



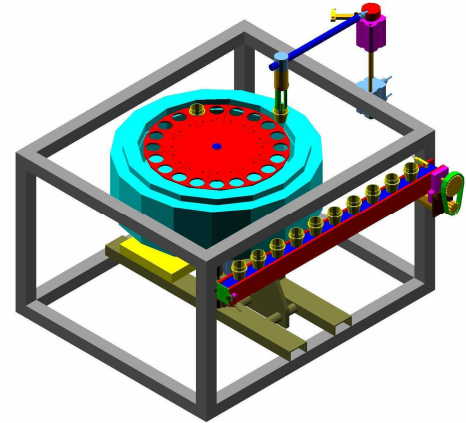
Prüfgeräte für Petrochemie,  
Gefahrgutanalytik und mehr

## MAKRO TGA MMS 2003

**For laboratory or production control**

Multiple Matrix - Multiple Sample (19) Moisture-Ash analyzer  
Applications: Food, animal feed, snacks, dough, wheat, flour,  
calcium carbonate, coal ( Ash in 20-25 minutes), cement (LOI in 20-25  
minutes) etc ...

Determination of: Moisture - ash, LOI

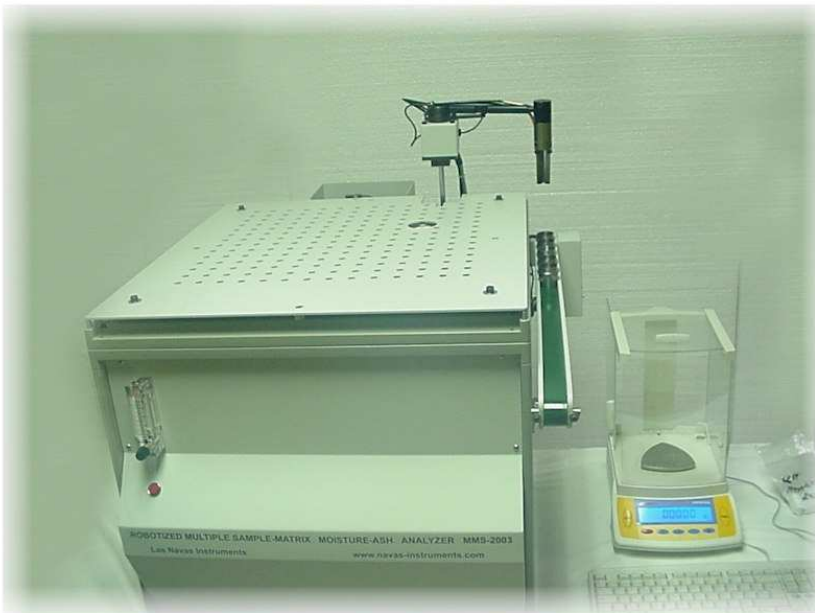


### Robotic configuration (Patented)

The robotic configuration allows using the dead analysis times present in conventional TGA.

The instrument converts following dead times into useful analysis time:

- 1 - Obtaining of initial weights of crucibles & samples during analysis time using an external balance.
- 2 - Dead cooling-down & heating-up times are removed as the furnace is always hot, samples are inserted inside furnace through an orifice on top of the furnace lid.
- 3 - Samples that are slow to provide results do not condition the rest of the samples, slow samples will stay in longer and fast samples will be removed sooner automatically by the robot and dropped in bin as soon as results are obtained.



### Advantages and costs savings

The instrument has several costs savings:

- 1 - **Purchasing cost savings** (1 MMS has 3 - 6 times more output capacity than conventional TGA).
- 2 - **Operation cost savings:** Operator involvement is reduced to the minimum possible.
- 3 - **Maintenance cost savings**
- 4 - **Speed of operation, results will be available in a much shorter time than conventional TGA.**

The carousel, pedestal and crucibles are made of a stainless steel alloy for high temperature.

The carousels do not bend nor warp under temperature stress, metal does not break like ceramics.

Ceramic crucibles allow analysis of materials that may attack metal crucibles ( Metal crucibles used in other models )

**1 Full year warranty on all components including carousel and spindle.**

## Standard components

All complete brand name balances and temperature controllers from recognized manufacturers.

The balances have display FOR EASY service.

The temperature controller has 2 displays: 1 for the set point and other for the present temperature.

The balance and the temperature controller are programmable using the buttons in the devices.

These devices are manufactured by the experts in the business.

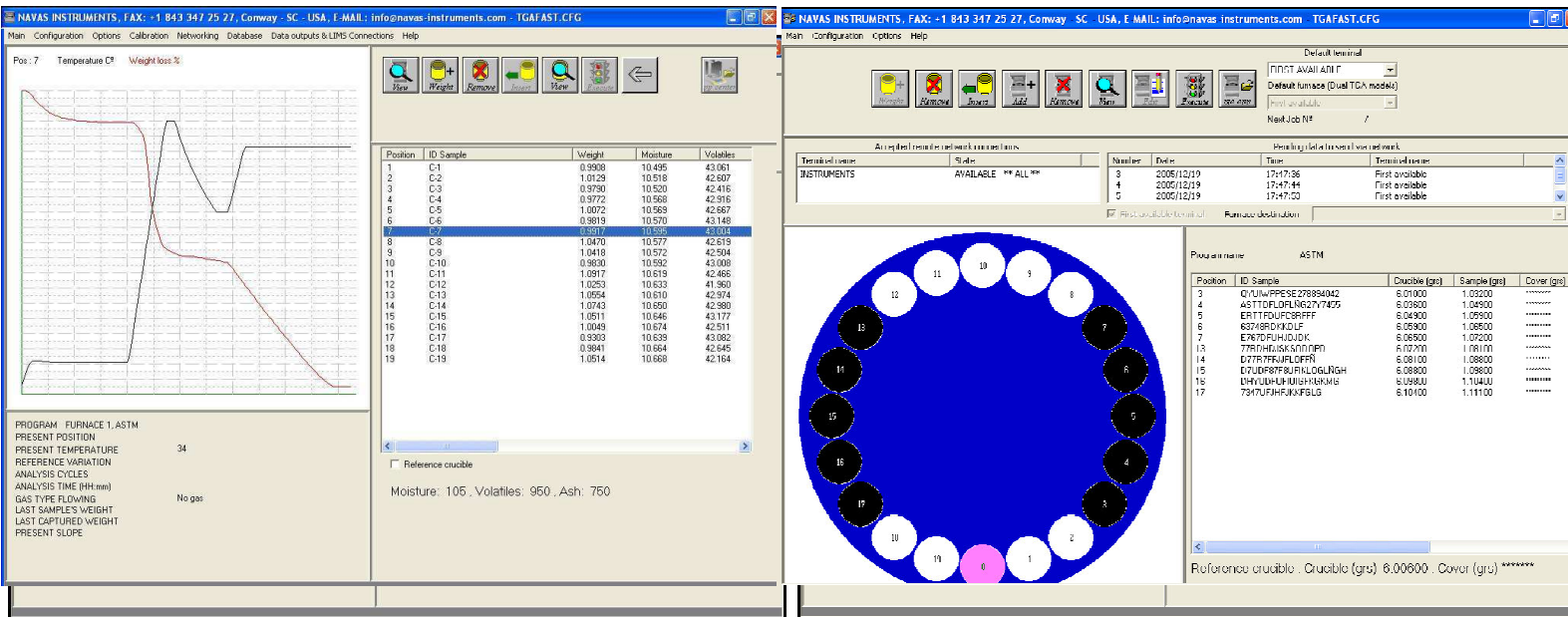
All the electric and pneumatic parts in the TGA can be acquired in the market: Magnetic switches, relays, pneumatic valves, pistons, etc...

Other TGA manufacturers use special electronics that can only be purchased from the manufacturer at very high price.

All the sensors are magnetic not affected by dust.

Very few proprietary electronics (Only 2 boards), that are located in 2 PC slots.

ACCESS FOR SERVICE from back, sides, front and underneath.



## MMS TGA application

The **Windows software** allows easy instrument operation.

Integration with **Microsoft Office**, results are stored in Microsoft Access Data base automatically, data can be exported automatically and manually in TXT, CSV and XLS formats to Microsoft Excel or several Laboratory Information Management Systems (**LIMS**).

Configurable parameters for all slopes up to 8 sets of settings: Final temperatures, plateau deviations, gases, etc...

The process variables are displayed dynamically during analysis (Samples in conveyor, samples in carousel, present temperature, present carousel position, last samples weight etc...)

The user can view the state of the furnace carousel dynamically, this provides a visual indication of the amount of samples inside furnace.

**EASY TO USE DIAGNOSTICS SCREEN.**

## MMS - 2003 Series

# Multiple Matrix - Multiple Sample Moisture-Ash analyzer

### Brief technical specifications ...

**Temp. range: 50 ~ 1000 ° C ±1 ° C**

**Sample size: 0.1 ~ 10 grams.**

**Standard deviation of ± 0.0002 g**

**Weight Loss/Gain range: 0 ~ 100 %**

**etc ...**

Ihr Ansprechpartner

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