

Blow-By Test Rig for On-Line Measurements of Blow-By Aerosols BBT 143



The Blow-By Test Rig BBT 143 for measuring the oil concentration of blow-by gases: Gravimetric Measuring System GMS 141, Process Aerosol Photometer PAP 610 and PAP 612

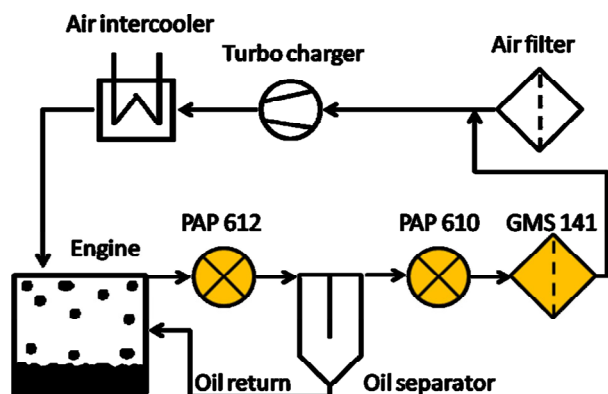
The Blow-by Test rig BBT 143 is a compact measuring system for the determination of the oil droplet content of crankcase gases (blow-by) at engine test rigs. It combines the precision of a gravimetric measurement of the GMS 141 with the speed of an optical concentration measurement of the aerosol photometer PAP 610.

Because of the design of the blow-by test rig and of the stand-alone devices, these measurements can be performed very efficiently at engine test stands. Combining the Gravimetric Measuring System GMS 141 with the Process Aerosol Photometer PAP 610, oil consumption measurements for engine characteristic maps can be performed with minimum efforts and time.

Additionally, the photometer PAP 612 provides the opportunity to measure oil films and oil gushes in pipes e.g. at tilt test stands.

Advantages

- Fast and reproducible determination of the oil content in blow-by aerosols in a large concentration range
- Integration in engine test rigs
- Measurement of the full flow of blow-by
- On-line concentration monitoring of oil mist aerosols
- Heated measuring chamber of GMS 141 and PAP 610 to avoid condensation
- Fast photometric measurements of aerosols with low uncertainty by two wavelengths
- Improved compact and robust design for mobile use, also for field use
- Straightforward to handle and fast set-up



Example for the integration of the GMS 141 and the photometers PAP 610 and PAP 612 in an engine test stand

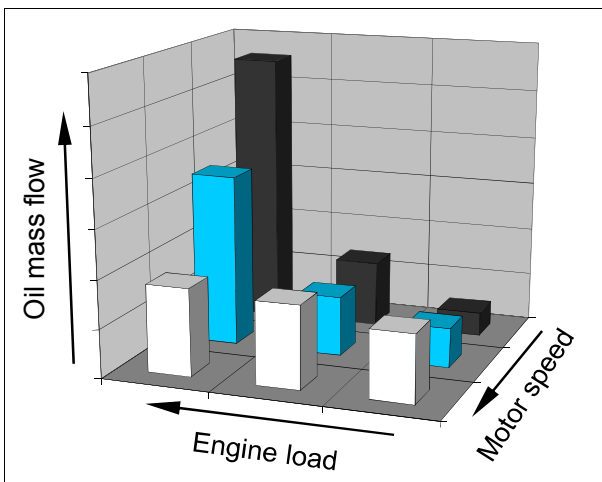
Gravimetric Measuring System GMS 141



Gravimetric Measuring System GMS 141 with absolute filter holder for flat sheets and cartridges

The gravimetric measurement system GMS 141 allows the comfortable detection of oil content in blow-by after oil mist separators with a filter flat sheet or filter cartridge directly on engines or engine test rigs.

The measuring device combines a simple and robust assembly with an economic low-cost manual application and handling. The device is controlled in a web browser.



Example:
Oil mass flow after the oil separator at combustion engines

Applications

- Determination of the blow-by oil content
- Gravimetric benchmark of oil mist separators
- Calibration of aerosol generators and aerosol photometers

Advantages

- Time-saving reproducible detection of oil mass flows
- Differential pressure measurement at the absolute filter
- Temperature and flow rate measurement of the blow-by aerosol
- Heatable absolute filter box in order to avoid condensation
- Convenient device control with web browser
- Straightforward, robust and compact design

Technical Data GMS 141

Flow rate	up to 300 l/min (18 m ³ /h)
Differential pressure measuring range	up to 50 hPa
Pipe connection diameter	28 and 32 mm
Dimensions of absolute filter	Filter flat sheet: Ø 110 mm (effective Ø 100 mm) Filter cartridge: Ø 65 mm, L= 93 mm
Temperature of filter box	max. 120 °C
Aerosol contacted materials	stainless steel, aluminum, Viton (FKM)
Power supply	230 V AC, 3 A
Dimensions	ca. 520 x 240 x 350 mm
Weight	14 kg

¹⁾ to be obtained from Topas

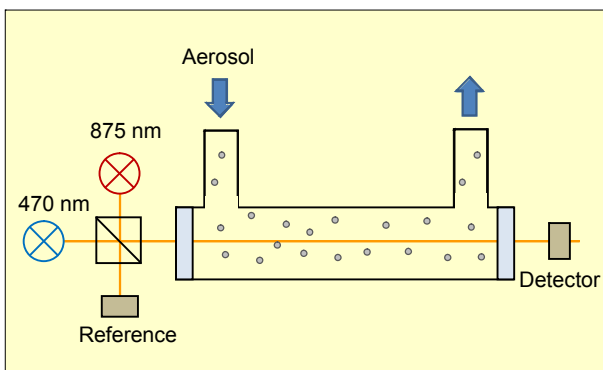
Process Aerosol Photometer PAP 610



Process Aerosol Photometer PAP 610

The Process Aerosol Photometer PAP 610 is used for inline measurements of the oil droplet concentration of blow-by aerosols. The time resolution allows the fast measurement of engine operation maps and the investigation of dynamic processes, e.g. at load or speed changes.

This measuring instrument is an addition to the Gravimetric Measuring System GMS 141 and requires a gravimetric calibration. It does not provide information about the droplet size distribution.



Measuring principle of the PAP 610

Applications

- Determination of the oil mist concentration in blow-by aerosols
- Investigation of dynamic processes at engine test rigs
- Concentration monitoring of aerosol generators on oil mist test stands (SPT 140)
- In-line monitoring of oil mist separators

Advantages

- High time resolution transmittance measurements by two wavelengths
- Remarkable time saving at measurement of engine operation maps
- Heatable measuring chamber
- Simple usability and service

Technical Data PAP 610

Principle of measurement	Transmittance / Extinction
Optical path length	300 mm
Oil concentration	approx. 0.05 to 3 g/m ³
Wavelengths	875 nm and 470 nm
Pipe connection diameter	28 and 32 mm
Heatable measuring chamber	max. 120 °C
Aerosol contacting materials	stainless steel, glass, aluminum, Viton FKM
Power supply:	
Heater PAP 610	230 V AC, 1 A USB supply (12 V)
Dimensions of tube (L x Ø)	560 x 76 mm
Weight	6 kg

Prozess Aerosol Photometer PAP 612



Process Aerosol Photometer PAP 612

The PAP 612 is a combined in-line extinction and scattered-light photometer with double-running test sections and two wavelengths, which can operate in overpressure or underpressure.

The instrument is used for measurements of high oil droplet concentrations in blow-by aerosols and for the detection of unwanted fluids in pipe systems (e.g. gushes of oil, wallfilm and condensation detection).

Due to its design, its use is conceivable on test rigs for engines, on swivelling test rigs, under lab conditions as well as for test drives in field use.

Applications

- Determination of high oil mist concentration in blow-by aerosols
- Detection of unwanted fluids in pipe systems for gas transport, e.g. gushes of oil, wall films or detection of condensation

Advantages

- Compact design for the use at laboratory, engine and tilt test stands and for field use
- Transmission and scattered-light measurements of aerosols by two wavelengths with high time resolution
- Low uncertainty and redundancy by measurement through two different measuring paths
- Operation at over- and underpressure processes
- Simple usability and service

Technical Data PAP 612

Principle of measurement	extinction, scattered light
Optical path length	25 mm
Oil concentration	> 2 g/m ³
Wavelengths	630 nm and 470 nm
Pipe connection diameter	28 mm
Max. pressure	4 bar
Temperature range	-10 ... + 60°C
Aerosol contacting materials	aluminum, Viton (FKM), sapphire glass
Power supply	USB supply (12 V)
Dimensions (L x Ø)	200 x 80 mm
Weight	1.2 kg

QMS certified to
DIN EN ISO 9001.



12 100 11908 TMS

For more information please
visit our website at
www.topas-gmbh.de

Specifications are subject to
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