

Test Bench for Mass Air Flow Sensors

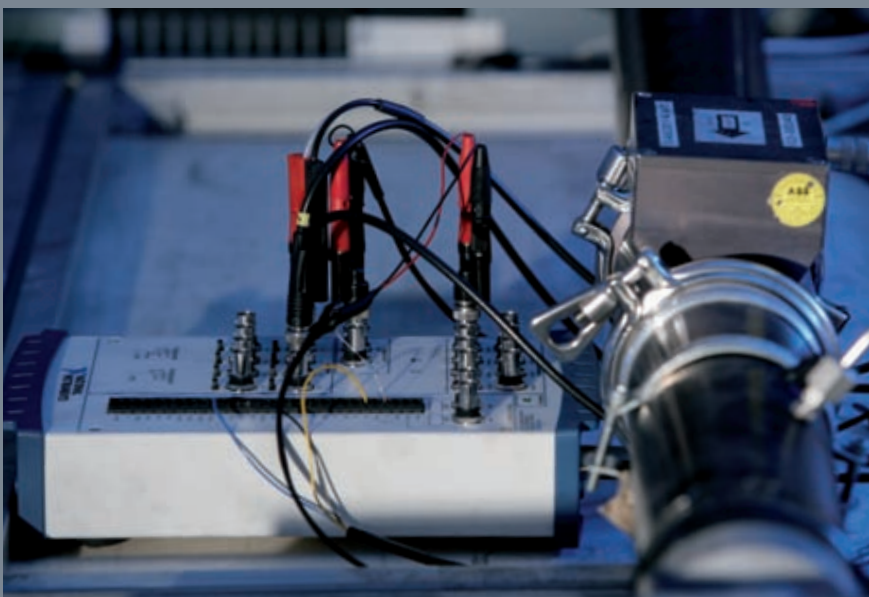
Measurement and Life-Cycle Tests



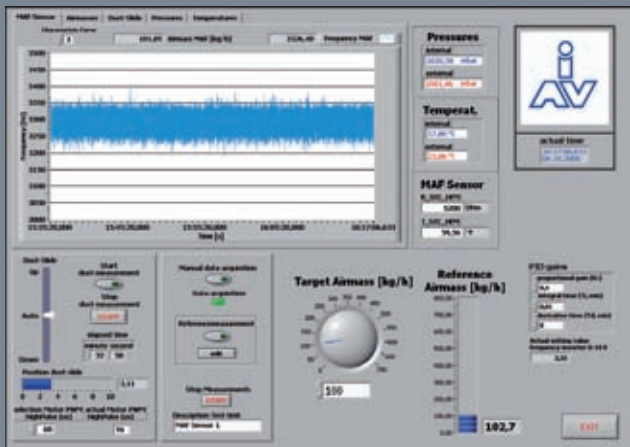
In the field of combustion engines, the automotive industry is currently focusing on optimizing fuel efficiency and exhaust emissions. Optimizing and varying combustion on the running engine demands extremely accurate information on the air supplied in the combustion process. MAF sensors have been used in this domain for a number of decades.

Air ducts for admitting different substances to the MAF sensors

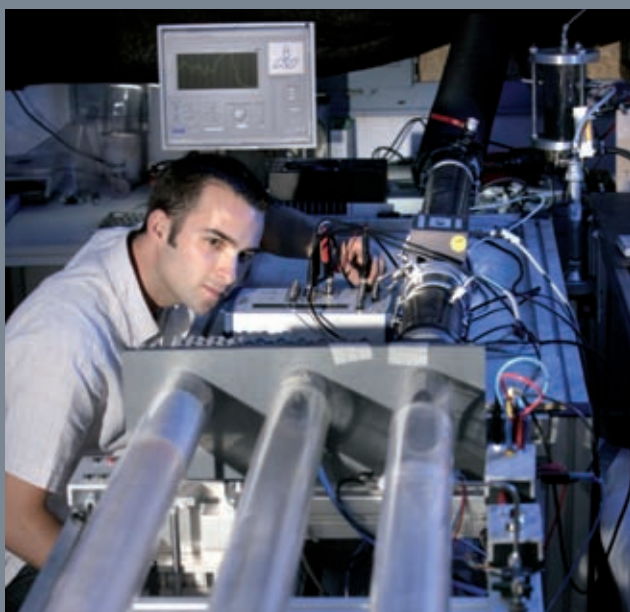
Tests are performed to examine their suitability for production, their pollution tolerance and their measurement plausibility. Various test scenarios can be used to simulate specific demands placed on the sensors in different ambient conditions.



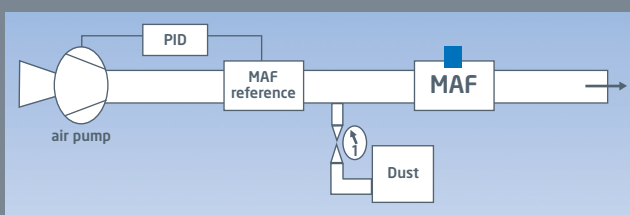
Reference measurement of air flow



Measurement and control interface



Adjustment of the measurement setup



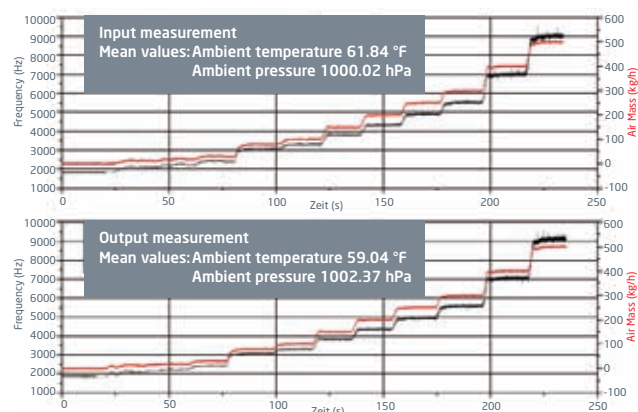
Air-duct/control path

Applications

- ▶ Measuring different MAF sensors, e. g. hot-film MAF sensor (HFM) or hot-wire MAF sensor
- ▶ Contaminating the MAF sensor with different substances, e. g. dust or water
- ▶ Automated measurements with a high level of reproducibility
- ▶ Life-cycle tests
- ▶ Benchmark tests based on reference measurements before and after applying substances

Technical Specification

- ▶ Air-mass flow: 0 - 600 kg/h
- ▶ Ascertainment of measured reference flow on the basis of calibrated air-mass flow measurement
- ▶ Measurement of analog and digital MAF sensor signals
- ▶ Automated conversion of sensor signal using characteristic curves and interpolation functions
- ▶ Detection of process and environmental variables (pressure, temperature, etc.)
- ▶ Different display formats and flexible evaluation algorithms
- ▶ Test-bench control with LabVIEW



Comparison of signal outputs