

**DEPARTMENT OF METALLURGICAL AND MATERIALS ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY: TIRUCHIRAPPALLI - 620 015**

27.12.2013

Minutes of the Pre-Bid conference

Tender Notification No.: NITT /F.NO: 007/UG LAB MODERNISATION/PLAN 2013-2014/MME


The pre-bid conference was held on 27.12.2013 at 4.00 pm. in the committee room of MME to discuss the specification published in the tender. All other terms and conditions mentioned in the tender document remains same.

Based on the discussion, the committee recommends the following amendments to the specification.

Specification for Fretting Corrosion Facility

| Original tender specification | | Amended specification |
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| ITEM | SPECIFICATIONS | |
| Contact configuration | Ball on plate (point contact) Pin on plate (area contact) | No amendment |
| Ball holder size | 6 -12mm | No amendment |
| Pin holder size | 6 -12mm | No amendment |
| Load range | 0.5 - 300N | No amendment |
| Frequency | 1 -80 Hz | No amendment |
| Stroke Length | 0.5 to 15mm | No amendment |
| Frictional force | +150N to -150 N with LC of 0.1N | No amendment |
| Wear measurement | 0 to 2000 μ m Least count 1 μ m | Or any other better measurement system |
| Oscillatory movement | Amplitude and frequency should be programmable | No amendment |
| High speed online data acquisition system | friction force, co-efficient of friction, Normal Load | No amendment |
| Test duration | 0 - 99 Hours | No amendment |
| Power | 230V/5A/1P/50Hz | No amendment |
| Features | <ul style="list-style-type: none"> ➤ Repeatable dynamic friction measurements, easy to calibrate ➤ Fully computer controlled and online real time data acquisition system with ups and all in one color laser Printer along with software's for analyzing and to extrapolate results should be provided along with equipment as default attachments. ➤ The structure should be rigid and vibrations maintained to a minimum. The structure should be a standalone bench top system. ➤ Lubrication bath for friction and wear test, option to be provided as default attachment. ➤ Automated loading disc rotatory oscillation and other related accessories to be provided as optional attachment. | <p style="text-align: center;">And Electric isolation of disc and pin with rest of the system</p> <p style="text-align: center;">Two sets of graphite electrode rods to be placed at two different distances, two graphite electrodes per set.</p> |

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|---|--|--|
| | <ul style="list-style-type: none"> ➤ The equipment should be synchronized with an Electrochemical Workstation for measuring corrosion, to be isolated from the rest of system electrically, leads from plate and the pin / ball should be taken out for working electrode, Platinized platinum grid to be placed at a distance, immersed in the corrosive medium to act as auxiliary electrode. Provision to be made to place a saturated calomel electrode to be placed in contact with the electrolyte. Whole of corrosion and wear to be immersed in the corrosive medium and electrically isolated with each other. ➤ Part of equipment subjected to corrosion medium should be easy to remove, clean and fix it back as the test is over. ➤ Electrochemical workstation can be procured by the supplier from outside their firm. ➤ Wear resistant hard Ball Pins and Plates to be provide along with all details like surface roughness and hardness etc. Material to be used are WC, SiC, Al₂O₃,YSZ etc... | <p>And Sleeve should be leak proof to avoid spillage of corrosion medium and to reduce the noise and electrochemical output.</p> <p>Additional 1 thermocouple for bottom sample along with electrode Sample size of Ball/Pin are: 6mm, 8mm,10mm& 12mm of WC, SiC, Al₂O₃, YSZ each 5 nos. plate size of 30 x30 mm made of SS -10Nos & WC- 10Nos.to be provided along the regular equipment Additional set of the above to be quoted as optional accessories. And Jigs to be provided to prepare electrochemically isolated test specimens for different wear track diameter.</p> |
| Specification for the Electrochemical System | <ul style="list-style-type: none"> ➤ Compliance Voltage : ±10 V ➤ Current: 2Amps ➤ Should be able to operate and perform both AC/DC Techniques, ➤ Built in Frequency Response Analyzer (FRA) for performing EIS measurements in the frequency range of 10uHz-1MHz with selectable amplitudes from 0.1mV-1000mV ➤ USB controlled system/ software for 32-bit/ 64 bit Windows 7 or windows xp program for electrochemical experiments and analyses. ➤ Software techniques Required: , Corrosion, Rp,tafel,PR,Potential-Galvano static, Potential-Galvano dynamic, EIS CV,SWV, Multiple CV,CA,CC,CP,Pulse Voltammetry, NPV,DPV,RNPV | <ul style="list-style-type: none"> • Compliance Voltage : ±12 V at 2A current • Current resolution 10pA or better • Applied voltage resolution -500nV or better • Option to measure external device voltage up to ±10 V • Additional 1 thermocouple for bottom sample. • Suitable data acquisition system to be provided. • CV, SWV, Multiple CV, CA, CC, CP, Pulse Voltammetry, NPV, DPV, RNPV techniques not required. |
| | Optical profilometer attachment to be provided as an optional attachment to create a 3D (X, Y, Z) image of the wear profile at less than 0.1 μm accuracy. | No amendment |
| | | Should quote for 5 years AMC |
| Full technical specification with pamphlet required | | |


Dr. S. P. Kumaresh Babu
Associate Professor – MME
Initiating faculty - NITT