

TOP TOGA GC



Dissolved Gas Analysis with automatic degassing unit *According to IEC 567/ASTM 3612*

Features and Benefits:

- » Fully automatic procedure
- » One touch operation
- » Multi-periodic vacuum degassing
- » Full TOGA analysis (11 gases)
- » Automatic transfer of gas sample

***Dose the oil-sample. Push ONE button.
Wait for the result.***

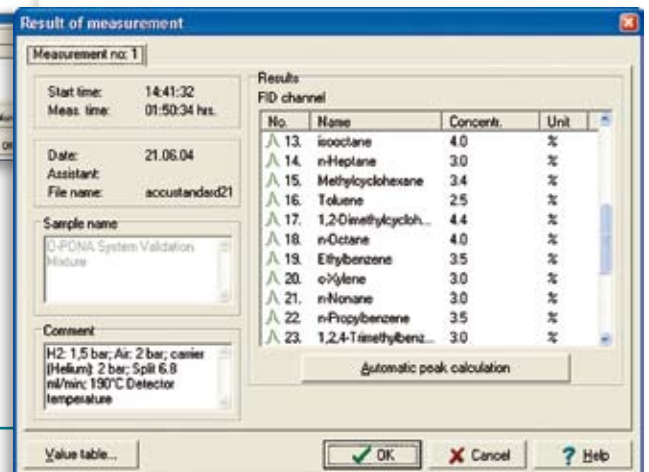
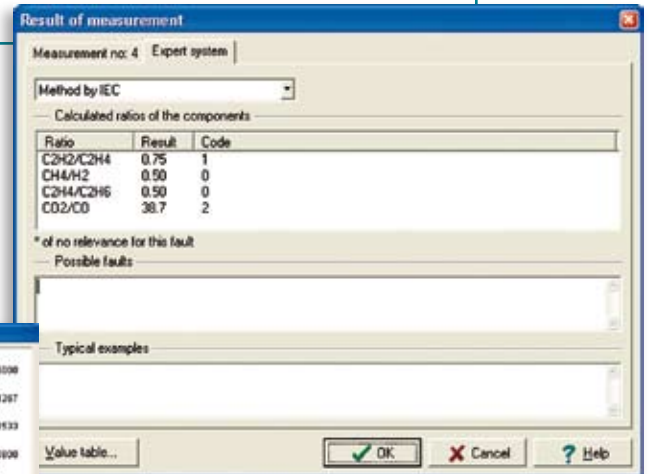
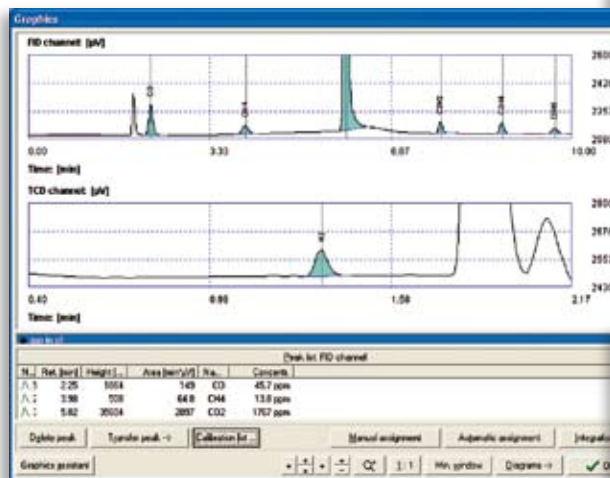
Description

The analysis is done in 2 steps with high selectivity and accuracy fully compliant with laboratory procedure.

1. Degassing of the oil sample through vacuum extraction (according to IEC 567/ASTM3612)
 2. Dissolved gas analysis TCD (thermal conductivity detector) , FID (Flame Ionization detector) and Methanizer.
- Both steps are synchronized by a micro-controller which guarantees a fast and reliable measurement routine.

Detektierte Gase und Meßbereiche/Gases and detection ranges:

H ₂	1 ppm	C ₂ H ₂	0,1 ppm	C ₃ H ₈	0,5 ppm
CO	0,2 ppm	C ₂ H ₄	0,1 ppm	O ₂	30 ppm
CO ₂	0,2 ppm	C ₂ H ₆	0,1 ppm	N ₂	30 ppm
CH ₄	0,2 ppm	C ₃ H ₆	0,5 ppm		



All results are displayed in ppm, the sensitivity is as low as 0,1 ppm for certain hydro-carbons. Therefore, also new transformer oils and transformers after their periodic maintenance can be analyzed.

Beside the display of the results in ppm, all other operating conditions are registered and stored in a data-base together with all other parameters.

The graphical display of the results is in real time on the monitor, in a table or/and as test report in a print file. All relevant data are stored in a measurement file. The integrated expert system will analyze even smallest deviations in the gas parameters.

A new invented vacuum degassing method (Patent pend. DE 102 52 652 4) degasses the oil sample multi-periodical. After extraction through a 4-step vacuum pump the gases are dosed into the vacuum chamber and separated.

In and outlet of the oil sample as well as the switching valve are micro-processor controlled. A linear pressure sensor measures the total gas content online which is a very important quality parameter for the characterization of the transformer load.

The injection of the gas sample into the gas chromatograph is via a fixed mounted transfer pipe.

The analysis of the dissolved gas is done after automatic injection in an automatic sample loop (6 port valve) of the gas chromatograph. The gas sample is separated in an inert gas stream into 11 components. This guarantees a high selectivity with no interference of other gas signals.

Two capillary columns (type Carboxen 1010, length 30m x ID 0,32 mm and Molesiev) are used for the separation of the different compounds.

Detection is carried out with a TCD (Thermal Conductivity Detector) and FID (Flame Ionization Detector). The compounds CO and CO₂ are converted with a Methanizer for detection on the FID which guarantees a very high sensitivity.



Technical Specifications

Degassing Unit

Type

» vacuum degassing procedure, oil- and mercury-free

Vacuum connections

» DN 16 KF

Vacuum Pump

» diaphragm pump

» chemically resistant three-stage

» compact modular design

» pumping speed: 2,0 m³/h

Vacuum sensor

» measuring range: 0,1 – 200 mbar

» read-out: 5 per sec

» independent of gas type

» accuracy/hysteresis: +/- 1 digit

Starting vacuum: 2 – 3 mbar

Degassing range: 2 – 200 mbar

Resolution: 0,1 mbar

Sample volume: 50-100 ml

Preconditioning time: < 5 min

Typical degassing time: < 2 min

Power supply: 230 V, 50/60 Hz; 115 V, 50/60 Hz

Gas Chromatograph

Basic unit: basic device with Windows control software for evaluating documentation and customer-specific settings

Detectors: Thermal Conductivity Detector (TCD) and Flame Ionisation Detector (FID), Methanizer

Columns: 2 capillary columns, Carboxen and Molesiev Column

Heating: furnace cassette with separating column and temperature programmed column heating system, separate heating for each column

Sample valve: Automatic, controlled gas sample valve with exchangeable 0,2 ml – dosing capillary, integrated in basic device.

Dimensions: approx. 600 x 500 x 550 mm

Weight: 49 Kg

(complete system)