

Tender document

Department of Civil Engineering
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Enquiry No.: CE/TE/23-24/03/HSM

Opening date: 04/08/2023

Closing date: 31/08/2023

Quotations (***both technical and financial***) are invited for laboratory high shear mixer for our research purpose **satisfying the following technical requirements (Quantity - 01)**. The detailed Specification of the laboratory high-shear mixer is described below.


Technical Specification for laboratory high shear mixer

- ❖ **The maximum rotational speed of the rotor**: We are looking for at least 10,000 rpm (with the capability to change the speed digitally with the least count for changing the speed should be 50 rpm or lower). The control electronics system (e.g., to change rotational speed, display system, etc.) utilized in the high-shear mixer should be of the best repute in the current time.
- ❖ **Stability under operating temperature**: Our operating temperature for the research (***typically bitumen or in other words, asphalt binder as material***) is close to 150-200 degrees C. Therefore, the rotor/stator arrangement or cowl blade head unit is expected to work perfectly without distortion/damage to temp. of at least 250°C to take care of temperature variation, if any.
- ❖ **Rotor-stator unit dimension**: The outer-to-outer extremities of the rotor/stator head, anything between 50 mm-70 mm should be provided. For this, the internal diameter of the stator should be anything from 45 mm to 50mm. This is important because we typically use cylindrical containers with diameters of close to 100 mm or so with a total volume of close to 1.5 liter. We also use relatively higher diameter containers sometimes (close to 180 mm or so) with a total volume of close to 2.5-5 litres. We typically fill these containers with mixing material to 40%-60% of the total container volume for mixing purposes.
- ❖ **Detachability option for stator**: The stator should be detachable so that one can easily change the stator of the same size (however, with different hole dimensions on the stator face).
- ❖ **Stator heads**: Stator heads of the same size; however, with different hole sizes on its surface (or in other words, hole size/shape on its surface) should be provided, which can cover hole (or opening) size range of let's say 1 mm to 10-15 mm or so. Stators with rectangular, circular, or slot-shaped holes (with different dimensioned holes on different stator pieces) should be provided. Please note that the size and shape of the holes/slots on a specific stator should be constant/uniform/equal.
- ❖ **Cowl Blade head**: A simple disperser head (also known as Cowl Blades) (i.e., twisted blades at the end instead of a rotor-stator arrangement) should also be provided along with rotor-stator head unit. Similar to the rotor-stator arrangement, the homogenizer head's dimension should also be in a similar outer-to-outer diametrical range.
- ❖ **Interchangeability**: As highlighted before, there should be an option for changing the working head to the cowl blade in the same machine/model. This will help us to replace the rotor-stator unit with the cowl blade unit and vice-versa with the same machine as per our research needs.
- ❖ **Machine capacity**: With minimum power of 1 HP (or 0.75kW). This is important because of the higher viscosity of the martial we will be dealing with.

- ❖ **Changing the vertical position of rotor-stator or cowl blade unit**: Should have an arrangement for changing the vertical position of the rotor-stator head efficiently.
- ❖ **Future service expectation**: Certainly expect good service from your company in case something goes wrong, or if we want some modification in the future.

Additional Terms and Conditions

- ❖ The bidder should be a registered OEM or must have valid authorization from a particular OEM.
- ❖ The bidder should have a valid ISO certificate – ISO 9001:2015, ISO 37001:2016 and ISO 45001:2018.
- ❖ AFFIDAVIT ON RUPEES 100 STAMP PAPER stating that the bidder is not under liquidation & blacklisted by any State Govt. or Central Govt. Organization or any Govt. undertaking department or any PSU's.
- ❖ Bidder must have dedicated service team for the after sales service. Bidder should have Escalation Matrix and all the details must be attached along with the bid documents.
- ❖ Min. 10 years spare support on cost basis by bidder after warranty period.
- ❖ Bidder should supply instruments with NABL calibration certificates wherever applicable.


Regards, 24/8/23
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