



## *Confirmation of Type Approval*

This is to certify that, pursuant to the Rules of American Bureau of Shipping (ABS), on 02/OCT/2007 the manufacturer of the below listed product held a valid Manufacturing Assessment (MA) and a valid Product Design Assessment (PDA) for the below listed product, entitling the product to type approval. The validity of the Manufacturing Assessment is dependent on satisfactory audits as required by the Rules. The Product Design Assessment is valid only for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

For Date of ABS Rules used for evaluation; Please refer to the ABS Rules below.

This Confirmation of Product Type Approval is valid as of the date shown above for the below listed product.

ABS makes no representations regarding type approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for evaluation.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that the Client has full responsibility for continued compliance with the evaluation standard, whether the standard is an ABS Rule or a non-ABS Rule. As specified in the ABS Rules, Unit Certification may be required in addition to Product Type Approval. Please refer to the "Service Restrictions" shown below to determine if Unit Certification is required for this product.

### KROHNE SKARPENORD

Model Name(s): OPTIWAVE 8300 C / OPTIFLEX 4300 C

**Presented to:**

KROHNE SKARPENORD  
Stromtaugreieu 21,  
Brevik  
NO-3950  
Norway

**Intended Service:**

gauging systems are used for the measurement of level, volume, distance to surface and reflectivity of liquids, slurries, pastes and solids in tanks.

**Description:**

These are radar gauging instrument systems. The OPTIWAVE 8300 C system uses 24-26 GHz Frequency Modulated Continuous Wave (FMCW) microwave level gauge radar and the OPTIFLEX 4300 C system is based on 2 GHz Time Domain Reflectometry (TDR) guided radar principle. The housing is made of 316 L graded stainless steel. All electrical connections are on the upper housing and the assembly being bolted on the tank top. The radar antenna usually protrudes into the tanks.

**Ratings:**

Power supply: 24 VDC; Enclosure rating: Optiwave IP - 67 and Optiflex - IP68; Operating frequency: OPTIWAVE - 24-26 GHz and OPTIFLEX - 2 GHz; Measuring Range: up to 40 M

**Service Restrictions:**

Unit Certification is not required for this product.

**Comments:**

Both OPTIWAVE 8300 C / OPTIFLEX 4300 C units are suitable for hazardous areas applications.

**Notes / Documentation:**

This Product Design Assessment (PDA) is valid only for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product. Optiwave 8300 C and Optiflex data sheets; Report No. 2006-3573, EMC and Environmental Testing for OPTIWAVE 8300C; Report No. 2006-3247, EMC and Environmental Testing for OPTIFLEX4300C

**Term of Validity:** This Design Assessment Certificate number 07-LD260556-PDA, dated 01/Oct/2007 will expire on 30/Sep/2012 or at an earlier date should there be alterations to the product's design or changes to the referenced ABS Rules and other specifications, which affect the product. Product use on or after 1 January 2008, will be subject to compliance with the ABS Rules or specifications in effect when the vessel, MODU or facility is contracted. The product's acceptability on board ABS-classed vessels or facilities is defined in the service restrictions of this certificate.

**ABS Rules:** 2007 Steel Vessel Rules 1-1-4/7.7, 4-9-7/13, 5C-1-7/21.13 and 5C-8-13/1.1

**National Standards:**

**International Standards:**

**Government Authority:**

**EUMED:**

**Others:**



Manager, ABS Programs

ABS has used due diligence in the preparation of this certificate and it represents the information on the product in the ABS Records as of the date and time the certificate was printed. Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. Limited circumstances may allow only Prototype Testing to satisfy Type Approval. The approvals of Drawings and Products remain valid as long as the ABS Rule, to which they were assessed, remains valid. ABS cautions manufacturers to review and maintain compliance with all other specifications to which the product may have been assessed. Further, unless it is specifically indicated in the description of the product; Type Approval does not necessarily waive witnessed inspection or survey procedures (where otherwise required) for products to be used in a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS. Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.