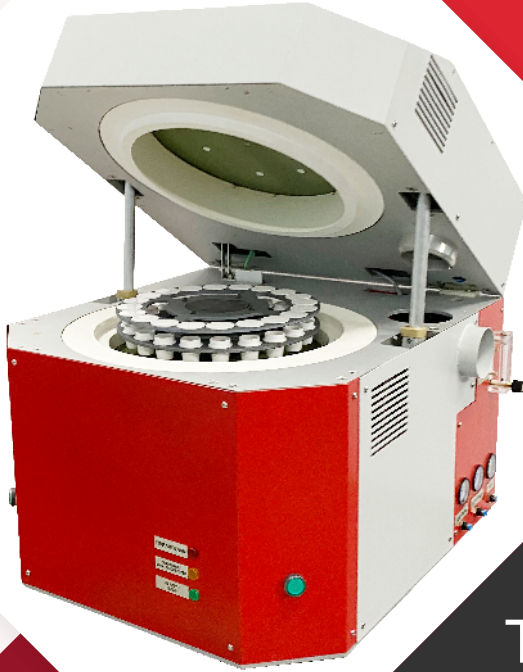


30
YEARS

ORBIT



Thermogravimetric Analyzer TGA 3000

TGA 3000 Thermogravimetric Analyzer

Orbit's TGA 3000 is an automated instrument which determines Moisture content, Ash content, Volatile content, Loss on Ignition (LOI) and Fixed Carbon content in a wide range of Organic, Inorganic and Synthetic materials.

Thermogravimetric analysis replaces the traditional analytical techniques that are slow, labour intensive and involve several steps with multiple laboratory equipment such as Muffle furnaces, Ovens and Balances. The TGA 3000 with integrated balance combines drying, ashing and weighing processes. This improves the efficiency, precision and provides high sample throughput.

The TGA 3000 is applicable in various industries and applications, including coal, coke, ores, cement, lime, foodstuffs, feeds and many more.

Typical Sample Materials

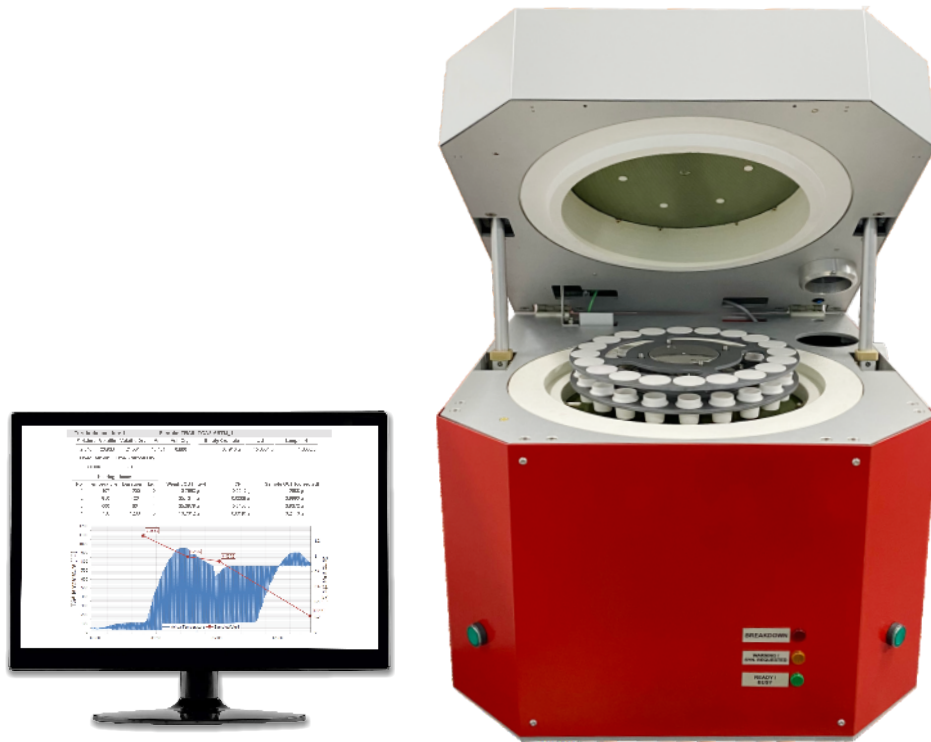


The TGA 3000 comes with a PC software that is easy to use and intuitively provides the user with control of the instrument, tracking of samples and measurement data throughout the analysis process.

Typical analysis is performed in air, other gases such as nitrogen and oxygen can also be used to achieve a specific test atmosphere. Samples can be heated and cooled to specified method settings.

Orbit's TGA 3000 is used to analyze samples in accordance with several international standards such as ASTM, ISO, DIN, EN and more.

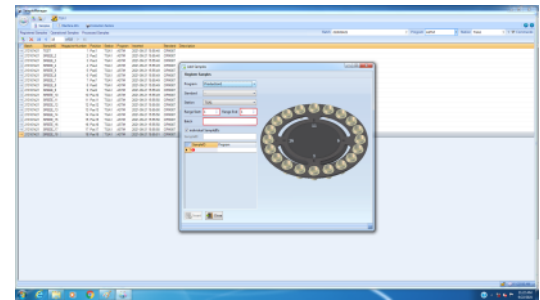
Reliable and fast proximate analysis by TGA 3000 Thermogravimetric Analyzer



TGA 3000 provides multi-constituent analysis for upto 19 samples at a time. Typical coal analysis method consists of determination of moisture, volatile matter and ash content. The software allows for customization of the analysis steps such as temperature ramping, start temperature & end temperature, programmable gas flows, placement/removal of crucible lids and mass constancy criteria for a fully flexible instrument optimized for every users unique needs.

Maximum Efficiency & Enhanced Precision

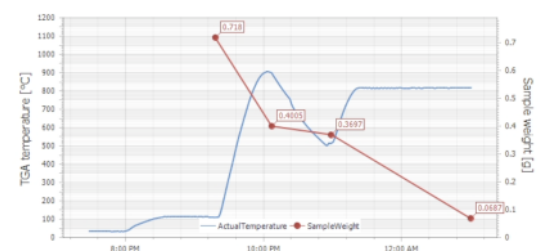
- High performance Thermogravimetric Analyzer
- Automated Analysis of upto 19 samples
- Capable to accept maximum sample weight up to 5 grams, higher range can be offered on request
- Programmable heating ramp rates as per test methods
- Automatic placement & removal of crucible lids
- Windows based control software for operation of the analyzer
- Integrated balance with 0.1 mg readability for robust and accurate mass determination



Turntable position: 3		Sample: 1-09-2020_3							
Empty Crucible	Lid	Sample IN							
22.4363 g	20.9138 g	1.0141 g							
Moisture Volatile Volatile Dry Ash Ash Dry Fixed Carbon Fixed Carbon Dry LOI750 LOI800									
Raw data [%]:	29.198	31.309	44.220	6.775	9.568	32.718	46.212	93.2255	60.5089
- [%]:	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Corrected [%]:	29.198	31.309	44.220	6.775	9.568	32.718	46.212	93.2255	60.5089

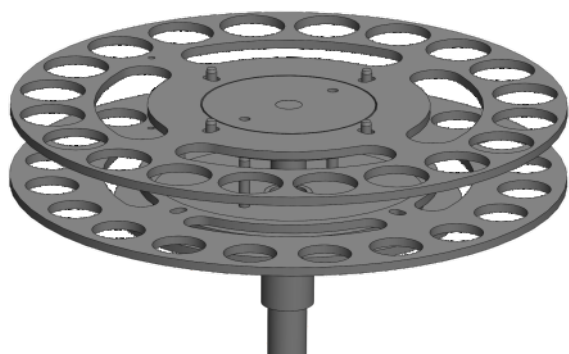
Windows Based Software

- Ensures precise control and operation of the analyzer
- Tracks the samples and measurement data throughout the analysis process
- Graphic display of temperature vs. weight loss measurements
- Retrieval of sample related information at any given time during analysis
- 16 Editable programs and data transmission to LIMS
- During analytical cycle, display of current parameters such as the real time furnace temperature, sample status and time remaining



Maximum Productivity

- 19 position carousel allows for high sample throughput rates
- Two TGA 3000's can be controlled from a single PC, thereby boosting productivity and reducing costs



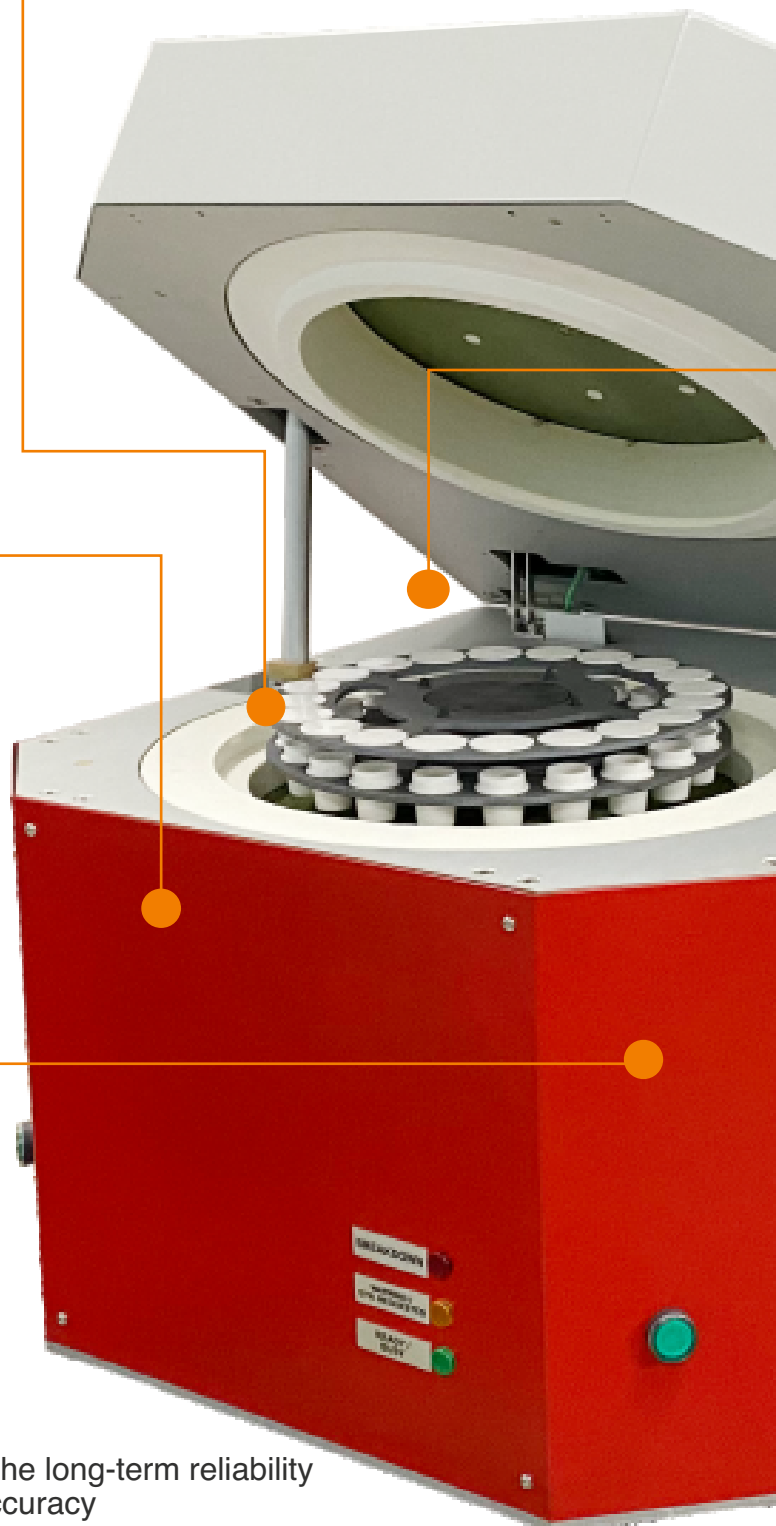
Dual Carousel

Furnace Cooling

After completion of analysis, cooling process is automatically started with user programmable furnace lid opening, to improve the cool down time.

Exceptional Performance

- Pneumatic carousel control mechanism increases the long-term reliability by eliminating oscillation and increasing position accuracy
- Automatic control of furnace atmosphere and programmable gas flow rates (Air, Nitrogen or Oxygen)



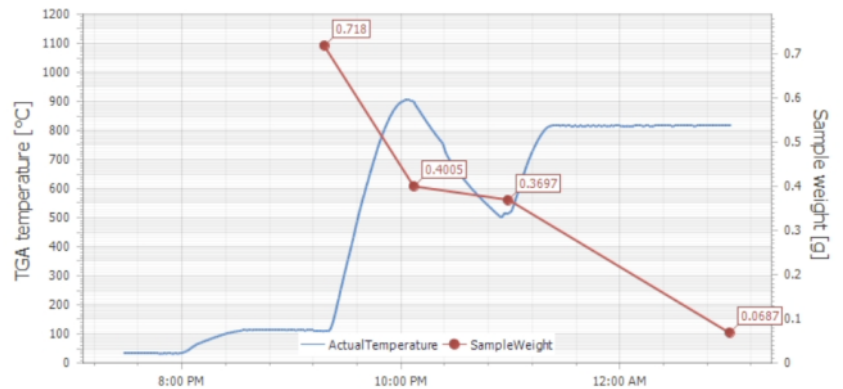


Powerful Heating Elements

- High power heating elements provide fast temperature ramping and excellent temperature stability
- Embedded multi-element design ensures that temperatures are uniform throughout the furnace chamber

Automatic Analysis

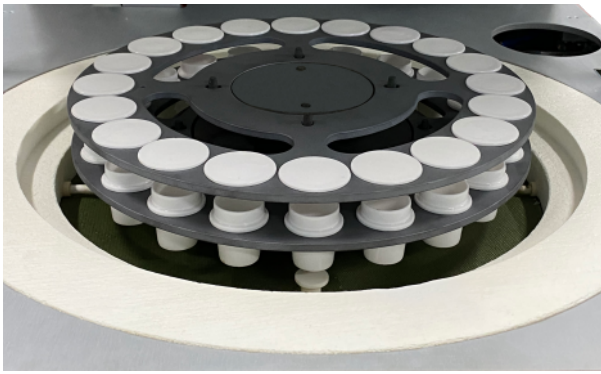
- Dual Carousel design provides automatic placement/removal of crucible lids inside the furnace
- Automatic end point recognition, user programmable method settings, skipping of empty crucibles allow for optimized analysis time



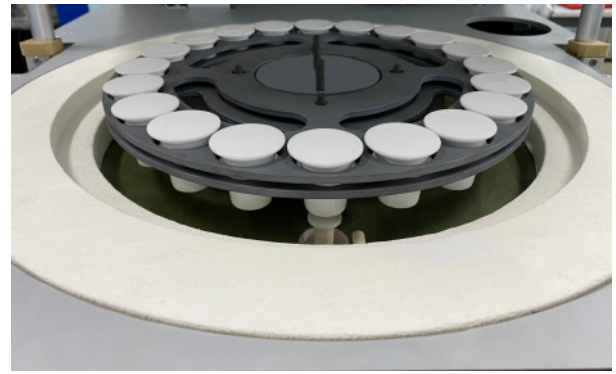
Graphical representation of results

Integrated Precision Balance

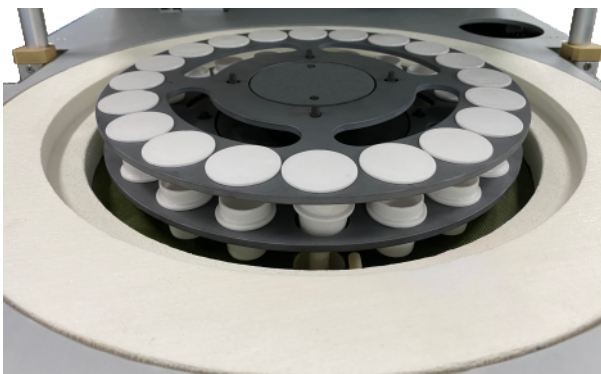
- Insulated balance that is isolated from the heat and ambient atmosphere for stable and precise measurements
- High precision balance accurate to 0.1 mg for precise weight measurements



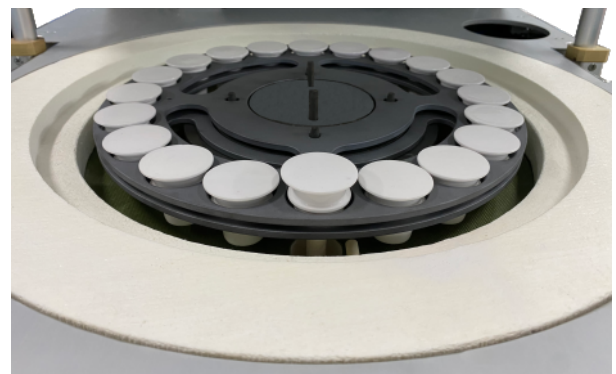
Crucible lids open



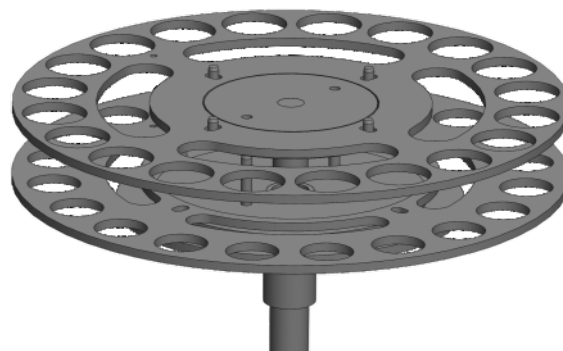
Crucible lids closed



Weighing with crucible lids open



Weighing with crucible lids closed



Dual Carousel

Dual Carousel Configuration:

- TGA 3000 uses High Strength, Corrosion Resistance Dual carousel Configuration – one for holding crucibles and one for holding crucible lids
- The carousels are made of special material which are not susceptible to warping under High temperature stress
- Second carousel allows for automatic placement and removal of crucible lids inside the furnace without opening the furnace lid
- This provides superior volatile matter accuracy in addition to automation & avoids sample oxidization
- Eliminates the risk of operator burns at elevated temperature (600 deg C)
- Avoids the risk of the operator dropping crucible lids into the furnace
- Crucibles and crucible lids can be pre-weighed using an external balance to accelerate the changeover between runs
- Can be used as a standard single carousel TGA without the second carousel when required

Superior Performance and Accuracy

- The TGA 3000 is a powerful thermogravimetric analyzer that combines best-in-class hardware with an intuitive software housed in a rugged design providing the best analytical performance.
- The carousels are made of special material which are not susceptible to warping under High temperature stress.
- TGA 3000 is also available in a dual furnace package (TGA 3000D) which allows for two TGA's to be operated from a single PC for laboratories that require the highest sample throughput.

The TGA 3000 complies with the following international standards, among others:

Standard	Material to be analysed	Title of the standard
ASTM D7582-15	Coal and Coke	Standard Test Methods for Proximate Analysis by Macro Thermogravimetric Analysis
ASTM D5142	Coal and Coke	Standard Test Methods for Proximate Analysis by Instrumental Procedures
ISO 562	Hard Coal and Coke	Determination of volatile matter
ASTM D7348	Solid Combustion Residues	Standard Test Methods for Loss on Ignition (LOI) of Solid Combustion Residues
DIN 51718	Solid Fuels	Determination of the water content and the moisture of analysis sample
ASTM E1755	Biomass	Standard Test Method for Ash in Biomass
DIN 51719	Solid fuels	Solid mineral fuels - Determination of ash content
ISO11722	Solid mineral fuels	Hard coal - Determination of moisture in the general analysis test sample by drying in nitrogen
ISO1171	Solid mineral fuels	Determination of Ash
EN 15148	Biomass	Solid biofuels - Determination of the content of volatile matter
EN 14775	Biomass	Solid biofuels - Determination of Ash content
AS1038	Coal & Coke	Proximate analysis & Testing
BS1016	Coal & Coke	Proximate analysis

Technical Specification Sheet

TGA 3000 Thermogravimetric Analyzer

<i>Furnace Temperature</i>	
Minimum Temperature	Ambient
Max Temperature	1000 deg C
Temperature Control Precision	±2% (or) ±2 deg C
Temperature Stability	±2% (or) ±2 deg C
<i>Programmable Ramp Rate</i>	
Ramp Rate	10 deg C /minute to 50 deg C /minute
Balance	Integrated Balance
Balance Resolution	0.0001g (0.1mg)
Balance Readability	0.0001g (0.1mg)
Weight Loss	0 -100%
Sample Size	up to 5 grams (Higher range can be offered on request)
Number of Samples	19 Samples +1 Reference
Number of Carousels	Two (one for Crucibles, one for crucible lids)
Carousel Material	The carousels are made of special material which are not susceptible to warping under High temperature stress
Weighing Precision	0.02% RSD (on inert Samples)
<i>Electrical Power Requirements</i>	
TGA 3000	230V (± 10%) / single phase / 50/60Hz / 15A
Computer	230V (± 10%) / single phase / 50/60Hz / 2A

Ordering Information:

22-100000: TGA 3000, Thermogravimetric Analyzer with Dual Carousel, Single furnace package

22-200000: TGA 3000D, Thermogravimetric Analyzer with Dual Carousel, Dual furnace package

22-100146: Ceramic Crucible, PK/1

22-100046: Ceramic Crucible lid, PK/1

22-107321: Ceramic Carousel, 20 Positions, Upper

22-107373: Ceramic Carousel, 20 Positions, Lower

22-112254: Metal Carousel, 20 Positions, Upper

22-112255: Metal Carousel, 20 Positions, Lower



Orbit Technologies Pvt. Ltd.

B-50, Industrial Estate, Sanathnagar, Hyderabad - 500 018, Telangana, INDIA

Tel:+91(0)4067216354

Email: orbit@orbitindia.com, Website: www.orbitindia.com