# SLOVENSKI STANDARD
# oSIST prEN ISO 2615:2023

**01-september-2023**

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**Analiza zemeljskega plina - Biometan - Določanje vsebnosti kompresorskega olja (ISO/DIS 2615:2023)**

Analysis of natural gas - Biomethane - Determination of the content of compressor oil (ISO/DIS 2615:2023)

Erdgas - Analyse von Biomethan - Bestimmung des Gehalts an Verdichterö (ISO/DIS 2615:2023)

Analyse du gaz naturel - Biométhane - Détermination de la teneur en huile de compresseur (ISO/DIS 2615:2023)



**Ta slovenski standard je istoveten z:** **prEN ISO 2615**

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|---|---|---|
| 75.060 | Zemeljski plin | Natural gas |

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DRAFT INTERNATIONAL STANDARD

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# Analysis of natural gas — Biomethane — Determination of the content of compressor oil

ICS: 75.060



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# Foreword

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This document was prepared by Technical Committee This document was prepared by Technical Committee ISO/TC 193, *Natural gas*, Subcommittee SC 1, *Analysis of natural gas*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

# Introduction

This document supports the implementation of specifications for biomethane and biogas such as ISO 15403-1[2] or EN 16723 (all parts[3,4],) when used in the natural gas grids and when used as a transport fuel. Implementation of these specifications require fit-for-purpose measurement methods with known performance and acceptable metrological traceability to support the trade in renewable gases and conformity assessment.

# Analysis of natural gas — Biomethane — Determination of the content of compressor oil

## 1 Scope

This document gives general guidance for the sampling and gas chromatographic analysis of compressor oil in biomethane or compressed natural gas (CNG). The compressor oil mass fraction is determined by sampling on coalescing filters under defined operational conditions (the two first cubic meters of gas referring to standard conditions, delivered at a refuelling station).

Compressor oils are lubricants used in mechanical devices where the purpose is to reduce the volume and increase the pressure of gases for use in a variety of applications.

The method is solely applicable to compressed gas ($p$>18 MPa).

The compressor oil content is expressed as mass fraction. The scope of this method is from 3 mg/kg – 30 mg/kg.

## 2 Normative references



The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.



ISO 6974-1, *Natural gas — Determination of composition and associated uncertainty by gas chromatography — Part 1: General guidelines and calculation of composition*



ISO 6974-2, *Natural gas — Determination of composition and associated uncertainty by gas chromatography — Part 2: Uncertainty calculations*

ISO 6974-3, *Natural gas — Determination of composition and associated uncertainty by gas chromatography — Part 3: Precision and bias*

ISO 6976, *Natural gas — Calculation of calorific values, density, relative density and Wobbe indices from composition*

ISO 14532, *Natural gas — Vocabulary*

ISO/IEC Guide 98-3, *Uncertainty of measurement — Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)*

ISO 8573-5, *Compressed air — Part 5: Test methods for oil vapour and organic solvent content*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 14532, ISO/IEC Guide 98-3 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

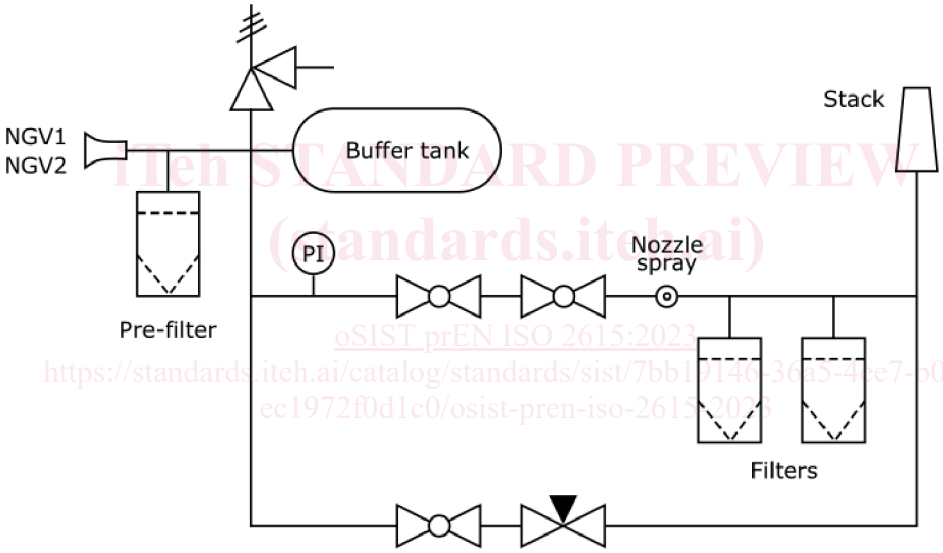
— IEC Electropedia: available at https://www.electropedia.org/

**3.1**
**response**
output signal of the measuring system, for a component that is measured as peak area or peak height

## 4 Principle

This method is based on sampling a sufficiently large volume of gas and condensating the compressor oil on a coalescing filter by expanding the gas through a nozzle spray. The compressor oil thus collected is analysed using gas chromatography. The gas chromatograph is calibrated with calibrants ideally using compressor oil of the same make. The method uses a flame ionization detector (FID) or mass spectrometer (MS).

The pressure of the compressed gas to analyze is drastically reduced by forcing the gas to pass through a nozzle spray with a limited hole diameter (which implies that the temperature of the gas also drops) so as to make the oil condense as droplets and deposit on a coalescing filter. Two filters are connected in series, a main filter and a backup filter. The oil that deposits in the buffer tank is recovered as well. For a typical sampling arrangement, see Figure 1.






**Key**

| | |
|---|---|
| NGV1 | NGV1 receptacle for car refueling |
| NGV2 | NGV2 receptacle for truck/bus refueling |
| PI | pressure indicator |

**Figure 1 — Compressor oil sampler**

## 5 Chemicals and materials

### 5.1 Compressor oils

For calibration purposes, samples of all compressor oils used at the station or any other oils that can be present in the gas to be analysed shall be separately collected to be used for preparing the calibration standards. Please note that oil references should ideally come from the same production batch as the ones actually used at the station.

If not feasible, calibration should be made using equivalent oils. The closer the characteristics of the oil being used for the calibrants and the oil present in the gas, the better the performance of the method.