



**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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**ICS:**

75.060

Zemeljski plin

Natural gas

**oSIST prEN ISO 2615:2023**

**en,fr,de**



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

ICS: 75.060

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### Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

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](http://www.iso.org/members.html).

## Introduction

This document supports the implementation of specifications for biomethane and biogas such as ISO 15403-1<sup>[2]</sup> or EN 16723 (all parts<sup>[3,4]</sup>) 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.

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# 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/>

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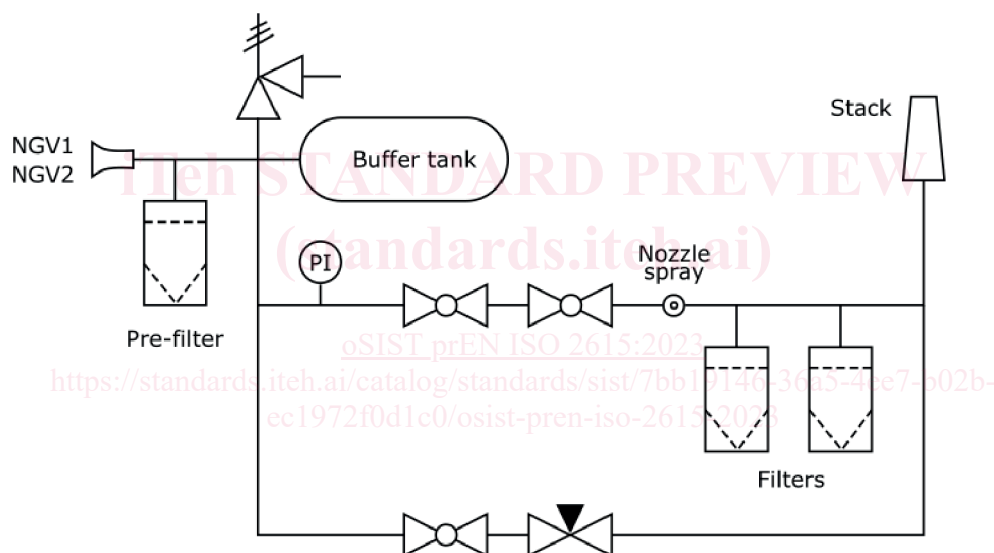
### 3.1 response

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.