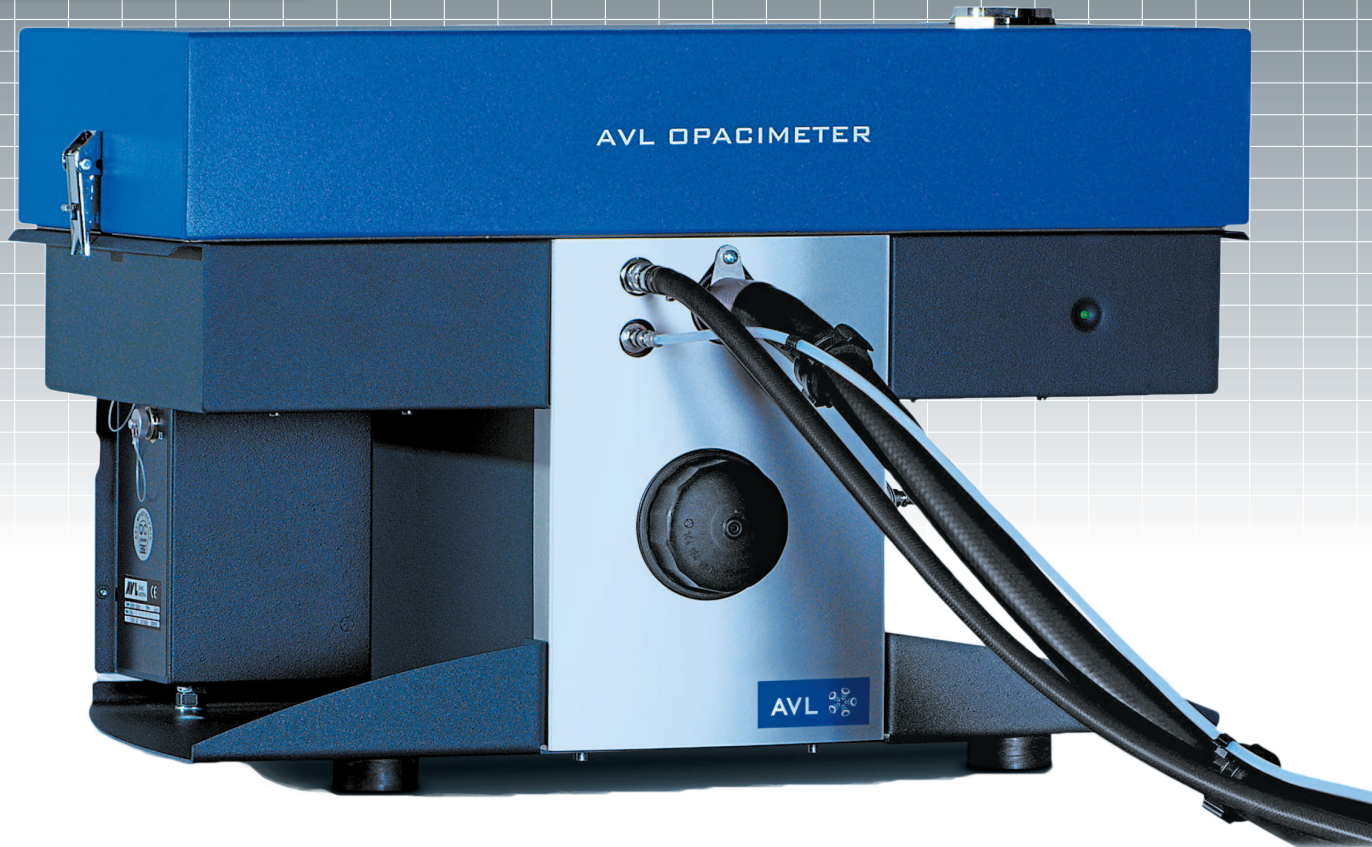


AVL



EMISSION MEASUREMENT INSTRUMENTS

AVL OPACIMETER

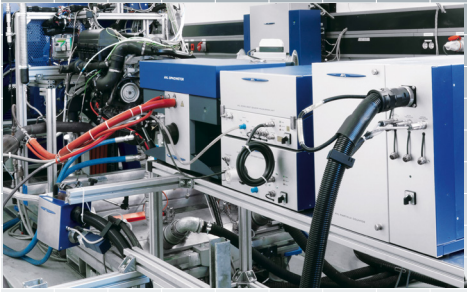
THE CHALLENGE

Recent emissions legislation has tightened the requirements for transient test procedures. To pass future emissions limits, it will also be necessary to monitor the engine's particulate emissions during transient operation even in the early stages of an engine R&D process. Therefore, an instrument with a very fast response time combined with a high accuracy is required.

Measurements in front of an engine after-treatment system where high exhaust pressures and temperatures are present must also be possible, e.g. upstream of a diesel particulate filter (DPF).

THE SOLUTION

The AVL Opacimeter is a highly dynamic partial-flow measuring instrument for the continuous measurement of exhaust gas opacity (in particular from diesel engines). It can be used during stationary and transient engine operation and is therefore perfectly suited for R&D, certification purposes and for production conformity tests. The Opacimeter measures the loss of light intensity between a light source and a receiver. The opacity N [%] and the light absorption coefficient k [m^{-1}] can be calculated. The very fast response time of 0.1 seconds, the compliance to legal requirements for emission certification testing (e.g. HD Euro III, IV, V and ECE R24), together with the easy-to-use data evaluation and the ability to measure upstream and downstream of a DPF make the AVL Opacimeter a unique product.



COMPLIANCE WITH TECHNICAL REQUIREMENTS AND REGULATIONS

- ECE R24
- 72/306/EEC, 77/537/EEC
- ELR test cycle for
 - Euro III according 1999/96/EC
 - Euro IV and Euro V according 2005/55/EC and 2005/78/EC
- GB 3847-2005
- ISO 8178-9
- ISO 11614
- SAE J 1667

The algorithms for the different test runs stipulated by law have already been programmed into the AVL Opacimeter and can be invoked at any time.

HIGH PRESSURE OPTION

The growing trend towards developing engines with different exhaust after-treatment systems requires special application components for particle measurement instruments. The latest generation of the AVL Opacimeters includes the possibility to use a high-pressure option, which extends the scope of application. It enables opacity measurements using the standard equipment with exhaust gas pressure peaks up to 3,000 mbar (relative to ambient pressure) and exhaust gas temperatures up to 800 °C.

HIGHLIGHTS

- High measurement dynamics for transient test runs
- Pre-programmed test cycles such as ELR and ECE R24
- High measurement value resolution and signal stability thanks to the conditioning of all essential parts
- Applicable for exhaust gas back pressures of up to +3,000 mbar (with high pressure option)

TECHNICAL DATA

Measurement principle	Measurement of light extinction
Measurement value output	Opacity N[%] or light absorption coefficient k[m ⁻¹]
Measurement range	N = 0 to 100% or k = 0 to 10m ⁻¹
Measurement value resolution	0.01% or 0.001m ⁻¹
Detection limit	0.02% or 0.0025m ⁻¹
Zero stability	{0.1% or 0.0025m ⁻¹ } / 30min (drift with zero gas)
Rise time	0.1s
Max. exhaust temperature	600°C (800°C with high pressure option)
Maximum exhaust pressure (relative to ambient pressure including pulsation peaks)	-100mbar to +400mbar (0mbar to +3,000mbar with high pressure option)
Interfaces	RS232 with AK protocol, digital inputs/outputs, analog inputs/outputs, TCP/IP (optional)
Data rate	up to 10Hz with RS232, 50Hz with analog output
Power requirement	1kVA (max.)
Compressed air requirement	max. 100l/min @ 4 to 10bar
Weight (basic unit)	Approx. 47kg
Dimensions (basic unit, WxHxD)	680 x 440 x 460mm
Sample flow	40 to 50l/min
Ambient conditions	5 to 50°C / max. 90% relative humidity (non-condensing)

FOR FURTHER INFORMATION PLEASE CONTACT:

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