



सीएसआईआर - राष्ट्रीय धातुकर्म प्रयोगशाला
CSIR - NATIONAL METALLURGICAL LABORATORY
(Council of Scientific & Industrial Research)

Burmamines, Jamshedpur - 831 007
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CORRIGENDUM

Tender Reference No. :- P/NC/1325/GSR/SM/OTE/23-24/R

Tender ID :- 2024_CSIR_215672_1

**Item Name :- Supply, Installation & Commissioning of
ULTRASONIC SHOT PEENING (USP) MACHINE**

NOTE: The Bids must be submitted in the Central Public Procurement Portal (URL:<https://etenders.gov.in/e procure/app>) only. Manual/Offline bids shall not be accepted under any circumstances. Bidders should quote in INR only.

Consequent to the Pre-Bid Meeting held on 29/11/2024, the revised technical specifications are attached in Annexure-A and Annexure-1.

The bidders are requested to submit their bid based on this revised technical specifications as per Annexure-A and Annexure-1

All other terms and conditions shall remain same.

Stores & Purchase Officer,
CSIR-NML, Jamshedpur

ANNEXURE-A

Preamble: Supply, installation and commissioning of Ultrasonic Shot Peening (USP) machine along with an air compressor for shot peening flat and curved metallic components/samples to induce compressive residual stresses on the surface of the component.

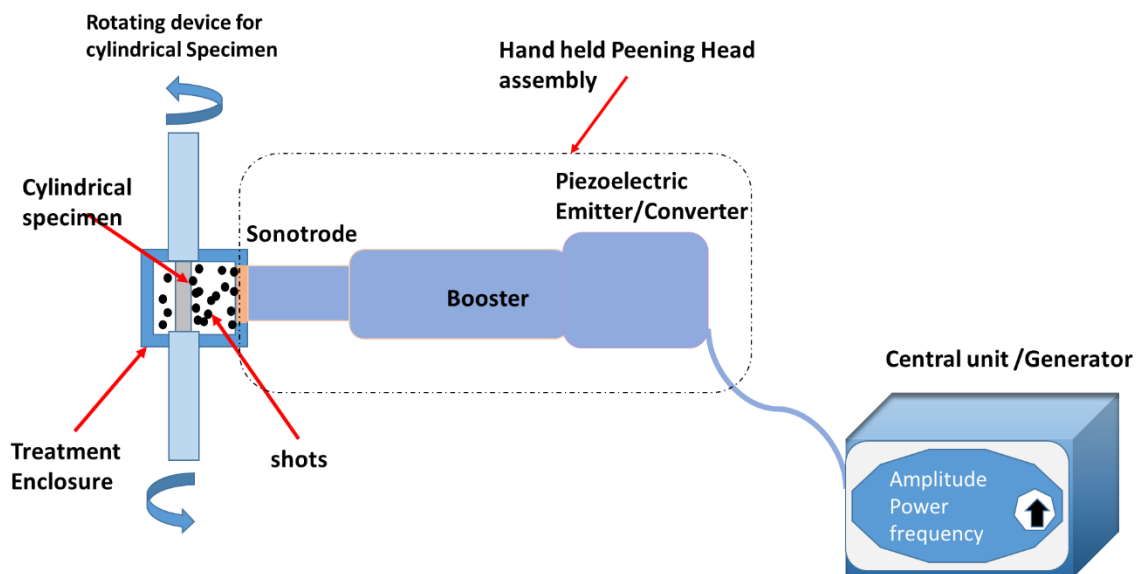
SECTION 1: TECHNICAL SPECIFICATIONS

1. USP Method

- USP provide a means of transferring kinetic energy to the peening media (shots) inside a hermetically sealed enclosure using a metallic element vibrating at an ultrasonic wave frequency of 20 kHz or higher.
- The USP equipment must conform to the following standards
 - SAE AMS2580“Shot Peening, Ultrasonically Activated”
 - SAEAMS2585 "Shot peening Media, Ultrasonically Activated", Rev A.

2. The USP shall be Portable with a hand-held Peening head with the following ultrasonic elements:

- Generator (Digital)
- Emitter (also called converter)
- Booster
- Sonotrode (also called Horn)
- Central Unit (including the Generator, the Human Machine Interface, and components to control the process)
- Treatment Enclosures



Schematic of ultrasonic shot peening machine with cylindrical specimen with rotating arrangement



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- 2.1. Generator – digitally generates a high-voltage electric sine wave at the ultrasonic frequency
 - Digital type.
 - Output Signal: 20 kHz +/- 0.4 kHz or higher
 - Peening Amplitude: 40 – 70 microns or wider range
- 2.2. Emitter (Converter) - Converts the high-voltage electric sine-wave signal to mechanical displacement by the piezoelectric elements
 - Frequency: 20kHz
 - Vibration amplitude output: 20 μ m peak to peak or higher
- 2.3. Booster: Amplifies the mechanical energy
 - Material: Titanium or similar high corrosion-resistant material
 - Min 20kHz or higher
- 2.4. Sonotrode - transfer the kinetic energy to the peening media (shots)
 - Material: Titanium or equivalent materials;
 - Shape: Rectangular in shape topeen the various samples types given in the Annexure 1
 - Resonating Frequency: 20kHz or higher
 - Vibration amplitude: up to 80 μ m peak/peak or higher, homogeneous at the external surface area

3. Peening Head

- Consists of components S.No. 2.2 to 2.4 in addition to the specific housing and umbilical cable and connectors
- Shall be Hand-held and portable

4. Shots (peening media)

- Material and hardness: As per SAE AMS2585.
- Shots size: 1.0 mm, 2 mm and 3.0 mm diameter
- Quantity: 100 grams each

5. Power Parameters of Ultrasonic Shot Peening equipment

- Input Voltage: 230 +/-10% V AC; 50/60 Hz; Shall be compatible to Indian power supply
- Maximum Power: 1000 Watts (without any additional device)
- Nominal Standard Power: 250 - 400 Watts
- Cooling media: Compressed air

6. Central Unit

- Central unit is including the Generator
- Touch screendisplay Human Machine interface
- User friendly software programs for working with USP parameters
- Portable and table top

7. Treatment Enclosures

- Hermitically sealed enclosures for Media to uniformlypeen the component surface



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- Material – Polyoxymethylene (POM) or equivalent hard plastic material with low damping coefficient or heat-treated hard steel. Shall be abrasion resistive during peening.
- Treatment enclosure shall accommodate various for sample types given in Annexure 1.
- Automaticrotating device with electrical motorfor peening cylindrical samples

8. Air compressor

- Portable compressor
- Compressed Air pressure: 6 Bar \pm 15% or higher;
- Flow rate: 250 – 300 Litre/min or higher.
- noise level \leq 60dB
- Dry pneumatic air (ISO 8573-1) Class 4 (Water/particles) & Class 2 (Oil)

Section II: The following requirements has to be met by the vendors.

Essential Requirements	<ul style="list-style-type: none">— Manufacturer has to certify/guarantee the availability of accessories/spares for a minimum 5 years after the installation— A complete list of spares and consumables required shall be provided separately with cost.— At least one previous purchase order copy and contact details of the users of a similar type of system shall be provided along with the offer.— Vendor must ensure the availability of service centre in India with qualified engineers
Eligibility criteria	<ul style="list-style-type: none">— Quotations only from the original manufacturer of the equipment or their authorized agents will be accepted.— The bidder should have supplied minimum 1 or more similar equipment in last 5 years of time in India or abroad in government or private industries.— Relaxation in case of MSME and Start-Ups will be given as per the Government rules. <p><i>Note: i. Relaxation of prior turnover and prior experience is applicable to only to all Start-ups recognized by Department for promotion of industry and internal trade(DPIIT) subject to meeting of quality and technical specifications. Start-ups may be MSME or otherwise.</i></p> <p><i>ii. Relaxation of prior turnover and prior experience is applicable only to all MSMEs recognized by the Department of Promotion of</i></p>



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	<i>Industry & internal trade (DPIT) subject to meeting of quality and technical specifications.</i>
Scope of Vendor	<ul style="list-style-type: none">— Supply, installation, commissioning of USP machine at CSIR-NML, Jamshedpur, India.— Freight upto CSIR-NML, Jamshedpur.— Equipment handling, experimental demonstration and necessary training shall be given to personnel for 5 people by the Supplier at CSIR-NML.— Detailed pre-installation requirements must be furnished along with the offer such as power, space, etc.
Scope of CSIR-NML	<ul style="list-style-type: none">— CSIR-NML will provide Electrical Power, space, and sample with various geometries. All other additional and necessary requirements needed to be provided by the supplier.
Calibration	<ul style="list-style-type: none">— Fully calibrated system along with all standards for future calibration & standardization of the equipment.
Manuals	<ul style="list-style-type: none">— Operational and maintenance manuals in hard as well as soft copies in English.
Warranty	<ul style="list-style-type: none">— Standard Warranty of 12 months
AMC after expiry of the warranty	<ul style="list-style-type: none">— Non-comprehensive AMC, after the expiry of the standard warranty, should be quoted separately for a minimum of three years.
Delivery Period	<ul style="list-style-type: none">— 4 months from the date of receipt of PO
Acceptance criteria	<ul style="list-style-type: none">— The vendor should successfully demonstrate USP on various sample geometry provided at CSIR-NML.



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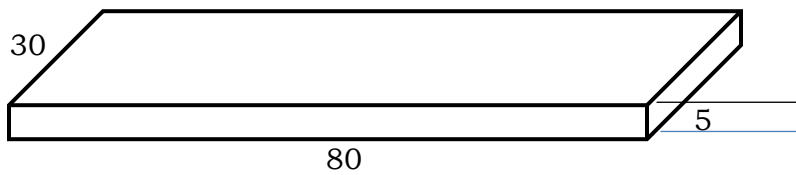
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ANNEXURE-1

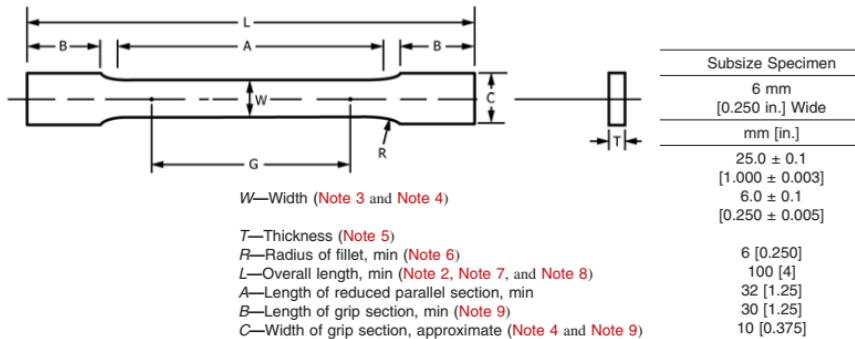
Specimen/Types as per ASTM E8 and ASTM E466

1. Rectangular plate:

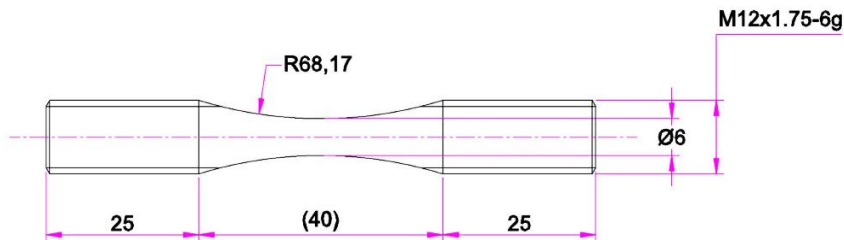
Size: 80 mm x 30 mm x 5 mm



2. Flat Sample



3. Fatigue continuous radius and with gage length specimens: 2 Nos

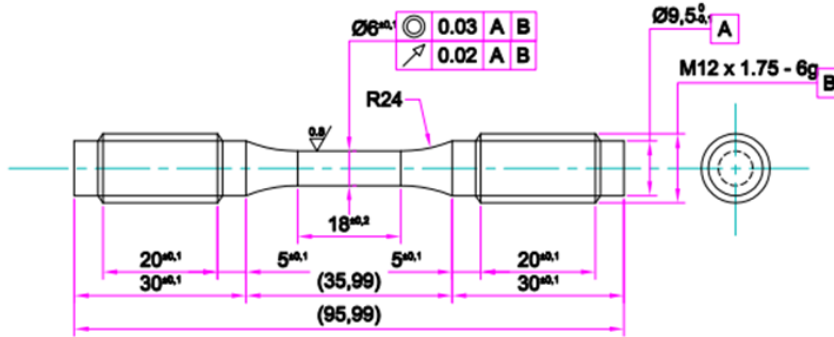




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