

Addendum 02

The Pre – Bid Meeting was held on **25/11/2019** at **3.30 p.m.** in the **Board Room**, NITK Surathkal for the purchase of “**Friction and Wear Monitor**” (**Tender Notification No: NITK/CRF/FWM/04 Dated: 04/11/2019**). The following queries were discussed & the Reply/Clarification given to the prospective bidders.

Queries & Reply/Clarification

SI. No.	NITK Tender Specifications	Questions asked by the vendor	Reply/Clarification	Changes to the Tender
1	Rockwell C diamond indenter for scratching (R=200 μm, 120°) with certificate. Optionally quote one extra indenter as spare indenter. It is mentioned that indenter is Rockwell C with R = 200-micron, 120 degree	Ducom: However, ISO 27307, indicates that the indenter tip should have R = 20 micron. Please clarify.	Committee agrees with the suggestion. Committee also feels that since unit will also be used for wear and friction measurement Rockwell C with R= 200 micron and 120 degree will be useful. However, Rockwell C with R= 20-micron and 120 degree will be added to comply ISO 27307	Under Tender Document, Annexure-H, page no. 30/32, Under Detailed Technical Specifications, Committee decided to modify it as: “Standard indenter is Rockwell C with R =20 micron and 120 degree. Also, another compatible Indenter with R= 200 micron and 120 degree to be quoted”.
2	Calibration samples are mentioned to be TiN and copper.	Ducom - However, ISO 20502, indicates that the certified reference material should be BCR 692 which is a diamond-like carbon coated substrate	Committee agrees with the suggestion. Hence, decides to add BCR 692, in addition to TiN and Copper.	Under Tender Document, Annexure-H, page no. 30/32, Under Detailed Technical Specifications, Committee decided to modify it as: “Calibration samples are BCR 692 (Diamond like carbon) as per ISO 20502 along with TiN and Copper”.

3	<p>Motorized X (minimum 75 mm) and motorized Y (minimum 75) tables, with resolution of 0.25 µm or better.</p>	<p>Ducom - ISO 20502 standard mentions that resolution should be 5 microns. Please clarify on the requirement for 0.25-micron resolution.</p>	<p>Committee agrees with the statement of Ducom on the resolution. But when researcher has to study the effect of particles/reinforcement constituents on the damage initiation, better positioning of sample is required.</p>	<p>As per the tender document</p>
4	<p>Scratch speed: variable between 0.5 mm/minute to 300 mm/minute (or wider than this range)</p> <p>Compatible to ISO 20502 – For fine ceramics, detection of adhesion of ceramic coatings by scratch</p> <p>Compatible to ISO 27307 – For thermal sprayed coatings- evaluation of adhesion/cohesion of the coatings by transverse scratch testing</p>	<p>Both ISO 20502 and ISO 27307 highlight that scratch speed should be in the range of 0.1 to 10 mm/min. Higher speeds are not recommended due to two factors</p> <p>(a) the damage modes and critical failure loads might change if the speeds are increased to > 10 mm/min. Repeatability of failure loads is poor at higher speeds making it a challenge to generate accurate adhesion data for the coatings.</p> <p>(b) at higher scratch speeds, there is greater likelihood of damaging the diamond indenter tip. This necessitates frequent replacement and recalibration which would affect smooth usage of the scratch tester for the intended research projects.</p> <p>Please clarify</p>	<p>Committee agrees with the statement of scratch speed by the Ducom. But during research, sometimes, deformation and coating behaviour under high speed scratch conditions, need to be explored. Hence, higher speed was specified.</p>	<p>As per the tender document.</p>

Following points to be included in the Addendum 02:

1. Under Tender Document, Annexure-H, page no. 30/32, Under Detailed Technical Specifications,

“Load actuator=Electromagnetic or piezoelectric” may be read as **“Load Actuator = Electromagnetic or piezoelectric or servo motors (other parameters remain same)”**.

2. Force measurement: **Strain gauge based or piezoelectric based or inductive force based or capacitive force based or electromagnetic force based or electrodynamic based or magnetoelastic based (other parameters remain same)**

3. Under Tender Document, section 2: **CONDITIONS OF CONTRACT**, page no. 13 of 32, Clause no: 2 may be read as

“In case of import, CIP rates should be quoted. All components of expenditure to arrive by air at Bangalore need to be explicitly specified. If ship by sea, the nearest seaport is Mangalore / Chennai. However, during financial comparison 6% additional charges will be levied to cover customs clearance and local transport”

It is decided to extend the Bid submission date by following dates:

Last date for request tender document : 29/01/2020, before 3.00 p. m.
Last date for Bid submission : 29/01/2020, before 4.00 p. m.
Bid opening date(tentative) : 31/01/2020 @ 3.00 p.m.

Sd/-
Buyer
(Dr. Ravishankar K. S.)

Sd/-
Chairman
Central Research Facility
NITK, Surathkal