

METHODOLOGY

on converting measured natural gas quantities from volume units into energy units

The methodology is based on the following regulatory documents:

- BDS EN 12405-2 Gas meters - Conversion devices - Part 2: Energy conversion
- International recommendation OIML R 140 Edition 2007 (E) Measuring Systems for gaseous fuel.

The natural gas quantity converts from volume - m³ into energy - kWh using the following formula:

$$E = V \times GCV$$

where,

E – energy, kWh;

V – volume, measured by the commercial metering devices, at temperature 20°C and pressure 0.101325 MPa, m³;

GCV – calorific value, gross calorific value of the natural gas at referent temperature 25 °C /20 °C, kWh/m³.

Representative calorific value of the gas is the calorific value (GCV), determined by the Transmission System Operator (TSO) pursuant to:

- **BDS EN 12405-2 Gas meters. Conversion devices - Part 2: Energy conversion**

3.1.22 Representative calorific value

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Individual calorific value or a combination of calorific values that is considered to be, according to the constitution of the measuring system, the most appropriate calorific value to be associated with the metered quantity in order to calculate the energy

The representative calorific value is calculated by rounding to the third decimal, as follows:

$$GCV = \frac{\sum_{i=1}^n GCV_i \times V_i}{\sum_{i=1}^n V_i}$$

Where:

V_i – volume at entry point i , m³/day;

GCV_i - calorific value at entry point i , kWh/m³.

Representative calorific value is introduced for a period of one calendar month.

The representative calorific value shall be provided not later than 15 calendar days prior to the beginning of the relevant month.

To determine the representative calorific value, the TSO keeps a database of average hourly and average daily calorific values and volumes of natural gas entering the entry points.

When determining the representative calorific value for a subsequent period, the TSO shall take into account the differences between the actual calorific value and the representative calorific value for the last completed period.

No representative calorific value is used on interconnection points and cross-border points.

Representative calorific value applies to all domestic entry/exit points of the National Gas Transmission Network (NGTN) and the Gas Transmission Network for Transit Transmission (GTNTT).

Representative calorific value is to be used by Users to determine the energy value when nominating quantities for transmission at the relevant points.

Representative calorific value is used to calculate the energy value of the measured/allocated volumes at the relevant points.

To determine the energy value of the natural gas quantities in withdrawal regime of Chiren UGS, a representative calorific value is used which is calculated on the basis of the representative calorific values used in injection regime, average weighted by the monthly quantities in energy units, provided that a storage contract has been concluded according to which quantities are nominated and allocated in energy units.

To book capacity at entry and exit points, the calorific value determined by the EWRC for the regulatory period is used, according to Decision NGP-1 of 01.08.2017:

“III. Approves to Bulgartransgaz EAD for the first year of the regulatory period: Energy value per volume unit of natural gas used to calculate access and transmission prices: Average GCV of natural gas 10.64 kWh per 1 m³ of natural gas measured at a temperature of 20 °C and a pressure of 0.101325 MPa.”