800 Series
Thermal Energy Analyser

Ellutia

All New Design

The Thermal Energy Analyser (TEA) has been an industry standard for nitrosamine analysis since its introduction thanks to its incredible sensitivity and almost infinite selectivity for nitrogen containing compounds. The all new TEA 800 Series was designed with input from users of older model TEA's from the outset to ensure this new model delivered everything customers wanted. Thanks to this input the TEA is now smaller, easier to service and simpler to operate, whilst still retaining the same great analytical performance as its predecessors.

Easier to Use

- Controllable by PC *via* USB or RS232
- Simple and intuitive operation
- Pyrolyser temperature selectable from 250 to 700°C for nitro or nitroso modes
- Optional separate 850°C catalytic pyrolyser for nitrogen mode
- Nitro/nitroso modes eliminate interfering nitrogen compounds
- Optional CTR filters to remove pyrolysis by-products

Easier to Service

- Modern design allows easier servicing
- Compatible with most GC's

Compact Size

- Saves valuable bench space
- Foot print of only 38 x 37 cm

New Refillable Ozone Traps

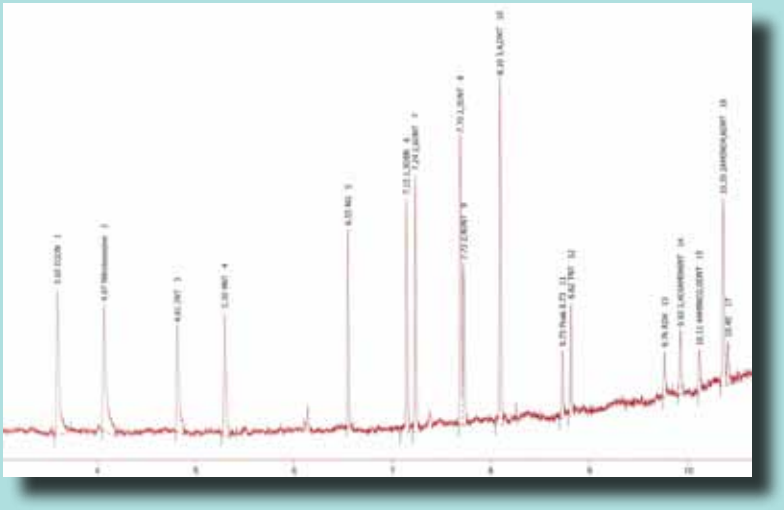
- New design means only the trap material needs to be replaced not the whole ozone trap

Industry Standard Performance

- Uses proven technology and principles
- Near infinite selectivity for nitrogen containing compounds
- High sensitivity

Choice of Pumps

- Vacuum pump now external for easy servicing
- Oil-free pump option



New O_3 Generator

- New O_3 generator features an electronically controllable oxygen flow and ozone production

Principles of Operation

Nitrogen Mode

In the nitrogen mode of operation, the GC effluent containing nitrogen compounds is passed through a catalytic pyrolyser at a temperature from 700 to 850˚C to produce carbon dioxide, water vapour and nitric oxide. At temperatures from 700 to 825˚C, all nitrogen, except molecular N_2, in any nitrogen containing compound is converted to the nitrosyl radical.

Under vacuum, the nitrosyl radical is reacted with ozone to produce electronically excited NO_2. The NO_2 rapidly decays to its ground state, emitting light in the process. The light is detected by a sensitive photomultiplier, whose signal is amplified and displayed on a chart recorder or integrator.

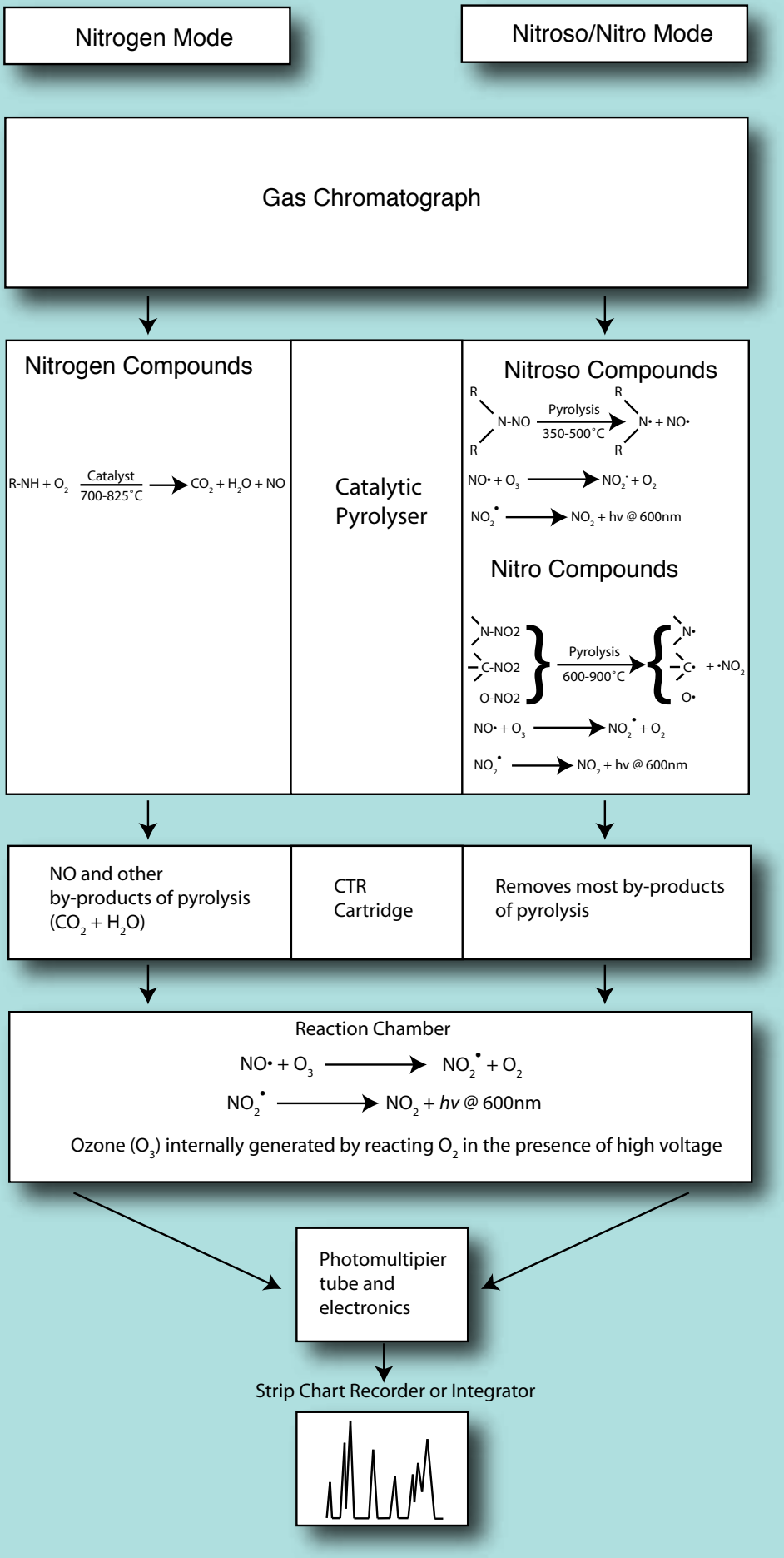
Since all organic materials (including solvents) produce CO_2 and H_2O as pyrolysis products, the detector is uniquely selective only for those samples which contain nitrogen.

Nitroso/Nitro Mode

In nitroso/nitro mode, the GC effluent is introduced into a reductive catalytic pyrolyser. In the catalytic pyrolyser under vacuum, nitroso and nitro containing compounds cleave at the -NO or -NO_2 bonds, releasing the radicals. The nitro radicals are further decomposed to nitrosyl radicals in the high temperature pyrolyser. The pyrolyser reaction products then pass through a gas-stream filter which allows only the nitrosyl radicals to pass through.

These nitrosyl radicals then react with ozone under vacuum to produce electronically excited NO_2. The NO_2 rapidly decays to its ground state emitting light in the near infrared region which is detected by a sensitive photomultiplier. The signal is amplified and displayed on either an integrator or strip chart recorder.

In the diagram, the yield of NO is a direct measurement of the nitro, nitroso or nitrogen compounds present.



Technical Specification

Operating Modes

- Nitro
- Nitroso
- Nitrogen with Catalyst (820 Series only)

Sensitivity

- <2pg N/sec Signal to Noise 3:1

Selectivity

- gN/gC > 10^7

Linearity

- 10^4

O_3 Voltage

- Up control sensitivity selection 0-150

Signal Output

- 1V, 10V

PC Connectivity

- Download software included with instruments enabling method storage with PC
- USB
- RS232

Size/Weight

- Size 36cm (H) x 38cm (W) x 37cm (D)
- Weight 15kg

Power

- 115V/230V, 50/60Hz 850VA internally switchable

Ellutia
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