



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

Ref No. 1000051274

(Rfx No.6100002502)

**Technical Specifications: TGA DTG with flow controller and DSC**

Sr. No	Item Description	Detailed Technical Specification	Technical Compliance (Yes / No)	Additional Information ( if any )
01	TGA DTG with flow controller and DSC	<p><b>Basic Requirements:</b></p> <ol style="list-style-type: none"><li>1. Flow controller to control the supply of various gases like Nitrogen, Oxygen and Zero Air, TGA DTG DSC and Flow controller should be PC controlled with software.</li><li>2. TGA DTG shall be able to reach up to minimum 1100°C with heating rate from 1°C/min to 100°C/min or better</li><li>3. Application is environmental samples like industrial waste, farm waste, powerplant waste</li></ol> <p><b>TGA Requirements:</b></p> <ol style="list-style-type: none"><li>4. Temperature range: Room Temperature-1100°C or higher</li><li>5. Balance Type: Parallel Guide Differential, separate pan for reference and sample or single pan for sample along with sensor to match characteristics of sample pan serving as reference or equivalent</li><li>6. Balance Min and Max: 1 mg and 200mg</li><li>7. Measurement Accuracy of Balance <math>\pm 0.5\%</math> or equivalent and Balance Sensitivity of 0.2 <math>\mu\text{g}</math> or equivalent</li></ol>		

8. Baseline Drift and repeatability: less than 50 $\mu$ g for both heating and isothermal or equivalent for complete range
9. Balance shall be in temperature compensated chamber
10. Temperature precision:  $\pm 0.5^{\circ}\text{C}$
11. Temperature Accuracy:  $\pm 1^{\circ}\text{C}$
12. Cooling from 1100 $^{\circ}\text{C}$  to 50 $^{\circ}\text{C}$  in less than 20 minutes or equivalent
13. TGA accuracy and precision: 0.1% and 0.04% or equivalent
14. Detector: Platinel (Plug-in type) or equivalent
15. Furnace heating element shall be resistant to inert and oxidative gases over full temperature range
16. Opening closing of furnace through push button or software

**Analysis Conditions:**

17. Heating Rate  $\pm 0.1$  to 100 $^{\circ}\text{C}/\text{min}$  or better
18. Atmosphere: Nitrogen, Zero Air or Oxygen with flow rate 200 ml/min using mass flow controller through the software
19. Sample Form: Substance which is solid or liquid at ambient temperature
20. All the required standards to be provided including chemicals, calibration standards like indium etc
21. Require 5 pan of Pt, Al and ceramic each

**Cleaning Conditions:**

22. Cleaning Gas: Clean using Zero Air or oxygen supply for furnace and detector

**DSC Specifications:**

23. DSC precision:  $\pm 3\%$  or better
24. Direct calculate DSC using software

		<p><b>Additional Requirements:</b></p> <p>25. Working temperature range and humidity is 15-35 °C, 5-80% or better</p> <p>26. Software to be provided along with training and manuals</p> <p>27. PC: As per requirement of TGA with latest window and software. Processor i7 or better.</p> <p>28. Gas Accessories: Complete accessories with installation for all gases including the gas cylinders for oxygen, nitrogen and zero air one each</p> <p><b>Warranty:</b></p> <p>29. Supplier should provide 36-month warranty after successful installation of the system which shall include all the consumables required annually for maintenance. The supplier should also quote for annual maintenance contract on a regular basis after the warranty period.</p> <p><b>Installation:</b></p> <p>30. The entire system should be installed and commissioned at IIT Bombay.</p> <p>31. Any additional requirements should be mentioned and provided including consumables, if any.</p> <p>32. After successful installation of the system and its peripherals, selected scientific and technical personnel from IIT Bombay should be provided with hands-on and in-depth training on the operation, maintenance and application of the instrument by factory engineer(s).</p>		
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Please Note the Following Terms and Conditions:

1. All the system components supplied, should have warranty for three years from date of installations including all labor cost.
2. System performance should be demonstrated with necessary standards and calibration kits which will be provided by the vendor as part of standard delivery.
3. Warranty should include preventive maintenance kit, calibration kit.
4. No conditional warranty will be accepted.
5. On-site training of staff and students (at least twice in a year) during the first 3 years of warranty.
6. Good technical support should be provided after the installation of the instrument and the service engineer should be able to attend unlimited breakdown calls and should visit the installation site

within 24 hours without fail.

7. Training on troubleshooting the issues associated with instrumentation or application should be provided free of cost whenever required by the user.
8. Manufacturer should provide the service support details in Mumbai
9. Details of the service engineers and application specialists should be provided along with their experience on these kinds of systems.
10. Details of the users (name, phone number and email ID) in India for the quoted instrument in the bid should be provided.
11. Instrument performance, quality of service and application support certificates from at least three existing users should be provided from CFTI or IIT
12. Evaluation will be done on the basis of technical specifications as per our tender notice.
13. Financial bids will be open only for those, who meets all technical specification.
14. Payment terms & condition is 80% after installation and 20% after successful running of equipment for 3 months & approval.
15. Validity of quotation should be at least for 180 days.
16. The delivery period should be specifically stated. Earlier delivery may be preferred.
17. The indenter reserves the right to withhold placement of final order. The right to reject all or any of the quotations and to split up the requirements or relax any or all of the above conditions without assigning any reason is reserved
18. We may provide unknown samples to the vendors for analysis on the quoted models to verify their claims on technical specifications and reserve the rights to reject any or all quotations based on the results