



EffecTech® Training Academy

Learn best practice from
the Global Leaders in
Gas Measurement



Gas Quality Matters

How much do your key staff know
about gas measurements?

Gas quality measurements are a vital element in determining the financial value of natural gas, LNG and other fuel gases. To avoid financial implications of mismeasurement it is important that the technicians and managers responsible for gas chromatographs and process instruments understand what is being measured and how it is measured, as well as being able to identify and resolve problems.

EffecTech® Training Academy courses are designed to provide you with the knowledge and tools needed to understand and apply best practice in gas measurement.

Gas Quality Training

The EffecTech® Training Academy offers high quality standard and bespoke training courses to suit the needs of those working in gas quality measurement.

Course design and provision is carried out by EffecTech's experienced Gas Measurement Specialists, drawing on extensive in-house expertise to offer a world-class learning experience.



"The training course was very informative and it covered both the basics and something more advanced on GC theory. The teachers were great and enthusiastic ... " – participant



EffecTech® Training Academy courses

1: Gas Chromatography Training for Technicians and Managers

2: Statistics and Uncertainty for Measurement Specialists and Engineers

3: Liquefied Natural Gas and LNG Sampling

1: Gas Chromatography Training for Technicians and Managers

Gas chromatography is the most commonly used method for gas quality measurement. The gas quality data produced by a gas chromatograph (GC), when combined with the flow data, determines the financial value of the gas. However, the theoretical details of the technique are not generally understood by the industry. Therefore, it is important that technicians and managers have a clear understanding of gas measurement as well as being able to identify and resolve issues.

This course is for: technicians, engineers and managers working with process or laboratory gas chromatographs who require a more detailed understanding of the theory and practice of how and why gas quality is measured and what is considered best practice.

Laboratory or Process Gas Chromatography?

The course can be tailored to suit the requirements of technicians who use process gas chromatographs or scientists who use laboratory gas chromatographs.

Course Content:

- Introduction to gas quality – what it is and why we measure it
- Chromatography
 - principles and hardware
 - column performance
 - column tactics
- Natural gas analysis – ISO 6974 suite of standards
- Calculation of composition and properties
- Response characteristics
- Natural gas sampling
- Troubleshooting guide

Practical Experience

For this two-day course, EffecTech has a range of the gas chromatographs most commonly used on-site and in laboratories. Students will gain hands-on practical experience in the use, calibration and maintenance of gas chromatographs. Theoretical aspects of gas chromatography and the calculation of physical properties will be covered.

Course requirements: All participants will be asked to complete a short questionnaire detailing their previous GC training and experience in advance so that the course materials can be matched with their knowledge level.

Participants will need to bring a laptop with Microsoft Excel installed and have a basic understanding of how to use the program.

Course length: 2 days





2: Statistics and Uncertainty for Measurement Specialists and Engineers

This course is for: those who want to know more about the commonly used statistical terminology and how statistics and other measurement parameters may be combined to formulate a robust uncertainty budget.

Course Content:

- Introduction to the role of statistics in gas measurement
- Random and systematic errors
- Accuracy and precision
- Errors in natural gas analysis / calibration gas
- Statistics of repeat measurements
- Frequency distributions and the normal distribution
- Confidence limits
- Accuracy and traceability
- Calibration / modelling calibration
- Concepts of uncertainty
- Compliance with limiting specifications
- Evaluating and combining uncertainty
- Use of Shewhart Control Charts (SQC)

Students will examine the types of errors found in gas analysis and how they are propagated. The importance of repeat measurements, trend analysis and Monte Carlo simulations will also be covered. The course will include practical exercises to build confidence in developing spreadsheet-based uncertainty calculations.

Course requirements: Participants will need to bring a laptop with Microsoft Excel installed and have a basic understanding of how to use the program.

Course length: 1 day

3: Liquefied Natural Gas and LNG Sampling

This course is for: engineers and managers interested in Liquefied Natural Gas measurement, and management of associated issues, such as fractionation.

Course Content:

- How is LNG produced?
- Transportation, un-loading, storage and re-gasification of LNG
- Measurement of LNG, volume and quality
- Sampling issues
- ISO 8943 – Sampling of LNG
- Vapourisation, fractionation, enrichment and sub-cooling
- EN 12838 – suitability testing of LNG sampling systems
- Alternatives to GC measurement of LNG
- Cryogenic LNG reference liquids

The course will provide an overview of the measurement of LNG and focus on difficulties in sampling and measurement. Current best practice will be covered along with an introduction to the cutting edge research EffecTech has undertaken to produce LNG of known composition which has been subsequently used to validate optical instruments for the direct measurement of LNG.

Course requirements: A basic understanding of the natural gas industry is advantageous.

Course length: 1 day

“Excellent course, well worth attending” – Participant at a bespoke training course for National Grid

“Excellent training experience!” – participant



Flexible, tailored training

EffecTech® Training Academy courses include practical work as well as theory and can be tailored to suit beginners, intermediate and advanced level learners.

You can choose either to attend the course most relevant to your requirements or sign up for all three to obtain a full overview of gas quality measurement in natural gas and LNG.

Class sizes are limited to facilitate interaction with course instructors and other participants.

Registration

For more information about the EffecTech® Training Academy courses, please visit our website at www.effectech.co.uk or email info@effectech.co.uk

Course Dates

The EffecTech® Training Academy runs courses three times a year in January, May and October which are held at EffecTech Headquarters in Uttoxeter, UK.

All three courses take place in the same week.

To find out more, please contact us at info@effectech.co.uk

Looking for a course tailored to your company's needs?

If you would like an EffecTech® Training Academy designed to suit your requirements, EffecTech's experienced trainers will work with you to create a bespoke training course.



Let us know what you need at info@effectech.co.uk

About EffecTech

EffecTech, the global leader in gas measurement, provides accredited inspection, calibration and testing services to the energy and power industries for gas quality, flow and total energy metering. Our highly trained and experienced staff provide fast and effective solutions to your fiscal, regulatory, contractual, safety and environmental gas measurement requirements.

Other Products and Services:

- ISO 17025 calibration gas mixtures for
 - Natural gas and LNG
 - Sulphur and odourant
 - Continuous emissions monitoring
 - Blast furnaces



- Instrument performance evaluation (ISO 10723)
- Gas quality measurement inspection
- Global Gas and LNG Proficiency Testing Scheme (GGLNG) for the Natural Gas and LNG industries
- Stack Emissions Proficiency Testing Scheme (SEPTS) for companies that provide stack testing services
- Cryogenic reference liquid mixtures for LNG applications

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EffecTech also operates laboratories in key locations in India and Qatar.

