



CERTIFICATE NUMBER	24-2511504-PDA
EFFECTIVE DATE	10-Apr-2024
EXPIRY DATE	09-Apr-2029
ABS TECHNICAL OFFICE	London Engineering Department

## CERTIFICATE OF Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

### **KONGSBERG MARITIME AS, TRONDHEIM**

located at

**SKONNERTVEGEN 1, 7053 RANHEIM, P.O. BOX 2434 ,  
TRONDHEIM, Norway, 7005**

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

**Product:** Cargo Tank Ullage Monitoring and Control System  
**Model:** K-Gauge  
**Endorsements:**  
**Tier:** 5 - Unit Certification Required

This Product Design Assessment (PDA) Certificate remains valid until 09/Apr/2029 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau Of Shipping

*SBarua*

Siddharth Barua, Engineer/Consultant

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

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**Tier: 5 - Unit Certification Required**

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**Product:** Cargo Tank Ullage Monitoring and Control System

**Model:** K-Gauge

**Endorsements:**

**Intended Service:**

ABS Classed Vessels and Offshore Facilities in accordance with the listed ABS Rules and International standards.

**Description:**

K-Gauge Kongsberg gauging systems for level, pressure and temperature, typically configured in system types as listed below:

**K-Gauge CLS**

Cargo Level System for monitoring of level, pressure and temperature on cargo tanks for oil, product and chemical cargo. Also included monitoring of level in ballast and service tanks when operated from same system.

**K-Gauge HLA**

High Level and Overfill system independent from the CLS system on oil, product and chemical tanks.

**K-Gauge GAS**

Cargo Level System for monitoring of level, pressure and temperature on gas tankers. Also included monitoring of tank and pressure related to gas as fuel.

**K-Gauge CTS**

Custody Transfer System for LNG tankers.

**K-Gauge TOPS**

Radar based Tank Overfill Protection System for gas tankers.

**K-Gauge RSS**

Remote Sounding System for ballast and service tanks, including both electro and electro-pneumatic type.

**Rating:**

Power supplies: 18 - 35 V DC

**Service Restriction:**

1. Unit Certification is required for this product.
2. Each application and configuration is to be specifically approved.
3. ATEX certified equipment is not to be installed in hazardous areas on U.S. Flagged Vessels, unless it can be proven to have been tested to the IEC 60079 series standards by an independent laboratory accepted by the U.S. Coast Guard. USCG MI Notice 01-12 (February 7, 2012).
4. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.
5. This ABS type approval certificate does not satisfy as evidence for the hardware components of the K-Chief 600 or K-Chief 700. The hardware components for such systems are covered by the following ABS PDA:
  - a) Microcomputer (RCU) and I/O modules is covered by 22-2274355-PDA Type Approval certificate, which is valid until 09-Aug-2027.
  - b) The hardware for DPU series is covered by 22-2274357-PDA Type Approval certificate, which is valid until 09-Aug-2027.
  - c) The special components for K-Gauge are covered by 23-2404183-PDA Type Approval certificate, which is valid until 04-Jun-2028.

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### Tier: 5 - Unit Certification Required

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#### Comments:

1. The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
2. For products to be installed in hazardous area, valid EX-certificates are to be provided for each installation.
3. K-Gauge is assigned Category II as defined by 4-9-3/7 of the 2024 Marine Vessels Rules. Accordingly, documentation is to be maintained and made available to ABS on request and witness testing by an ABS Surveyor is to be carried out as detailed in 4-9-3/8, 4-9-3/9 & 4-9-3/17 Table 5 of the 2024 Marine Vessels Rules.

#### Notes/Drawing/Documentation:

Drawing No. 110-00488008B, FMEA, Revision: 1, Pages: 1

Drawing No. 22-2274355-PDA, K-Chief 700 Type Approval, Revision: 1, Pages: 1

Drawing No. 22-22744357-PDA, K-Chief 600 Type Approval, Revision: 1, Pages: 1

Drawing No. 23-2404183-PDA, GL-300 Type Approval, Revision: 1, Pages: 1

Drawing No. 385541C, K-Gauge CLS 600 Operator Manual, Revision: 1, Pages: 1

Drawing No. 386311P, Software History, Revision: 1, Pages: 1

Drawing No. 386440C, K-Gauge CLS Product Sheet, Revision: 1, Pages: 1

Drawing No. 386565C, K-Gauge GAS Product Sheet (Tank Monitoring System for LPG Carriers), Revision: 1, Pages: 1

Drawing No. 387265B, K-Gauge CTS Product Sheet, Revision: 1, Pages: 1

Drawing No. 387761B, K-Gauge GAS 600 Operator Manual, Revision: 1, Pages: 1

Drawing No. 390749D, K-Gauge HLA Product Sheet, Revision: 1, Pages: 1

Drawing No. 394333C, K-Gauge GAS Product Sheet (LNG / LPG / NH3 Fuel Tank Monitoring System), Revision: 1, Pages: 1

Drawing No. 422699A, High Level and Overfill Alarm System Operator Manual, Revision: 1, Pages: 1

Drawing No. 448723A, High Level Alarm System Operator Manual, Revision: 1, Pages: 1

Drawing No. 458319A, K-Gauge GAS 700 Operator Manual, Revision: 1, Pages: 1

Drawing No. 458335A, K-Gauge CLS 700 Operator Manual, Revision: 1, Pages: 1

Drawing No. 493992A, Functional Description, Revision: 1, Pages: 1

Drawing No. BV Type Approval, 17755, Revision: 1, Pages: 1

Drawing No. Class Approval, H1790A-H1793A, Revision: 1, Pages: 1

Drawing No. Correspondence, 20-2035016-PDA Certificate, Revision: 1, Pages: 1

Drawing No. Correspondence, Declaration of Conformity, Revision: 1, Pages: 1

Drawing No. Correspondence, K-Chief Operator Manual, Revision: 1, Pages: 1

Drawing No. Correspondence, Drawings Description, Revision: 1, Pages: 1

Drawing No. Correspondence, ABS RL: T2371228, Revision: 1, Pages: 1

Drawing No. Correspondence, Product Description, Revision: 1, Pages: 1

Drawing No. Correspondence, Material Declaration, Revision: 1, Pages: 1

Drawing No. Correspondence, Plan Approval Signed, Revision: 1, Pages: 1

Drawing No. Correspondence, PDA-Application Signed, Revision: 1, Pages: 1

Drawing No. Correspondence, ABS RL: T2389413, Revision: 1, Pages: 1

Drawing No. EMC Report 330633, GLA-300/GL-310, Revision: 1, Pages: 1

Drawing No. EMC Report GLK-300, 450658, Revision: 1, Pages: 1

Drawing No. EMC Report GLK-300 no.2, E09680, Revision: 1, Pages: 1

Drawing No. EMC report, GC-300/GC-306, Revision: 1, Pages: 1

#### Terms of Validity:

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**Tier: 5 - Unit Certification Required**

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**STANDARDS**

**ABS Rules:**

Rules for Conditions of Classification - Marine Vessels, Part 1A - 2024: 1A-1-4/7.7, 1A-1-A3, 1A-1-A4, which covers the following:

- Rules for Building and Classing Marine Vessels (2024): 4-1-1/3.3, 4-9-9/13, 4-9-9/Table 1

Rules for Conditions of Classification - Offshore Units and Structures, Part 1B - 2024: 1B-1-4/9.7, 1B-1-A2, 1B-1-A3, which covers the following:

- Rules for Building and Classing Mobile Offshore Units (2024): 4-3-1/15, 4-3-1/17

- Rules for Facilities on Offshore Installations (2024): 3-7/3.1, 3-7/3.3, 3-7/3.5

**National:**

N/A

**International:**

NA

**Government:**

N/A

**EUMED:**

N/A

**OTHERS:**

N/A