

## Validation for Emissions Trading Requirements

Any industrial installation in the EU emitting significant quantities of carbon dioxide are subject to monitoring and reporting requirements as outlined in the Commission's "Monitoring and Reporting Guidelines" of the EU Emission Trading Scheme (EU/ETS).

EffecTech® provides calibration services for clients necessary for compliance with the EU/ETS. EffecTech's laboratory is accredited by the United Kingdom Accreditation Service (UKAS) for providing calibration gases accredited to ISO 17025 and the analysis of samples collected from the customer's site. EffecTech's site services team is unique in providing ISO 17025 calibration at the customer's site to calibrate their on-line process instruments for compliance with the requirements of the EU directive. This requirement for on-line monitoring is outlined in section 13.5.3 of the "Monitoring and Reporting Guidelines" of the EU/ETS.

These requirements include site-specific analysis of gas composition which can only be achieved using gas analysis instrumentation located on site. This instrumentation can be based on a number of different techniques, for example, gas chromatography, infra-red spectroscopy or mass spectrometry.

In addition to using in situ gas analysis, the requirements also specify that the calibration gas must be calibrated according to ISO17025. The M&R Guidelines also specify required measurement

uncertainties which vary depending on the process and industrial sector. E.g. In the natural gas fuelled power station sector, category C emitters are required to demonstrate an uncertainty of <1.5% relative for their measurement of carbon dioxide emissions.

In order that verifiers are able to confirm the required measurement uncertainty has been met, the analytical instrumentation used on site must be assessed. This assessment is in the form of an objective evaluation using gases of known composition. For natural gas process instrumentation, the evaluation is based upon the International Standard ISO10723. An ISO 17025 calibration certificate is required by the verifiers to show compliance with the M&R guidelines.

The EU/ETS directive requires that measurements of carbon dioxide and their uncertainties be reported in accordance with the "Guide to the expression of uncertainty in measurement" (GUM) so that a 'level playing field' is established where uncertainties can be directly compared without fear of differences arising due to the instrumentation or calculations used.

EffecTech® now calibrates (according to ISO 17025) over 100 gas chromatographs in the UK, Ireland, Belgium, Spain, Turkey, Qatar and the UAE, providing ISO 17025 calibration gases to more than 20 countries around the world.



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global leaders in gas measurement



site services

global leaders in gas measurement

Inspection of Gas Quality Measurements  
Flow Metering Validation  
Validation for Emissions Trading Requirements

EffecTech® can reduce the risk of financial discrepancies arising from errors and uncertainties in your metering. The services offered by EffecTech® are world leading and can be used to demonstrate regulatory, contractual, environmental or safety compliance.

EffecTech® is an independent specialist company providing 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 obligations.



#### Inspection of Gas Quality Measurements

EffecTech® provides inspection and performance evaluations on Gas Quality Measurement Systems & process gas chromatographs in accordance with the international standards ISO 17020 and ISO 17023. Operators require this to demonstrate that their natural gas measurement systems are operating as expected and that optimal performance is being maintained reducing significant mis-measurements which may compound over time. Regular site inspections and performance evaluations provide confidence in the metering system and objective evidence that the gas is being metered correctly. EffecTech® is first in the world to have gained ISO 17025 accreditation for on-site calibration by performance evaluation. This enables EffecTech® to provide clients with evidence of compliance with even the strictest fiscal metering requirements.

By investing in annual inspections and site calibrations provided by an independent specialist company, the traceability and accuracy of your data is guaranteed and the quality of the data generated will be greatly improved. The improvement in quality will increase the confidence in the analytical results which are used to calculate the physical properties and ultimately the monetary value of the fuel gas.

As part of the inspection we perform a review of the whole gas quality measurement chain covering:

- Sampling
- Sample conditioning
- Calibration
- Analysis
- Staff
- Quality control
- Maintenance

Following a successful inspection, calculations of mass/energy balances, physical properties and process efficiencies are more credible and have a traceable and quantifiable uncertainty. Your internal risk assessments can then be based on accurate inspection information providing improved financial predictions and profitability.

As part of this service we supply free telephone support and advice including:

- **Technical support** - analytical procedures including calibration gas composition, quality control procedures and refinement of parameters to improve gas quality measurements.



#### Flow Metering Validation

- Gas volume uncertainties are the dominant factor in the metering of energy and regular validations will reduce mis-measurements and un-accounted for gas.
- ISO 17025 accredited for on-site calibrations of temperature, pressure and differential pressure ensuring traceable validations with defined uncertainty.
- Financial confidence in billing of gas.
- We operate a re-calibration database and will remind clients of forthcoming instrument calibrations.

A metering system validation will reduce exposure to commercial risk created over time by possible over or under metering of total energy i.e. volume and heating value. Metering systems comprise of many separate measurement elements, all of which are susceptible to calibration drift and measurement bias over time. In addition, the flow computer system must be correctly set up and configured to use the correct constants and parameters from the outset and updated as appropriate.

EffecTech® is an independent gas metering specialist with a wealth of experience gained from across the globe. We specialise in performing comprehensive and regular traceable validations of the entire metering system. We work with large consumers of gas such as power stations and other energy intensive industries including gas transmission and LNG terminal operators.

We offer a troubleshooting and consultancy service to investigate and identify metering errors, lost or unaccounted for gas and suspected metering or energy imbalances across plant and hydrocarbon accounting chains. In addition, we also witness metering validations as an independent third party where the end user of the gas does not own and maintain the flow measuring equipment.

Other services include, inspection of metering system maintenance, preparation of metering validation procedures, training and mentoring and attending factory acceptance tests (FAT) as well as advice on metering system design and specification are other areas where we are able to assist clients.

Typically a metering validation will include performance evaluation of the following:

#### Primary instrumentation

Orifice plates must be inspected, cleaned and regularly re-certified by an accredited metrology laboratory.

Turbine and ultrasonic flow meters can be validated in situ by monitoring various operating parameters. They are also removed periodically and sent to an accredited calibration facility for re-calibration with high pressure natural gas.

#### Secondary instrumentation

Differential pressure (DP), pressure and temperature transmitters are calibrated according to our ISO 17025 calibration scope with certified, traceable UKAS calibration equipment ensuring a high standard of accuracy and traceability. DP transmitters often have a footprint calibration performed off site by other ISO 17025 accredited calibration facilities.

#### Flow computer

Functions and calculations must be verified against independent off-line calculations to ensure they are correct. In addition, constants and system data such as orifice plate, pipe sizes and gas composition dependant factors entered into the flow computer must also be verified.