

**TOORNAFTA JA VEDELAD NAFTATOOTED
VEDELIKUTASEME JA TEMPERATUURI
AUTOMAATNE MÕÕTMINE MAHUTITES**

**Osa 6: Temperatuuri mõõtmine survestatud mahutites
(v.a külmikmahutid)**

Petroleum and liquid petroleum products
Measurement of level and temperature in storage tanks
by automatic methods
Part 6: Measurement of temperature in pressurized
storage tanks (non-refrigerated)

EESTI STANDARDI EESSÕNA**NATIONAL FOREWORD**

<p>Käesolev Eesti standard EVS-ISO 4266-6:2007 "Toornafta ja vedelad naftatooted. Vedelikutaseme ja temperatuuri automaatne mõõtmine mahutites. Osa 6: Temperatuuri mõõtmine survestatud mahutites (v.a külmikmahutid)" sisaldab rahvusvahelise standardi ISO 4266-6:2002 "Petroleum and liquid petroleum products - Measurement of level and temperature in storage tanks by automatic methods - Part 6: Measurement of temperature in pressurized storage tanks (non-refrigerated)" identset ingliskeelset teksti.</p>	<p>This Estonian Standard EVS-ISO 4266-6:2007 consists of the identical English text of the International Standard ISO 4266-6:2002 "Petroleum and liquid petroleum products - Measurement of level and temperature in storage tanks by automatic methods - Part 6: Measurement of temperature in pressurized storage tanks (non-refrigerated)".</p>
<p>Standardi avaldamise korraldas Eesti Standardikeskus.</p>	<p>Estonian standard is published by the Estonian Centre for Standardisation.</p>
<p>Standard EVS-ISO 4266-6:2007 on kinnitatud Eesti Standardikeskuse 26.11.2007. a. määrusega ja jõustub sellekohase teate avaldamise EVS Teataja 2007 aasta detsembrikuu numbris.</p>	<p>This standard is ratified with the order of Estonian Centre for Standardisation dated 26.11.2007 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.</p>
<p>Standard on kättesaadav Eesti Standardikeskusest.</p>	<p>The standard is available from Estonian Centre for Standardisation.</p>

Käsitlusala

Käesolev standardi ISO 4266 osa annab juhised survestatud mahutites hoiustatava toornafta ja naftasaaduste temperatuuri mõõtmisel rahaliste tehingute/valdaja vahetuse aluseks olevates rakendustes kasutatavate automaatsete mahuti termomeetrite (*automatic tank thermometers* – ATT) valiku, täpsuse, paigaldamise, kasutuselevõtu, kalibreerimise ja nõuetele vastavuse kontrolli kohta.

Käesolev standardi ISO 4266 osa ei ole rakendatav temperatuuri mõõtmisel maaalustes koobasmahutites ja külmikmahutites.

ICS 75.180.30 Volumeetriselised seadmed ja mõõteriistad**Standardite reprodutseerimis- ja levitamiseõigus kuulub Eesti Standardikeskusele**

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse poolt antud kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:
Aru 10 Tallinn 10317 Eesti; www.evs.ee; Telefon: 605 5050; E-post: info@evs.ee

Right to reproduce and distribute belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without permission in writing from Estonian Centre for Standardisation.

If you have any questions about standards copyright, please contact Estonian Centre for Standardisation:
Aru str 10 Tallinn 10317 Estonia; www.evs.ee; Phone: 605 5050; E-mail: info@evs.ee

Contents

	Page
1 Scope	1
2 Normative reference	1
3 Terms and definitions	1
4 Precautions	2
4.1 Safety precautions	2
4.2 Equipment precautions	2
4.3 General precautions	2
5 Accuracy	3
5.1 General	3
5.2 Intrinsic error of ATTs	3
5.3 Calibration prior to installation	3
5.3.1 General	3
5.3.2 ATT calibrated as a system	3
5.3.3 ATT calibrated by components	4
5.3.4 Multiple-point ATTs	4
5.3.5 Uncertainty of the reference	4
5.4 Error caused by installation and operating conditions	4
5.5 Overall accuracy	4
5.5.1 General	4
5.5.2 Use of ATT for fiscal/custody transfer purposes	4
6 Selection of ATTs	5
6.1 General	5
6.2 ATTs for fiscal/custody transfer purpose	5
7 Description of ATT equipment	5
7.1 Introduction	5
7.2 Electrical temperature elements	6
7.2.1 Resistance temperature detectors	6
7.2.2 Other temperature elements	6
8 Installation of ATTs	6
8.1 General	6
8.2 Single-point (spot) temperature elements	6
8.3 Multiple-point temperature elements	6
8.4 Moveable spot temperature element	7
8.5 Other methods	7
8.6 Thermowells for electronic temperature elements	7
8.7 Thermowells for verification purposes	7
9 Calibration and field verification of ATTs	7
9.1 Introduction	7
9.2 Calibration of single-point temperature element ATTs used for fiscal/custody transfer purpose	8

9.2.1	Calibration prior to installation	8
9.2.2	Initial field verification	8
9.3	Calibration of upper, middle and lower or multiple-point ATTs	9
9.3.1	Calibration prior to installation	9
9.3.2	Initial field verification	9
9.4	Subsequent verification of ATTs	10
9.4.1	General	10
9.4.2	Frequency of subsequent verification	10
9.4.3	Record keeping	10
10	Data communication and receiving	10
	Bibliography.....	11

This document is a preview generated by EVS

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 3.

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 part of ISO 4266 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 4266-6 was prepared by Technical Committee ISO/TC 28, *Petroleum products and lubricants*, Subcommittee SC 3, *Static petroleum measurement*.

ISO 4266-6, together with ISO 4266-1 to ISO 4266-5, cancels and replaces ISO 4266:1994, which has been technically revised.

ISO 4266 consists of the following parts, under the general title *Petroleum and liquid petroleum products — Measurement of level and temperature in storage tanks by automatic methods*:

- *Part 1: Measurement of level in atmospheric tanks*
- *Part 2: Measurement of level in marine vessels*
- *Part 3: Measurement of level in pressurized storage tanks (non-refrigerated)*
- *Part 4: Measurement of temperature in atmospheric tanks*
- *Part 5: Measurement of temperature in marine vessels*
- *Part 6: Measurement of temperature in pressurized storage tanks (non-refrigerated)*

Petroleum and liquid petroleum products — Measurement of level and temperature in storage tanks by automatic methods —

Part 6:

Measurement of temperature in pressurized storage tanks (non-refrigerated)

1 Scope

This part of ISO 4266 gives guidance on the selection, accuracy, installation, commissioning, calibration and verification of automatic tank thermometers (ATTs) in fiscal/custody transfer applications in which the ATT is used for measuring the temperature of petroleum and liquid petroleum products, stored in pressurized storage tanks.

This part of ISO 4266 is not applicable to the measurement of temperature in caverns or in refrigerated storage tanks.

2 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this part of ISO 4266. For dated references, subsequent amendments to, or revisions of, this publication do not apply. However, parties to agreements based on this part of ISO 4266 are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 1998 (all parts), *Petroleum industry — Terminology*

3 Terms and definitions

For the purposes of this part of ISO 4266, the following terms and definitions given in ISO 1998, and the following, apply.

3.1

automatic tank thermometer

ATT

instrument that continuously measures temperature in storage tanks

NOTE An ATT, which may also be known as an automatic tank temperature system, typically includes precision temperature sensors, field-mounted transmitters for electronic signal transmission, and receiving/readout device(s).

3.2

resistance temperature detector

RTD

electrical temperature-sensing element in common use to measure the temperature of the contents of a storage tank

3.3

single-point ATT

spot ATT

ATT that measures the temperature at a particular point in a tank by the spot temperature element