

Biomethane to Grid and CV measurement; notes on FWACV determination

Context

Work completed for the EMIB working group has identified that:

- Enrichment of Biomethane to FWACV protects local consumers (from 2010 Work Group)
- Flows of Biomethane into existing gas networks are small and cannot materially affect the calculation of FWACV in a charging zone
- Therefore measurement of CV can be performed to an accuracy of 0.5 MJ/m³ (instead of 0.14 MJ/m³), with no adverse effects on consumers
- This is conditional on the fact that the Biomethane CV must fall within the FWACV cap by enrichment or blending
- The FWACV equipment that is necessary and appropriate for normal entry from NTS into GDNs has been designed to meet the requirements of the Gas (Calculation of Thermal Energy) Regulations 1996, is very complex and difficult for new entrants to develop
- GDNs are accountable for CV measurement under Letters of Direction.

Further, it has been agreed that:

- Biomethane sites will be subject to Direction by Ofgem so that appropriate standards of accuracy and resilience of CV measurement instrumentation can be under sensible governance
- Ofgem are able to issue Letters of Direction that reflect the potential impact of Biomethane connections on FWACV calculations
- Ofgem approval is required for all instruments that measure CV and calculate total energy flow and that this should be appropriate to Biomethane connection

Data management for FWACV and import to the UK-wide billing system is computed by NG Transmission and afterwards managed by Xoserve on behalf of all shippers, gas transporters and consumers. Xoserve require:

- Receipt of data in specified electronic file format (CSV) at end of gas day (data is total energy flowing into the grid and average CV of such energy)
- Communication of data files using ISDN link

Current Thermal Energy Regulations broadly require:

- The calculation of actual daily FWACV is performed within the Xoserve systems using data collated from measurement sites in specific charging zones.
- CV measurement instruments must provide specific demonstration of fitness for purpose to the satisfaction of the Gas Examiner, and be housed and operated so that this demonstration is rendered feasible

- Calculation of FWACV to be performed by an approved methodology and approved software (Dannint + sub-systems)
- CV data processing and retention is required on site for min period (assume [6] years)
- CV data is required to be available for inspection upon reasonable request

Biomethane Producers Standpoint

Biomethane producers require that barriers to entry are removed to the maximum extent possible so that project economics can be improved and processes simplified. Reduction in cost of equipment will over time allow a lower RHI than would be the case and hence reduced level of support from the Government.

Producers accept that this must be achieved without any adverse financial impact on consumers. There is no safety impact in relation to FWACV, EMIB has separately reviewed the conditions in relation to gas quality from a safety perspective.

Options for implementation of EMIB findings in respect to FWACV

REA believes that there are three main options:

1. Continue with existing equipment and governance arrangements (to deliver all requirements as set out in Dave Lander briefing note)
2. Enable alternative FWACV instrumentation under governance and Letters of Direction specific to Biomethane
3. Change Regulations to remove Biomethane from the FWACV calculation, but retain governance arrangements for instrumentation accuracy and data retention

1. Retain existing arrangements

This option perpetuates the current plant and equipment provision, using equipment that is available from one supplier.

2. Alternative Instrumentation with specific Letters of Direction

This option will enable use of suitable alternative measurement systems to calculate a total energy flow into grid and average CV. This will provide the 0.5 MJ/M3 level of accuracy. In this option, competitive supply of equipment is supported and costs are expected to reduce substantially.

REA has been given estimates of £50K per site from 2 suppliers of Entry facilities as to the additional cost imposed by the FWACV suite of systems (ie this cost relates to FWACV systems and not the CV accuracy).

To illustrate, a complex chromatograph, expensive computer, dedicated and bespoke software, and complex hardware can be replaced with a calorimeter plus data logger and flow computer (Energy calculation and data storage), all of which are widely available at much lower cost. Savings are estimated at a minimum £50k per site.

Question - is a separate flow computer needed if the biogas clean up and upgrading plant PLC can do the calculation and store the data?

Current facility to transmit data and data file format can be retained so that there are no required changes to Xoserve systems. This would comprise end of day values at the same frequency and granularity.

All data visibility and audit capability described in section 1 above would be maintained.

Remote visibility via telemetry of key values (including safety related and instantaneous CV), remote control of the ESD valve and transmission of data files would be unaffected.

3. Biomethane sites removed from FWACV Calculations

This option is a simplification of Option 2; Ofgem would continue with Letters Of Direction but this would be in regard to operational FWACV value targeting (enforced via NEA) and data retention.

CV data would continue to be measured and retained on site, and transmitted to Xoserve in the current (or an appropriate alternative) file format.

Ofgem would be able to determine and audit actual CV measurement and values in real time and historically, and the Biomethane producer would still be obliged to target and achieve prevailing grid FWACV value as advised by the transporter.

The requirement to retain data securely for a period would be retained; however as the site no longer contributes to FWA values the requirement for data inspection upon request would be removed.

The net result would be smaller, simpler and substantially cheaper installation that continued to provide accurate energy calculation and the necessary data albeit with no connection to the FWA calculation. Estimated saving £50k per site.

Appropriate changes to the Thermal Energy Regulations would be required in order to deliver these savings.