

Second edition
2023-11

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

Part 2: Measurement of level in marine vessels

Pétrole et produits pétroliers liquides — Mesurage du niveau et de la température dans les réservoirs de stockage par des méthodes automatiques —

Partie 2: Mesurage du niveau dans les citernes de navire



Reference number
ISO 4266-2:2023(E)

© ISO 2023



COPYRIGHT PROTECTED DOCUMENT

© ISO 2023

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

This is a preview of ISO 4266-2:2023. Click [here](#) to purchase the full version from the ANSI store.

Contents

	Page
Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Precautions	3
4.1 Safety precautions.....	3
4.1.1 General.....	3
4.1.2 Equipment precautions.....	3
4.2 General recommendations.....	3
4.2.1 Accuracy and performance.....	3
4.2.2 Speed of response.....	3
4.2.3 Protection from mechanical damage.....	4
4.2.4 Manual gauging.....	4
4.2.5 Minimum measurable level.....	4
4.2.6 Trim and list.....	4
4.2.7 Product temperatures.....	4
4.2.8 Compatibility.....	4
4.2.9 Entrained air and vapour.....	4
4.2.10 Vessel motion.....	4
4.3 Use of marine ALGs in fiscal/custody transfer.....	5
5 Accuracy	5
5.1 Intrinsic error of ALGs.....	5
5.2 Calibration prior to installation.....	5
5.3 Initial shipyard adjustment.....	5
5.4 Error caused by operating conditions.....	5
5.5 Overall accuracy.....	6
5.5.1 General.....	6
5.5.2 Use of ALGs for fiscal/custody transfer purposes.....	6
6 Installation of marine ALGs	6
6.1 General.....	6
6.2 Location of ALG.....	6
6.3 Location of manual calibration check point.....	6
6.4 Gauging of inerted tanks.....	6
7 Onboard verification of marine ALGs	7
7.1 General precautions.....	7
7.1.1 Check for smooth operation of level-sensing elements— at the shipyard.....	7
7.1.2 ALG technology-specific considerations.....	7
7.2 Verification by innage gauging or ullage gauging.....	7
7.3 Initial verification.....	7
7.4 Subsequent verification.....	7
7.4.1 General.....	7
7.4.2 Agreement between ALG reading and manual gauge reading.....	7
7.4.3 Use of average gauge readings.....	7
7.4.4 Adjustment of the ALG.....	8
7.5 Verification by alternate methods.....	8
7.6 Schedule for regular ALG verification.....	8
7.7 Record keeping.....	8
8 Data communication and receiving	8
8.1 General.....	8
8.2 Use of remote readout in fiscal or custody transfer.....	8

This is a preview of ISO 4266-2:2023. [Click here to purchase the full version from the ANSI store.](#)

8.3	Telemetry and readout equipment.....	9
Annex A	(informative) Accuracy limitations of marine level measurement.....	10
Annex B	(informative) Accuracy limitations of marine volume measurement.....	11
Bibliography	12

This is a preview of ISO 4266-2:2023. [Click here to purchase the full version from the ANSI store.](#)

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 document 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).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 28 *Petroleum and related products, fuels and lubricants from natural or synthetic sources*, Subcommittee SC 2, *Measurement of petroleum and related products*.

This second edition cancels and replaces the first edition (ISO 4266-2:2002), which has been technically revised.

The main changes are as follows:

- in [Clause 2](#), the reference to ISO 8697 has been removed as it is a withdrawn document;
- in [4.2.7](#), it has been clarified that the tank level should be measured and recorded simultaneously with the temperature;
- in [7.4.4.1](#), it has been clarified regarding the procedure prior to making adjustments against manual measurements;
- added addition documents in Bibliography.

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

Marine automatic level gauges (ALGs) are not normally used in fiscal or custody transfer applications because of the limitations described in [Annexes A](#) and [B](#). However, level measurement by marine ALGs may be used in fiscal or custody transfer when no other alternative, reliable measurement is available. The use of marine-vessel-based ALGs in fiscal or custody transfer normally requires mutual contractual agreement between the buyer and the seller and can be subject to government regulations.