

ISO 4266-5:2002-11 (E)

Petroleum and liquid petroleum products - Measurement of level and temperature in storage tanks by automatic methods - Part 5: Measurement of temperature in marine vessels

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 | 3 |
| 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 -- Electrical temperature elements | 5 |
| 7.1 Resistance temperature detectors | 5 |
| 7.2 Other temperature elements | 6 |
| 8 Installation of marine ATTs | 6 |
| 8.1 General | 6 |
| 8.2 Location of temperature-sensing element(s) | 6 |
| 8.3 Location of manual (temperature) gauge hatch | 6 |
| 8.4 Temperature measurement of inerted tanks | 6 |
| 9 Calibration and on-board verification of marine ATTs | 6 |
| 9.1 Introduction | 6 |
| 9.2 Calibration of single-point temperature element ATTs for fiscal/custody transfer purposes | 7 |
| 9.2.1 Calibration prior to installation | 7 |
| 9.2.2 Initial verification at shipyard or during sea trials | 7 |
| 9.3 Calibration of multiple-point ATTs for fiscal/custody transfer purposes | 8 |
| 9.3.1 Calibration prior to installation | 8 |
| 9.3.2 Initial on-board verification at shipyard or during sea trials | 8 |
| 9.4 Subsequent verification of ATTs | 9 |

| | | |
|---|--|----|
| 9.4.1 | General | 9 |
| 9.4.2 | Frequency of subsequent verification | 9 |
| 9.4.3 | Record keeping | 9 |
| 10 | Data communication and receiving | 9 |
| Annex A Accuracy limitations of tank-temperature measurements on board marine vessels | | 11 |
| Bibliography | | 12 |