membrane wall Panels or Tubular Coils of Super Critical Boilers. The machine should be of compact size to allow machining of Spiral Wall Tube Panels for tube and pitch dimensions given below.            Tube dia. 38.1mm and Pitch 50.8mm,            Tube dia. 41.3mm and Pitch 54mm in tubular panel(Pitch: between center of tubes)</p> <div style="text-align: center;">  <p style="margin-left: 150px;">Minimum gap : 61 mm</p> </div>	
1.1	O.D.Chamfering	Outside Beveling to 37.5° angle or 'J' style edge preparation. All styles with a land of 1.0 mm to 2.0 mm.	
1.2	Facing	End Facing of Tubes.	
1.3	ID Boring	ID straight boring only to 25mm in depth. No taper boring is required; in bore dia is 13.1mm (38.1 mm - Th. 3.6mm to 12.5mm)	
1.4	Machining Mode	Tool holder to be suitable for any of the above two operations are to be done simultaneously.	

S.No.	FEATURE	BHEL SPECIFICATION	VENDOR'S OFFER (with complete Technical Details)
<b>2.0</b>	<b>MACHINE OPERATION</b>	Electrically Operated	
2.1	Power Supply	230 +/- 10% V, 50 +/-3 Hz, Single Phase AC Supply, through a 3-Wire System. [3rd wire for protective earthing]	
2.2	Input Power Cable	The input heavy duty power cable shall be of 15 meters length with suitable end connector for 3-Pin Socket (Indian standard).	
2.3	Noise Level	Not more than 85 dB, at a distance of one meter from the work spot.	
<b>3.0</b>	<b>JOB DETAILS</b>		
3.1	Tube dimensions	38.1 mm - Th. 3.6mm to 10.67mm 41.3 mm - Th. 4.0mm to 8.2mm 42.4 mm - Th. 4.0mm to 8.6mm 44.5 mm - Th. 4.0mm to 8.7mm 51.0 mm - Th. 4.0mm to 11.0mm 54.0 mm- Th. 3.6mm to 13.49mm 63.5 mm - Th. 4.0mm to 7.1mm	
3.2	Material	SA 213 T11, SA 213 T12, SA 213 T22, SA 213 T91, SA 213 T92, SA 213 TP 347H and SA 213 TP S304H.	
<b>4.0</b>	<b>MACHINE CONFIGURATION</b>		
4.1	Weight	Not more than 10 kg. Vendor to specify the weight.	
4.2	Overall dimensions (For angular type)	Width – less than or equal to 60mm Height – Vendor to specify Length – less than or equal to 360mm	

S.No.	FEATURE	BHEL SPECIFICATION	VENDOR'S OFFER (with complete Technical Details)
4.3	Job Clamping	O.D. Clamping with a Locking Lever (suitable Jaws for varying job diameter to be provided)	
4.4	Electric Motor Output Power	Not less than 1200 W. Vendor to Specify	
4.5	Electric Motor Output Toque	Vendor to Specify	
4.6	Tool holder rpm	100 to 150 rpm.Vendor to Specify.	
4.7	Cutting speed	15 to 20 m/min.	
4.8	Tool Feed (Manual)	Minimum 25 mm.Vendor to Specify.	
4.9	Construction	The equipment shall be made of impact resistant and corrosion resistant metal alloys with suitable coatings.	
4.10	Hook for suspension	Machine shall be provided with a hook to suspend. Vendor to confirm.	
<b>5.0 TOOLINGS</b>			
5.1	O D Clamping Bases (to clamp on to the outer diameter of tubes)	The machine should be capable of clamping tubes with OD38.1mm/41.3mm /42.4mm / 44.5mm / 51.0mm/54.0 and 63.5mm (Total : 7sizes)	
5.2	Cutting Tool	HSS 3 / Carbide Tool Bits (HSS with COBALT inclusion)	
5.3	Cutters and Tool Bits	1) 37.5°for O.D.Beveling 3) 'J' style for weld EP 4) ID Boring	2) Facing

S.No.	FEATURE	BHEL SPECIFICATION	VENDOR'S OFFER (with complete Technical Details)
<b>6.0 SPARES</b>			
6.1	Main Equipment	Complete List of Spares including Motor - Armature, Bearings, Contactors, Bushes, etc. to be <b>LISTED ITEMWISE</b> with quantity.	
6.2	Cutting Tools	For each machine Tool Holders /Cutting Heads to hold tool bits Two nos and Tool Bits 20 nos each as per clause 5.3 are required.	
<b>7.0 MANUALS</b>			
7.1	No of Copies	2 (Two) for Each Machine	
7.2	Language	English	
7.3	O & M Manual Details	Manual shall contain BLOW-UP details on assembly / dismantling, part numbers with part description for Maintenance, Safety Instructions while using, and Operating Sequence for using the equipment for Beveling, Trouble Shooting Chart.	
<b>8.0 GENERAL</b>			
8.1	Cost Details	Price break-up shall be given separately for main equipment, accessories, cutting tools, spares, etc.	
8.2	Inspection/Testing	The equipment shall be inspected and tested for performance evaluation prior to dispatch. Test Certificate shall be given.	
8.3	Commissioning	Detailed Instruction Sheet shall be given for easy commissioning of the equipment at BHEL works.	
8.4	Guarantee	The equipment shall be guaranteed for a minimum of twelve months from the date of commissioning or eighteen months from the date of dispatch.	
8.5	Catalogue	The offer shall be accompanied with ORIGINAL Catalogues of the offered equipment.	