

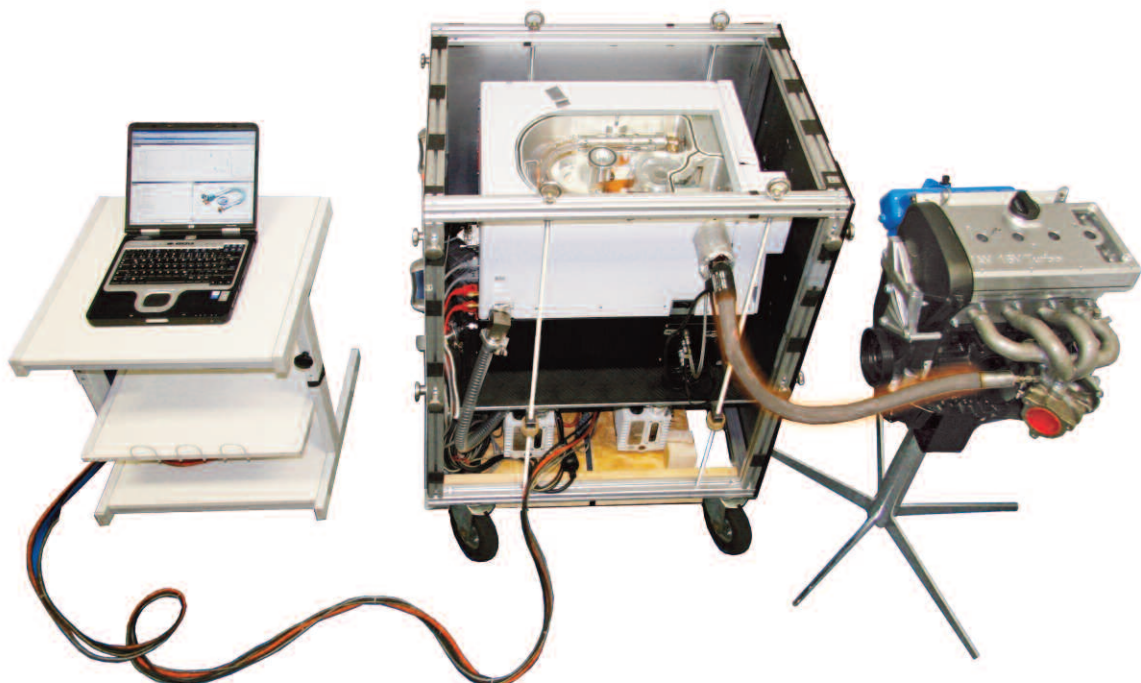
FOCAS 1200

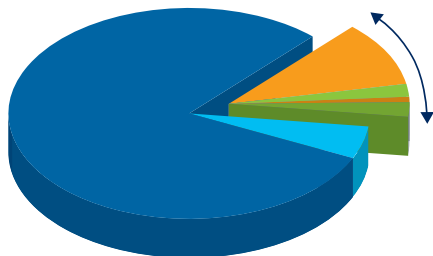
Fast Oil Consumption Acquisition System 1200

The FOCAS 1200 measuring system works on the principle of mass spectrometry. It is a modern facility for investigating the oil consumption behavior of combustion engines. Particularly effective as a development tool, it provides major time savings over conventional methods, such as gravimetric or volumetric measurements. Once calibrated with engine-specific oil, it permits quantitative statements on current oil emission as well as relative statements for comparing different development stages or for detecting cases of damage. The data obtained can be used for generating an oil-emission map within just a few hours. HC emission can also be determined.

Employing over 4,000 staff across the globe, IAV is one of the leading providers of engineering services to the automotive industry. Our core competencies include powertrain, electronics and vehicle development. As a result, we can provide our clients with production-ready solutions for the entire vehicle on a one-stop shop basis. IAV engages in its own primary research, performs its own advanced development activities and works on an interdisciplinary basis. Our clients include all major automobile manufacturers and component suppliers.

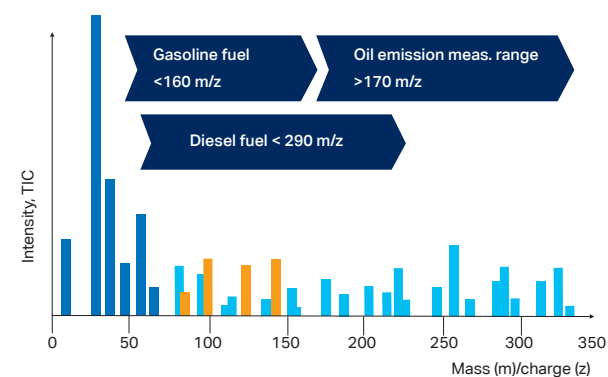
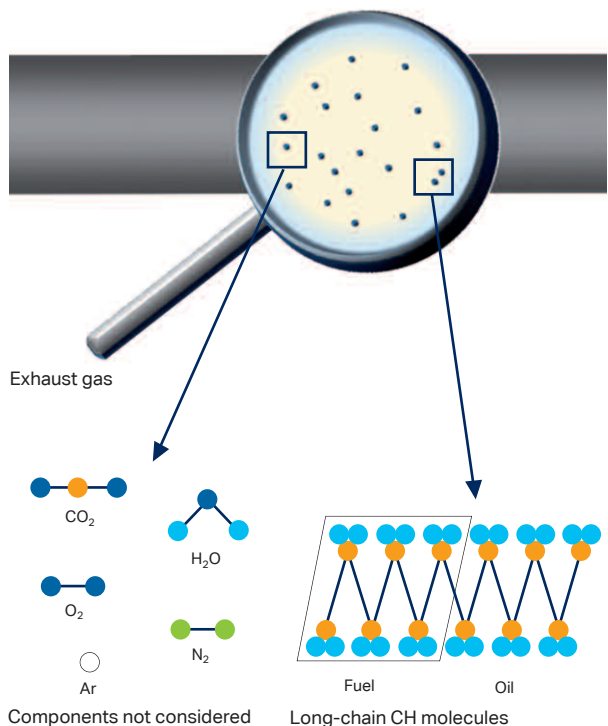
Picture below: Measurement set-up with evaluation system, measuring equipment and test specimen





- | | |
|--|-----------------------------------|
| Measurable components: | Components not considered: |
| Oil vapor
(exhaust-gas measurement) | Burned oil component |
| Bleed component
(blow-by measurement) | External oil leakage |
| | Oil droplets |
| | Oil deposits |

Oil losses



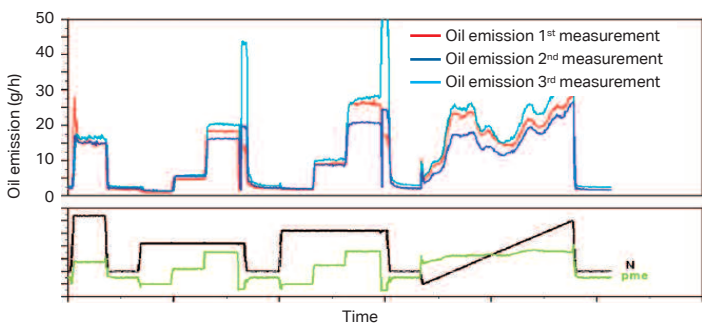
Operating principle, prerequisites:

- A fundamental distinction must be drawn between oil balance, oil consumption and oil emission. As a result of its operating principle, FOCAS 1200 can only measure the components emitted.
- Calibration is necessary for quantifying concentration from the measured signal. This takes place using oil specific to the test specimen.
- The relevant mass flow must be known for stating oil emission.
- Concentration measurement uncertainty falls within the single-figure ppm range.
- Calibration provides the capability of allowing for pressure and temperature differences at different measuring points.
- System is suitable for conducting cylinder-specific measurements, measurements upstream and downstream of the exhaust-gas turbocharger as well as measurements in the ventilation system.
- An appropriate sampling point in the installation space must be agreed with the measurement personnel and prepared (position/accessibility/diameter) before commencing measurement.
- FOCAS 1200 cannot be used for conducting measurements autonomously. Users must have experience in operating/maintaining the system as well as in evaluating the measurement signal. This will be provided by instructed and qualified staff.
- Results are normally presented in the form of plots or maps.

Application:

- FOCAS 1200 is a development tool for evaluating component variations and parameters in the development process.
- It also provides support in conducting validation measurements throughout the engine.

Results: Emission plot



Emission map

