

Annexure 1

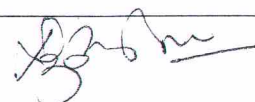
Specification for Controller with Data recorder / logging system for Thermal Ageing Oven (Qty. 04 nos)

		BHEL Specification	Vendor Acceptance/Remarks/Deviation
1	Thermal Ageing Ovens	The controller with data logger must be suitable for Thermal Ageing Oven :	
	1.1	Rating of heating element	3 Phase, 15 kW. Maximum temperature – 350 degree C
	1.3	Input	3 Phase + 1N , 415 V
	1.4	Frequency	50 Hz.
2	Control Panel		
	2.1	Controller	PLC based controller.
	2.2		Relays used for control of temperature should be of Thyristor based relays.
	2.3		The digital temperature controller shall operate through a thermocouple sensor.
	2.4		The control panel shall consist of MCBs, Relays, Contactors, etc. for the proper and precise control of temperature.
3	Data Logger		Paperless data recorder / logger for recording the temperature cycles.
	3.1	Data storage.	The internal memory must be suitable to record and store thermal ageing cycles at an interval of 1 min for 45 days (minimum). Data record, storage and retrieval must be available at an interval of 01 second to 01 day. Provision for record and storage of data in USB (compatible with latest version) must be provided.

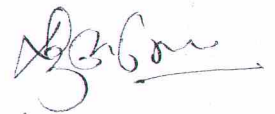
	3.2	Monitoring	Provision must be provided to monitor, record and store the thermal ageing data in PC / laptop.	
4	HMI			
		Display	The HMI shall have a display wherein the following is displayed: Date Time Set Temperature Actual Temperature Fault diagnosis Visual display for any alarms or faults.	
		Control and Monitoring	The input and output parameters like set temperature, actual temperature, thermal ageing cycles etc. should be controlled and monitored through HMI	
5	Protection			
		Over / Under voltage and Phase sequence Fault	Protection against over voltage, under voltage, earth fault and phase sequence fault must to provided. Any such faults must be instantly diagnosed and oven shall be cut off to prevent ant damage to the equipment. Any fault condition must have audible (buzzer) and visible alarm.	
		Fan	In case of any fault condition or in event of door being opened, the fan must stop immediately and an audio and visual alarm must be triggered.	
		Doors	Visible and audio alarms in case the door is open or not closed properly. The oven must operate only when the door is properly closed.	
		Alarms	Audible and visual alarms required for fault conditions.	
6	General			
		Calibration	Calibration certificate of data recorder / logger from NABL accredited lab to be provided at the time of installation. Calibration report / certificate of the thermal ageing oven after modification/ installation of the controller along with	



श्रीनिवासु जी / SREENIVASU. G
 लाब प्रबंधक (आई सी एच) / Lab Manager (ICH)
 बी.एच.ई.एल., अनु.एवं.वि. / BHEL CORP. R&D
 विक्रमनगर / VIKASHNAGAR



		the data recording and logging system to be provided after installation.	
	Warranty	Minimum 12 months warranty on workmanship, components and materials used, from the date of installation and commissioning.	
	Installation	All modification, installation and commissioning at ICH lab, BHEL Corporate R & D, Hyderabad. The thermal ageing ovens will not be allowed outside BHEL R & D premises	
	Auto resumption	In case of power outage or failure, the oven must resume automatically in case of power resumption. Provision must be provided for automatic and manual operation of the oven.	

श्रीनिवासु जी / SREENIVASU. G

लाब प्रबंधक (आई सी एच) / Lab Manager (ICH)

बी.एच.ई.एल., अनु.एवं.वि. / BHEL CORP. R&D

विकासनगर / VIKASNAGAR

हैदराबाद / HYDERABAD-500 093.

