



SLOVENSKI STANDARD

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Petroleum, petrochemical and natural gas industries - Lubrication, shaft-sealing and control-oil systems and auxiliaries - Part 3: General-purpose oil systems (ISO 10438-3:2003)

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Erdöl-, petrochemische und Erdgasindustrie - Schmieröl-, Sperröl- und Regelölversorgungsanlagen und Hilfsanlagen - Teil 3: Ölversorgungsanlagen für allgemeine Anwendungsfälle (ISO 10438-3:2003)

Industries du pétrole, de la pétrochimie et du gaz naturel - Systèmes de lubrification, systèmes d'étanchéité, systèmes d'huile de régulation et leurs auxiliaires - Partie 3: Systèmes d'huile pour applications générales (ISO 10438-3:2003)

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English version

Petroleum, petrochemical and natural gas industries -
Lubrication, shaft-sealing and control-oil systems and auxiliaries
- Part 3: General-purpose oil systems (ISO 10438-3:2003)

Industries du pétrole, de la pétrochimie et du gaz naturel -
Systèmes de lubrification, systèmes d'étanchéité,
systèmes d'huile de régulation et leurs auxiliaires - Partie 3:
Systèmes d'huile pour applications générales (ISO 10438-
3:2003)

This European Standard was approved by CEN on 2 December 2003.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.



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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN ISO 10438-3:2003) has been prepared by Technical Committee ISO/TC 67 "Materials, equipment and offshore structures for petroleum and natural gas industries" in collaboration with Technical Committee CEN/TC 12 "Materials, equipment and offshore structures for petroleum and natural gas industries", the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2004, and conflicting national standards shall be withdrawn at the latest by June 2004.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

NOTE FROM CMC The foreword is susceptible to be amended on reception of the German language version. The confirmed or amended foreword, and when appropriate, the normative annex ZA for the references to international publications with their relevant European publications will be circulated with the German version.

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Endorsement notice

The text of ISO 10438-3:2003 has been approved by CEN as EN ISO 10438-3:2003 without any modifications.

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**Petroleum, petrochemical and natural gas
industries — Lubrication, shaft-sealing
and control-oil systems and auxiliaries —**

**Part 3:
General-purpose oil systems**

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*Industries du pétrole, de la pétrochimie et du gaz naturel — Systèmes
de lubrification, systèmes d'étanchéité, systèmes d'huile de régulation
et leurs auxiliaires*

Partie 3: Systèmes d'huile pour applications générales

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 10438-3 was prepared by Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, Subcommittee SC 6, *Processing equipment and systems*.

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ISO 10438 consists of the following parts, under the general title *Petroleum, petrochemical and natural gas industries — Lubrication, shaft-sealing and control-oil systems and auxiliaries*:

- *Part 1: General requirements* [SIST EN ISO 10438-3:2004](https://standards.iteh.ai/catalog/standards/sist/f4083d24-9f6d-4c22-bccd-c60a77ca6d15/sist-en-iso-10438-3-2004)
- *Part 2: Special-purpose oil systems*
- *Part 3: General-purpose oil systems*
- *Part 4: Self-acting gas seal support systems*

Introduction

ISO 10438 is based on API Std 614, 4th edn., April 1999, divided into four parts as follows:

- *Part 1: General requirements* is based on Chapter 1 of API Std 614;
- *Part 2: Special-purpose oil systems* is based on Chapter 2 of API Std 614;
- *Part 3: General-purpose oil systems* (this part) is based on Chapter 3 of API Std 614;
- *Part 4: Self-acting gas seal support systems* is based on Chapter 4 of API Std 614.

Users of this part of ISO 10438 should be aware that further or differing requirements might be needed for individual applications. This part of ISO 10438 is not intended to inhibit a vendor from offering, or the purchaser from accepting alternative equipment or engineering solutions for the individual application. This may be particularly appropriate where there is innovative or developing technology. Where an alternative is offered, the vendor should identify any variations from this part of ISO 10438 and provide details.

This part of ISO 10438 requires the purchaser to specify certain details and features.

A bullet (•) at the beginning of a clause or subclause indicates that either a decision is required or further information is to be provided by the purchaser. This information or decision should be indicated on suitable data sheets; otherwise it should be stated in the quotation request (inquiry) or in the order.

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Petroleum, petrochemical and natural gas industries — Lubrication, shaft-sealing and control-oil systems and auxiliaries —

Part 3: General-purpose oil systems

1 Scope

This part of ISO 10438 specifies requirements for oil systems supplying lubricating oil to machines in general-purpose applications for use in the petroleum, petrochemical and natural gas industries as well as in other industries by agreement. It is intended to be used in conjunction with ISO 10438-1. ISO 10438 in its entirety specifies requirements for lubrication systems, oil-type shaft-sealing systems, self-acting gas seal systems, control-oil systems and other auxiliaries for general- or special-purpose applications. These systems can serve equipment such as compressors, gears, pumps and drivers. General-purpose applications are limited to lubrication systems.

None of the parts of ISO 10438 is applicable to internal combustion engines.

Typical schemas for general-purpose oil systems are provided in Annex A.

NOTE General-purpose systems supply lubricating oil only (i.e. no seal oil) and do not require an accumulator to cover transient conditions.

2 Normative references

The following referenced documents are indispensable for the application 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 10438-1:2003, *Petroleum, petrochemical and natural gas industries — Lubrication, shaft-sealing and control-oil systems and auxiliaries — Part 1: General requirements*

ISO 14691, *Petroleum and natural gas industries — Flexible couplings for mechanical power transmission — General purpose applications*

IEC 60079 (all parts), *Electrical apparatus for explosive gas atmospheres*

3 Terms, definitions and abbreviated terms

For the purposes of this document, the terms, definitions and abbreviated terms given in ISO 10438-1 apply.

4 Minimum components

The bill of material covered below describes the minimum specified system. Manufacturers may substitute alternatives for any of the options covered in this clause as upgrades to the basic system if required or if offered as standard for the equipment serviced. In any event, the oil system supplied shall be capable of supplying sufficient quantities of clean, filtered oil at proper temperature and pressure for start-up and all operating conditions of the serviced rotating equipment.

The basic oil system shall contain as a minimum the following components:

- a) single pump, (cast iron or steel casing) which may be shaft-driven or motor driven;
- b) motor driven start-up pump (if required);
- c) valves, made of carbon steel with stainless steel trim;
- d) oil piping, made of stainless steel with carbon steel slip-on flanges, conforming to the piping system design code (e.g. ASME B31.3), or stainless steel tubing and fittings;
- e) reservoir, made of stainless steel with minimum 3 min retention time, or combined with equipment base;
- f) single cooler;
- g) single filter with 25 µm nominal pore size;
- h) single regulator for control of delivered oil pressure;
- i) the following instruments:
 - 1) pressure indicator (PI), [SIST EN ISO 10438-3:2004](https://standards.iteh.ai/catalog/standards/sist/f4083d24-9f6d-4c22-bccd-c60a77ca6d15/sist-en-iso-10438-3-2004)
 - 2) temperature indicator (TI), <https://standards.iteh.ai/catalog/standards/sist/f4083d24-9f6d-4c22-bccd-c60a77ca6d15/sist-en-iso-10438-3-2004>
 - 3) visual level indicator (LI),
 - 4) pressure switch low-low (PSLL).

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5 General

5.1 The equipment (including auxiliaries) covered by this part of ISO 10438 shall be designed and constructed for a minimum service life of 20 years. It is recognized that this is a design criterion.

5.2 The oil system shall be suitable for general-purpose applications as defined in ISO 10438-1. The system shall be designed as a separate console, or may be designed to be integral with the baseplate of the equipment it serves. If components are spared, the design shall allow for transfer between and shutdown of the main and spared components of the system for maintenance without interrupting the operation of the system or the equipment the system serves.

5.3 The vendor shall assume unit responsibility for all equipment and all auxiliary systems included in the scope of the order.

5.4 The materials of construction of all major components shall be clearly stated in the vendor's proposal. Materials shall be identified by reference to applicable international or national standards including the material grade.

5.5 The purchaser shall specify the required oil supply conditions and the heat load.

- **5.6** Control of the sound pressure level (SPL) of all equipment furnished shall be a joint effort of the purchaser and the vendor. The equipment furnished by the vendor shall conform to the maximum allowable sound pressure level specified by the purchaser.

5.7 Where oil is supplied from a common system to two or more machines (such as a compressor, a gear, and a motor), the oil's characteristics shall be specified on the data sheets (such as provided in Annex B) on the basis of mutual agreement with all vendors supplying equipment served by the common oil system.

NOTE The usual lubricant employed in a common oil system is a hydrocarbon oil of viscosity grade 32 or 46 as specified in ISO 8068.

5.8 The system shall be designed to supply oil to all equipment specified by the purchaser.

5.9 Oil recycled for control purposes shall originate upstream of the filters.

NOTE This is to minimize the potential for generation of static electricity (or a static charge) that can result when filtered oil bypasses the equipment and is recycled directly to the reservoir.

- **5.10** The purchaser shall specify whether the installation is indoors (heated or unheated) or outdoors (with or without a roof) as well as the weather and environmental conditions in which the equipment will operate (including maximum and minimum temperatures and unusual humidity, dust, or corrosion conditions).
- **5.11** If specified, the arrangement of the equipment, including piping and auxiliaries, shall be developed jointly by the purchaser and the vendor. The arrangement shall provide adequate clearance areas and safe access for operation and maintenance.

NOTE For some pre-engineered general-purpose oil systems, purchaser input might be impractical.

- **5.12** If applicable, the purchaser shall specify minimum requirements for clearance around and access to components (especially clearance around and access to coolers, filters, and hand valves).

5.13 Motors, electrical components, and electrical installations shall be suitable for the area classification (class, group, and division or zone) specified on the data sheets and shall meet the requirements of the applicable part(s) of IEC 60079 as well as local codes specified and furnished by the purchaser (see ISO 10438-1).

- **5.14** If specified, pumps, filters, strainers, coolers, traps, valves, and all other components that retain oil under pressure and that are external to the reservoir shall be made of steel.

5.15 Unless otherwise specified, components may be submerged in the reservoir, and these may be made of cast iron.

- **5.16** If specified, valved vents, drains, and piping shall be furnished to permit draining, cleaning, and refilling of idle components while the equipment is in operation.

5.17 Coolers, filters, overhead rundown tanks, and other pressure vessels within the scope of the pressure design code shall conform to the requirements of that code.

5.18 The vendor shall advise the purchaser of, and both parties shall mutually agree upon, any special provisions that are necessary to ensure that an adequate supply of lube oil is maintained in the event of complete failure of the lube-oil supply system. These provisions may include stand-by pumps, rundown tanks, and special arrangements for equipment safety and protection when the equipment decelerates. Provisions shall be adequate for coast-down time and cool-off time as applicable. The purchaser and the vendor shall mutually agree upon the system and its components.

5.19 Block valves which interrupt the oil flow to the equipment shall not be installed in oil supply lines downstream of the filters unless the block valves are part of a component block and bypass arrangement.