

OIL AERATION MEASUREMENT BY COMPRESSIBILITY**Inside test bed measurement****Short processing time****Automatic system**

SMAC is an oil aeration measurement system using compressibility, developed under an IFP licence

- ✓ **Lubricant aeration ratio**
- ✓ **Enables comparison of oil quality on an engine**
- ✓ **Maintains oil pressure and temperature**
- ✓ **Measurement accuracy < 0.5 %**
- ✓ **Mobile device**
- ✓ **Fully-autonomous and automated system**
- ✓ **Fast installation**

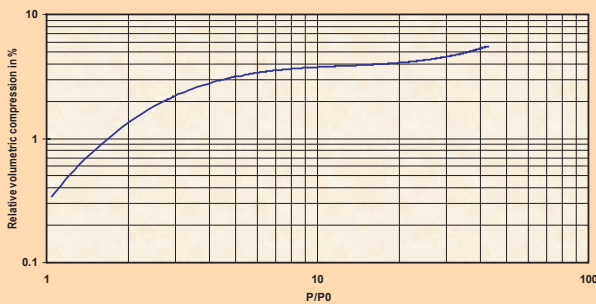


GENERAL PRESENTATION

The SMAC was developed for continuous online monitoring of the oil aeration ratio in a running mechanical system (engine, gearbox, powertrain...). It is particularly convenient for testing engines, lubricants and additives...).

The presence of air in oil can cause significant performance problem in the mechanical system. Trapped air may be in a dissolved state or suspended bubbles.

The measurement principle relies on the compressibility difference between gases and liquids. Indeed, the evolution of the relative volumetric compression according to pressure shows, in a logarithmic graph, an inflexion point, which ordinate is equal to the aeration ratio of the initial mixture.



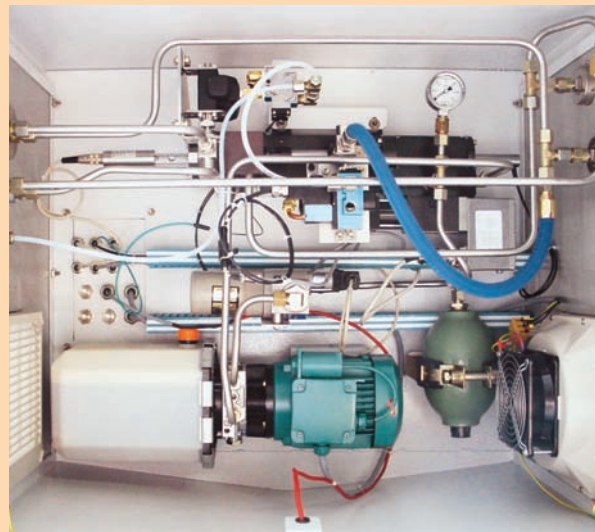
The fluid, to be analysed, circulates in the SMAC, which can be linked in serial or in parallel with the system under analysis (engine, pump test bed...).

The SMAC carries out 3 main functions:

- sampling without pressure change,
- linear pressure increase in the sample upto 190 bar while making the data acquisition of pressure and displacement,
- inflexion point localisation on the logarithm graph of the compression curve and display of the gas ratio.

The entire system is made up of:

- a control PC, for acquisition, data processing and the edition of a test report for each measurement,
- measurement parts, which consist of all the hydraulic and electrical components allowing the sampling, pressure and volumetric compressibility measurements.



TECHNICAL SPECIFICATIONS

Mechanical and electrical features

Dimensions	800 × 700 × 830
Weight	approx. 100 kg
Operation temperature	between 10 and 50 °C
Power supply	230 V (110 V optional)
Consumption	10 A

External connections

Compressed air	from 3 to 5 bar
Link with the test bed PC (optional)	AK protocol

Fluid to analyse

Type	all lubricant types
Maximum viscosity	40 mm ² /s
Recommended filtration	>50µm
Fluid temperature range	from 10 to 150 °C
Measurable aeration range	from 0.5 to 15 %

Typical values of sampling

Accuracy	>0.5 %
Duration	2 min approx.
Interval between 2 samples	1 min minimum

All D2T products benefit from a one-year back-to-factory parts and workmanship warranty. Technical specifications may be modified without prior notice.