

TD-106-2 Rev.No.0	Form No		PRODUCT STANDARD HYDERABAD		GT53123	
					Rev.No.01	
					PAGE 1 of 5	
COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARATH HEAVY ELECTRICALS LIMITED. It must be not used directly or indirectly in any way detrimental to the interest of the company.		SUPPLY, ERECTION & COMMISSIONING OF PREPARATORY SYSTEM FOR FLUORESCENT PENETRANT INSPECTION FACILITY				
		1. SCOPE This specification provides a standard for the procurement, acceptance and installation of a Ultrasonic cleaning station for Fluorescent Penetrant inspection line and associated material handling system. 2. PURPOSE Ultrasonic cleaning station is required for removing grinding particles prior to FPI Inspection of Frame 5, Frame 6B and Frame 9E Turbine Buckets and Nozzles. 3. JOB SPECIFICATION 3.1 Maximum Size of the job : 600x800x300 mm -1 Nos 3.2 Maximum weight of the job: 90 Kg -1Nos 4. FEATURES OF FPI FACILITY 4.1 ALKALINE ULTRA SOCNIC CLEANING STATION 4.1.1 To remove the grinding particles after creep feed grinding on the component before conducting FPI. The tank should be provided with suitable number of transducers and cooling coils. 4.1.2 Tank should have minimum dimensions of 600 x 600 x 600 mm (L x W x H). Suitable outer cover with top lid should be provided. 4.1.3 The Tank should be made of Stainless steel 304, 2 mm thick sheet, supported by MS angular frame and should able to take a load of 100kg. 4.1.4 Suitable SS grill type basket should be provided for loading. 4.1.5 Slope to be provided at the bottom for easy draining of solution with a drain valve. 4.1.6 Timer to Monitor Cleaning time. 4.1.7 Tower Lamps (Audio Alarm) to be provided, on which the tower glows in Red for the set period time, once the set time is reached, alarm starts sounding and tower lamp turn to green indicating the completion of job. 4.1.8 Out let drain size from the tank – 1". 4.1.9 Drain Pipe & Valve – 1". 4.1.10 Brass Gate Valve – 1". 4.1.11 Tanks should be buffed finish inside and painted outside. 4.1.12 Gradual Load of the grills – 100 Kgs. 4.1.13 Tank operating height from the ground should be approximately 900 mm. 4.1.14 Tank should have S.S lid hinged to the frame with back resting. 4.1.15 Skimmer for Oil/Dirt removal from work surface. 4.2 HOT WATER RINSING TANK : 4.2.1 The Size of the tank should be : 600 (L)X 600(W) X 600(D)mm 4.2.2 Tank should be made of 2mm SS 304 Grade.				
Ref.Doc	New		Prepared BHASKAR	Approved LOKESH	Date 13-10-2017	

TD-106-2 Rev.No.0	Form No		PRODUCT STANDARD		GT53123			
					Rev.No.01			
			HYDERABAD		PAGE 2 of 5			
COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARATH HEAVY ELECTRICALS LIMITED. It must be not used directly or indirectly in any way detrimental to the interest of the company.			4.2.3 Mounted on MS tubular structure 4.2.4 Temperature 80° C, Maximum. 4.2.5 6 KW Immersion heaters mounted from bottom side of the tank for easy maintenance 4.2.6 Digital temperature Controller along with J-type sensor & control box 4.2.7 Thermal insulation of 50mm with metal covering. 4.2.8 1” Drain outlet with valve from bottom of the tank 4.2.9 Scum collection arrangement and over flow outlet 4.2.10 Control panel with digital temperature controller and timer along with On/off switches and buzzers should be provided. 4.2.11 Provision to integrate with pneumatic roller platforms should be provided. 4.3 PNEUMATIC ROLLER GRILLS ASSEMBLY 4.3.1 The size of the roller grill platform should be 500x 500 mm 4.3.2 25 mm diameter Stainless steel rollers to be used. 4.3.3 Up/ down arrangements through Pneumatic cylinder, total travel 450 mm 4.3.4 Solenoid with electrical integration. 4.3.5 Structure at rear side of the tank to support the pneumatic Up and down movement along with Guide rods and bearings, housing etc. 4.3.6 Lid coupled with Pneumatic grill for solvent ultrasonic and aqueous ultrasonic tanks and drier station. Rinse stations without lid. 4.3.7 Two push button station mounted on each station to start the cycle, which ensure safety of operator while operating. 4.4 ROLLER PLAT FORM 4.4.1 1000 mm length roller platform. 4.4.2 25 mm diameter SS Rollers 4.4.3 MS support structure with tubular frame. 4.4.4 Roller platform should accommodate 2 sets of SS baskets load. 4.4.5 12” exhaust fan for cooling the part temperature. 4.5 SS BASKETS 4.5.1 SS wire basket fabricated with 5 mm Rods at outside. 4.5.2 Bottom SS wire mesh. 4.5.3 Part holding fixturation to handle the parts safely to avoid the job to job contact. 4.6 PLC CONTROL PANEL 4.6.1 Control panel with reputed make. 4.6.2 Siemens S7 PLC with necessary hardware should be provided. 4.6.3 Operational control panel along with switches and indication lamps.					
			Ref.Doc	New		Prepared	Approved	Date
						BHASKAR	LOKESH	13-10-2017

TD-106-2 Rev.No.0	Form No		PRODUCT STANDARD HYDERABAD		GT53123
					Rev.No.01
					PAGE 3 of 5
COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARATH HEAVY ELECTRICALS LIMITED. It must be not used directly or indirectly in any way detrimental to the interest of the company.		4.6.4 Integration of each station process parameters, lid up/down, sensors, and other safety aspects. 4.6.5 Electrical wiring from panel to respective stations.			
		5. CONSUMABLES: 5.1. All the necessary consumables for ultrasonic cleaning of the component should be supplied by the vendor. 5.2. Aqueous cleaner : Quantity -100 Liters			
		6. ELECTRIC CONNECTIONS 6.1 The workstation should be equipped with proper electrical connections and panel board.			
		7. COMPRESSED AIR 7.1 Compressed air at around 6 to 7 bar will be made available at one point. Vendor to ensure proper functioning of all systems / sub systems of the equipment at this air pressure or vendor to introduce necessary devices to decrease the air pressure to the required level. The vendor should indicate the inlet point for compressed air in the layout drawing of the machine.			
		8. PREPARATORY ACCESSORIES TO BE SUPPLIED. 8.1 TAM PANEL, PSM-5, SHERWIN MAKE -1 No 8.2 Cracked Aluminum Block- 1 No 8.3 UV Super flood light, 400 watt- 1 No 8.4 UV Torch light - 1No 8.5 Refractometer 1 no 8.6 TAM Crack comparator, TAM 135273 1 No. 8.7 SS wire baskets, 400 x 400 x 100 mm -8 no's 8.8 Consumable storage cupboard : 1 Nos / 1.6 x 1.6 x 0.8 m			
		9. ERECTION & COMMISSIONING 9.1 Erection and commissioning of the entire system at BHEL Hyderabad works will be under the scope of the supplier. 9.2 Supplier to take full responsibility for complete erection and commissioning. Start up, testing of equipment, its control system & all types of other supplied equipment etc. are the responsibility of the supplier. 9.3 Service requirement like power, air & water will be provided by BHEL at only one point to be indicated by supplier in their foundation/layout drawings. 9.4 Only crane facility will be provided by BHEL, free of cost. All other requirements like welding power source, consumables, gas etc. are to be brought by the supplier. 9.5 Vendor should quote the lump sum charges including local conveyance, boarding & lodging for complete Erection and commissioning of the system.			
Ref.Doc	New		Prepared BHASKAR	Approved LOKESH	Date 13-10-2017

RESTRICTED USE



TD-106-2 Rev.No.0	Form No		PRODUCT STANDARD HYDERABAD		GT53123 Rev.No.01 PAGE 4 of 5
COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARATH HEAVY ELECTRICALS LIMITED. It must be not used directly or indirectly in any way detrimental to the interest of the company.		9.6 Following will be provided by the BHEL to the vendor 9.6.1 Normal Industrial water from the overhead tank. PH Value within 6.5 – 7.5 9.6.2 Air: Filtered Dry Air of 4 - 5 Kg/cm². 9.6.3 Material handling arrangements (loading and unloading). 9.6.4 Plumbing lines up to the equipment and equipment drain point to waste water collection drain tank. 9.6.5 Disposal of waste water and aqueous waste water. 9.7 Payment for the Erection & commissioning services will be released based on the satisfactory certification from the end user. 10. FOUNDATION DETAILS 10.1 Vendor should submit the General arrangement layout drawing along with the offer. The layout should show complete equipment with all accessories including space requirement for equipment and accessories. Vendor should submit complete GA layout drawing and foundation drawing (if required) details within one month from the date of P.O. 11. DOCUMENTATION 11.1 Three sets of following documents (Hard copies & Soft Copies) in English language should be supplied along with the machine. 11.2 Operating manuals of Equipment. 11.3 Detailed Maintenance manual of the equipment with all drawings of assemblies/sub-assemblies/parts. 11.4 Catalogues, O&M Manuals of all bought out items including drawings, wherever applicable. 11.5 GA Drawing 12. INSPECTION AT VENDOR WORKS 12.1. Pre dispatch inspection will be carried out by BHEL Engineers to check the facility and its components 13. PERFORMANCE TESTING AT BHEL: 13.1 Performance test will be carried out after commissioning of the equipment at BHEL. Job prove-out will be carried out as per clause 14.0. The working of complete facility to be demonstrated to full satisfaction of BHEL personnel. 14. PROVE OUT OF THE ULTRASONIC CLEANING FACILITY : 14.1 Vendor should illustrate the complete working of Ultrasonic cleaning system by conducting cleaning on one set of turbine buckets and nozzles. 14.2 First fill of the consumables required for ultrasonic cleaning is in vendor scope. 15. GUARANTEE: 15.1 As per BHEL commercial terms & conditions 16. PACKING 16.1 To ensure receipt of items in good condition			
		Ref.Doc	New		Prepared BHASKAR

TD-106-2 Rev.No.0	Form No		PRODUCT STANDARD HYDERABAD		GT53123
					Rev.No.01
					PAGE 5 of 5
COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARATH HEAVY ELECTRICALS LIMITED. It must be not used directly or indirectly in any way detrimental to the interest of the company.		17. GENERAL 17.1 Painting of Equipment - As per BHEL colour code to be done by vendor. 17.2 Over all space required for the facility including sub systems: L x W x H :- 17.3 Approximate total weight of the Equipment including accessories : 17.4 Vendor to submit, along with offer, reference list of customers where similar facility have been supplied mentioning broad specifications of the supplied facility. 17.5 Detailed catalogues, sketch/ photographs of the equipment and accessories should be submitted with the offer. 17.6 All the valves supplied should be off brass and standard make. 17.7 All heating tanks should be provided with digital temperature controller with calibration certificate. 17.8 All process tanks should be equipped with level sensors with electrical integration. 17.9 Working height 900 mm 17.10 Common incoming water line with valves at each station. 17.11 Drain and overflow provision as per the process requirement. 17.12 Localized plumbing for Rinse water and process chemicals. 17.13 Name plates for identification 17.14 Operating manual with detail drawing of system to be provided. 17.15 All necessary system maintenance tool kit to be provided. 17.16 All tanks should be provided with drain facility with 1" BSP gate valve provided at bottom to drain the chemicals from bottom. 17.17 Emergency switch to be provided for quick shut down of the machine while emergency.			
		18. QUALIFYING CONDITIONS 18.1 Only those vendor, who have supplied and commissioned at least two Ultrasonic cleaning for FPI application in the past ten years and should have completed at least one year as on date of opening of tender. Such facility should be presently working satisfactorily. The following information is to be submitted by the vendor about the companies where similar Ultrasonic cleaning for FPI application have been supplied. 18.2 Name of the customer/ company where similar equipment is installed. 18.3 Complete postal address of the customer. 18.4 Month & Year of commissioning 18.5 Application for which FPI facility is supplied with details of the job. 18.6 Name and designation of the contact person of the customer. 18.7 Phone/ Fax / Email address of the contact person of the customer 18.8 Performance certificate from the customer regarding satisfactory performance of the equipment supplied to them. 18.9 BHEL reserves the right to verify information submitted by vendor, in case the information is found to be false / incorrect, the offer shall be rejected.			
Ref.Doc	New		Prepared BHASKAR	Approved LOKESH	Date 13-10-2017

RESTRICTED USE

