

# TDAS 2000

## Thermal Desorption Autosampler

The TDAS 2000 thermal desorption unit was engineered and developed to work in combination with the CTC Combi PAL system. Volatile and semi-volatile organics in solid, liquid or gaseous samples can be analyzed either by desorption from adsorbent resin filled tubes (e.g., Tenax TA<sup>®</sup>, Carboxen<sup>®</sup>, Carbotrap<sup>®</sup>, etc.) or by direct thermal extraction from solid samples via a GC or GC/MS system.

- ▶ Adaptable to existing PTV injectors (liquid N<sub>2</sub> or liquid CO<sub>2</sub> cooling required)
- ▶ PC controlled operation by Cycle Composer Software
- ▶ Software integrates with Agilent ChemStation or ThermoFinnigan Xcalibur

You still have all the capabilities of a CTC Combi PAL – liquid, headspace SPME and SPDE injections within the same unit.

### Description

The system works as follows. First, desorption vials, crimped with regular caps, are transported from the sample tray to the heater inlet port by the PAL's injection unit. As soon as the vial is placed in the heater, the injection unit pushes them downward, piercing both vial ends. The bottom of the heater, which is fitted with a syringe needle, injects the sample into the PTV. The carrier gas flow then switches direction, passing through the desorption vial and onto the cooled PTV. All analytes are thereby refocused onto the cooled liner. After a 3 – 5 minute desorption at a high temperature, the PAL moves the thermal desorption unit out of the inlet. At that point, the flow is redirected to the inlet, so that it no longer passes through the sample.

After a short equilibration time, the PTV inlet heats rapidly to its maximum temperature. If you choose to do the heating while the PTV is in splitless mode, it will provide maximum sensitivity.



Fig. 1. Thermal desorber option attached to CTC PAL using an Agilent 6890 GC

### System Features

- ▶ Fully automated thermal desorption sampler
- ▶ Ideal for food and flavor analyses
- ▶ Great for use in solid sample analyses for the semiconductor and plastics industries
- ▶ "Moving oven" technology
- ▶ Easy mounting on top of GC injector for quick installation and removal
- ▶ Smart vial transport by CTC PAL
- ▶ Direct thermal extraction from sample tube to GC injector
- ▶ Heater oven temperature of up to 350 °C
- ▶ Special PTFE plugs provide inert and gas-tight sealing of TDAS sample tubes
- ▶ No heated transfer line or switching valves – no carryover



Fig. 2. Tubes being transported by the CTC PAL injection unit

Now the sample tube can undergo a conditioning step in the TDAS oven heater. Otherwise the sample tube will be transported back to the sample tray. By selecting appropriate TDAS parameters (e.g., desorption temperature, desorption time) it is also possible to control the number of extracted compounds as well as the molecular weight distribution.

