



INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
MATERIALS MANAGEMENT DIVISION
Powai, Mumbai 400076.

Ref. PR No. 1000053231

Item Description: 3D Printer electron beam powder bed fusion (E-PBF) system (Qty-1)

Sr. No	Item Description	Detailed Technical Specification	Technical Compliance (Yes / No)	Additional Information (if any)																																								
1.	3D Printer electron beam powder bed fusion (E-PBF) system	1. specifications (Operation) <table><thead><tr><th>Parameter</th><th>Value</th></tr></thead><tbody><tr><td>Melt module</td><td>1</td></tr><tr><td>Build module</td><td>Fixed</td></tr><tr><td>Manual reload Time</td><td>< 30 minutes</td></tr><tr><td>Ionizing Radiation</td><td>< 0.2 μ Sv/h at</td></tr><tr><td>User interface</td><td>Development User Interface [DUI]</td></tr><tr><td>User interface</td><td>Production User Interface [PUI]</td></tr></tbody></table> 2. Electron gun (Beam generation) <table><thead><tr><th>Parameter</th><th>Value</th></tr></thead><tbody><tr><td>Compatibility e – MELT-iM</td><td>100 %</td></tr><tr><td>Electron gun type</td><td>Diode, laser heated</td></tr><tr><td>Cathode</td><td>Sintered LaB6</td></tr><tr><td>Cathode heating</td><td>Laser</td></tr><tr><td>Electron gun efficiency</td><td>> 75 % at 6 kW beam power</td></tr><tr><td>Beam Power Max</td><td>6 kW</td></tr><tr><td>Beam acceleration Voltage</td><td>60 kV</td></tr><tr><td>Beam power regulator tuning</td><td>Automatic</td></tr><tr><td>Laser Type</td><td>CO2 RF laser</td></tr><tr><td>Laser power</td><td>> 70 W</td></tr><tr><td>Laser wavelength</td><td>10 μm</td></tr><tr><td>Laser lifetime</td><td>10000 hours</td></tr></tbody></table>	Parameter	Value	Melt module	1	Build module	Fixed	Manual reload Time	< 30 minutes	Ionizing Radiation	< 0.2 μ Sv/h at	User interface	Development User Interface [DUI]	User interface	Production User Interface [PUI]	Parameter	Value	Compatibility e – MELT-iM	100 %	Electron gun type	Diode, laser heated	Cathode	Sintered LaB6	Cathode heating	Laser	Electron gun efficiency	> 75 % at 6 kW beam power	Beam Power Max	6 kW	Beam acceleration Voltage	60 kV	Beam power regulator tuning	Automatic	Laser Type	CO2 RF laser	Laser power	> 70 W	Laser wavelength	10 μm	Laser lifetime	10000 hours		
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		Standard version	400 V 3 Phase		
		Peak power consumption	8 kW		
		4 Build module			
		Parameter	Value		
		Dimension	1.8 x 0.9 x 1.5 m		
		Max weight	600 Kg		
		4.1 Build			
		Parameter	Value		
		Build size	100 mm diameter		
		Build tank diameter	110 mm		
		Build height	325 mm		
		Non ceramic sealing	Yes		
		4.2 Powder feed			
		Parameter	Value		
		Powder feed method	Push piston		
		Powder feed minimum dosage	40mm ³		
		Powder feed volume	7 litres		
		Parameter	Value		
		Recoater stroke flatness	+ - 25µm		
		Recoater max speed	500 mm/s		
		Recoater max acceleration	5000 mm/s ²		
		Recoater head configuration	Process dependent		
		Recoater head replacement	< 3 minutes		
		4.4 Active Build cooling			
		Parameter	Value		
		Build cooling	Active water cooling		

		Build cooling flow	Process dependent		
		4.5 ProHeat			
		Parameter	Value		
		Max temperature	2000 °C		
		Material	Graphite		
		Travel time	0.4 s		
		5 Software			
		Parameter	Value		
		Build file Format	Open Build File [OBF]		
		Beam path definition	Open Beam Path [OBP]		
		Build logs format	Open Build Record [OBR]		
		Build control software	Build Director		
		Build file preparation	Pixelmelt™ 3 rd parties & open format		
		5.1 Build controls			
		Parameter	Value		
		Real time variable process	Process variables		
		Build file optimization	Pixelmelt™		
		Process package	Ti, W		
		5.2 Build sensorics			
		Parameter	Value		
		Periscope camera	Near infrared (NIR)		
		Pyrometer	Yes		
		Backscatter detector	Yes		
		Residual Gas Analyser Optional	Yes		
		Auxiliary ports			
		5.3 Monitoring			
		Parameter	Value		

		Remote handlingYes Build observation through cameraYes Build observation with backscatter imagesYes Remote parameter adjustmentsYes 5.4 Factory integration ParameterValue MES integration ERP integration Remote operationSystem designed for Remote control operations Online diagnostics24/7 monitoring 6 Auxiliary equipment ParameterValue Vacuum cleaner Blasting cabinet Powder Sieve Powder Blender Label printer 7 Turnaround process ParameterValue ChecklistsDigital and guided Build report integrationAutomatic Powder fill levelRead from build file 8 Market Compliance ParameterValue EUCE US UKCE Canada ChinaCE Terms and Conditions – 1) Installation, Training and Documentation -		
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		• The supplier shall be responsible for the complete installation and commissioning of the system. • The supplier shall provide the on-site training covering system operation and best practices. <u>Warranty</u> • A comprehensive warranty shall be provided for a period of one (1) year from the date of supply. Payment Terms- • 100% payment shall be released upon delivery through ICICI Foundation on behalf of IIT Bombay.		
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