

Course

Gas Flow Metrology



This **five-day course** focuses on the backgrounds of gas flow and energy measurement and the pitfalls that can be encountered in these measurements. It was developed for people who are active in gas quantity and energy measurements and for people who are responsible for calibration or the initial verification of gas meters.

Contents of the course

- Module 0: Backgrounds of metrology (0,5 day)
 - Taking measurements, terminology
 - Traceability of gas flow measurements
 - Measurement uncertainty overview
- Module 1: Legal (0,5 day)
 - Fundamentals of regulations: MID, OIML Recommendations, product standards
 - Legal requirements for gas meters and conversion devices
 - Sealing and markings
 - Verification: does the instrument meet tolerances
- Module 2: Instrumentation (1 day)
 - Equipment for gas flow metering and future developments
- Module 3: Energy (1 day)
 - Measurement of energy
 - Calculation of the calorific value from the gas composition
 - Process gas chromatographs (GCs): design and operating principle
 - Traceability of process GCs
 - Standards for the evaluation of process GCs
 - Calibration of process GCs
- Module 4: Conversion devices and flow computers (1 day)
 - Real gas effects in natural gases
 - Water and hydrocarbon dew point
 - Energy measurement systems
 - Gas Custody Transfer
- Module 5: Calibration (1 day)
 - Calibration models for gas flow meters
 - Calibrations in traceability chains
 - Practical calibration in VSL's gas flow laboratories
 - Uncertainty evaluation and influence of flow disturbances

Location

The course takes place at:

VSL

Thijssseweg 11

2629 JA DELFT, The Netherlands

Certificate

All participants will receive a certificate of attendance at the end of the course.

Information

For further information please contact

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The participants should have basic knowledge of pc-based spreadsheets like Excel.

Duration and dates in 2010

5 consecutive days, 9h00-16h30

4 – 8 October 2010

Language

The course material is in English. In all probability the course will be given in English. Only if all participants are Dutch the course will be given in Dutch.

Fee

€ 3065,00 per person, VAT excluded.

Lunches, refreshments and course material are included.

