TECHNICAL SPECIFICATION FOR INVERTED METALLURGICAL MICROSCOPE

Essential Features:

- The equipment should have capabilities of imaging metals, non-metals and polymers (e.g. aluminum, magnesium, copper and their alloys, high strength materials such as stainless steels, titanium alloys, super alloys and metal matrix composites etc.)
- The required specifications are tabled as following:

Technical Specifications:

Sl. No.	Part/Feature	Description
01	**Microscope Frame**	• Microscope Frame for Reflected light illumination with camera port. • Suitable C-Mount adapter to fix the camera.
02	**Focus**	• Manual, coarse and fin coaxial handle • Focus stroke 9 mm (2 mm above and 7 mm below the stage surface) or better • Fine stroke 100 um / rotation or better • Graduation on Fine Focus 1 μm or better • Coarse stroke 7 mm / rotation or better • Pre-focusing limit stopper and torque adjustment on coarse focus
03	**Reflected light illuminator**	Suitable for: • For BF (Bright Field)/DF (Dark Field) • Single lever switchover for BF/DF observation • Required filter sliders are required to use BF and DF imaging • Manual AS and FS settings • Slot for Polarizer and Analyzer filter slider • LED light source
04	**Observation Tube**	• Binocular Observation tube, inclination angle: 90° reverse image • Eyepiece Pair: Wide field 10x with F.N 22 or better
05	**Light Source**	• LED Light source for Reflected light illumination suitable for BF/DF Observation • White LED: 5700K or higher • Average life time: Approx. 50,000 hrs. or better
06	**Revolving nose piece**	• Revolving nosepiece with slot for DIC suitable for BF/DF
07	**Objectives**	• M Plan Semi apochromatic grade objective 5X/ aperture 0.15(or better), WD 12mm or higher • M Plan Semi apochromatic grade objective 10X/ aperture 0.3(or better), WD 6.5mm or higher • M Plan Semi apochromatic grade objective 20X/ aperture 0.45(or better), WD 3mm or higher • M Plan Semi apochromatic grade objective 50X/ aperture 0.8 (or better), WD 1mm or higher

		• M Plan Semi-apochromat BD objective 100X/ aperture 0.9 (or better), WD 1mm or higher
08	**Mechanical Stage**	• Right handle stage • Stage area: 200 (Y) mm x 200(X) mm or higher size • Movable range: 40 (Y) mm x 40(X) mm or higher size
09	**Digital Color Microscope Camera**	• Single Chip Digital Color Microscope Camera Minimum 5 Mega Pixel CCD • Sensor size – 2/3 Inch color CCD • A/D converter- 12bit • Exposure time - 50 µs – 8 s • Min 22 frames per second (for resolution 1920 x 1080, Full HD 16:9) • Min 30 frames per second (for resolution 1224 x 960) • USB3.0 Connectivity
10	**Basic Measurement Software**	• Software for Basic image acquisition movie acquisition (Avi and MP4 format preferred) • Annotations, layer management, scale bar, cross hair, info stamp display, and image filters should be there • Digital reticle/grid, line profile display should be there • Basic interactive measurement (distance, angles, rectangles, circles, ellipses, polygons, circle-to-circle distance, angle ruler, and line ruler) and data export to MS Excel • Report creation (MS Word, and MS Excel formats)
11	**PC**	• Dell/HP/Lenovo Intel i5 Processor based System • With 8 GB RAM, 2 GB graphics card, 1 TB HDD • Windows 10, 64bit OS, MS Office 2016 • 22" LED Monitor • Keyboard & Mouse
12	a) Grainsize analysis module (intercept method) b) Grainsize analysis module (planimetry method) c) Nonmetallic inclusion rating in steel, worst field method d) Porosity Analysis e) Cast Iron analysis module f) Layer Thickness Measurement module	
OTHER TERMS and CONDITIONS		
13	**Warranty period**	12 months from the date of installation/commissioning.
14	**Installation**	Installation should be done by factory trained engineers at our site, free of charge.
15	**GST**	Offer should be made @ 5 % GST against concessional GST certificate.
16	**Delivery condition**	Equipment to be delivered in test ready, factory calibrated condition.
17	**Compliance statement**	Compliance statement needs to be provided clearly specifying COMPLY/NON-COMPLY with remarks of all of the points mentioned above.

The quotes should be addressed to:

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