

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Emission Monitoring System

with type designation(s)
S-Keeper 7

Issued to

TECNOVA HT SRL
Via Castellazzo, 29, 20010 Pregnana Milanese MI, Italy

is found to comply with
DNV GL rules for classification – Ships and offshore units

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Location classes:

Temperature	A
Humidity	B
Vibration	A
EMC	A
Enclosure	B

This Certificate is valid until **2019-02-01**.

Issued at **Høvik** on **2017-02-02**

DNV GL local station: **Milan**

for **DNV GL**

Approval Engineer: **Ingrid Hagen Johansen**

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Odd Magne Nesvåg
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Job Id: **262.1-021161-1**
Certificate No: **TAA00000U7**

Product description

The TecnovaHT S-Keeper 7 Marine Emission Monitoring System is designed for continuously measure the concentration of NO_x, CO₂, SO₂, CO, O₂, HC and particulate in the ship effluent gas.

Product	Version	System components	Software version
S-KEEPER 7	S-KEEPER 7 EASY-N S-KEEPER 7 EASY-S S-KEEPER 7 EASY S-KEEPER 7 LITE-N S-KEEPER 7 LITE-S S-KEEPER 7 LITE S-KEEPER 7 FULL	Analyzer Cabinet Sample Probe; - SK7_HP_1 - SK7_HL_1	0.18.25.0

System output signals:

Parameter	Signal type (S-Keeper 7 side)
NO _x (g/kWh)	MODBUS
SO ₂ /CO ₂ ratio	MODBUS
NO,CO,SO ₂ ,CO ₂ ,O ₂ ,HC,Particulate raw values	MODBUS
System status alerts	MODBUS
System operating conditions	MODBUS

I/O connection to ship: 1 x Ethernet RJ45, 1 x RS-485, 1 x Potential free contact
Power supply: 230V 50Hz

Place of manufacture

Elettromeccanica BTB srl
Via della Tecnica, 6, 52025 Levanella, Montevarchi AR, Italia

Application/Limitation

The Type Approval covers hardware and software listed under Product description.

DNV GL shall be informed prior to installation of S-Keeper 7 onboard DNV GL classes vessel. A reference to this Type Approval certificate shall be included.

This Type Approval certificate **does not** cover requirements of MARPOL Annex VI, Regulation 4 & MEPC.259(68), MARPOL Annex VI Regulation 13 and NTC2008. Installation and performance as required by these regulations shall be verified separately.

Clause for application software control

All changes in software are to be recorded as long as the system is in use on board. The records of all changes are to be forwarded to DNV GL for evaluation and approval. Major changes in the software are to be approved before implementation.

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Type Approval documentation

Document No	Title	Rev	Date
THT-SK-00001-EL-1	S-Keeper 7 – Wiring Diagram	1	2015-11-18
THT-SK-00001-LY-1	S-Keeper 7 – Layout & Component List	0	2015-08-31
DP02-F	Onboard Monitoring Manual for gaseous emissions with Tecnova HT S-Keeper 7 Marine Emission Monitoring System	01/00	2015-07-15
MOD 05.04.1	Type approval Tecnova HT S-Keeper 7 Marine Emission Monitoring System	002	-
TesLab 153050F	Electromagnetic Compability Test Report	1.64	2015-05-06
0017/ME/CMP/15	Test Report – Dry Heat, Damp Heat Cold		2015-09-16
0076/ME/CMP/15	Test Report – Low Temperature		2015-10-23
TesLab 154069A	Environmental Test Report	1.36	2015-05-16
RT-AB-063/15	Vibration Tests on Tecnova HT S-Keeper 7-Full	00	2015-07-31
MOD 07-36	S-Keeper - Verbale collaudo interno	5	2015-09


Tests carried out

Applicable tests according to:

- Class guideline DNVGL-CG-0339, November 2016
- Type Approval Test

Marking of product

System label TECNOVA HT:

 <small>WE MEASURE ↔ YOU CONTROL</small>			
Pregana Milanese - Italy - www.cemsonboard.com			
Project Commissa	SK 12345	S/N Matr.	SK 12345_1
		Year Anno	2016
Model Modello	S-KEEPER7 FULL	Part Number Codice	SK7FM01P02E01S01RPOT
Vdc. / Vac. / F. (Hz)	24 / 230 / 50	Weight Peso	1213 lb / 550 kg
Max. Curr. (A) / Max. Curr. Sc < (kA) / Degree of Prot Max. Corr. (A) / Max. Corr. Cc < (kA) / Grado di Prot.	32 / 10 / IP54		
Customer Name / PO Cliente / Nr. Ordine	TECNOVA HT / PO#12342016		
As per Secondo	IMO Res. MEPC.177(58)(NTC2008) , IEC 60092-504/2001-03		

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System label TECNOVA HT for OEM customer:

<h1>TECNOVA HT</h1> <p>Pregnana Milanese - Italy</p>					
Project Commessa	SK 12345	S/N Matr.	SK 12345_1	Year Anno	2016
Model Modello	S-KEEPER7 FULL		Part Number Codice	SK7FM01P02E01S01RPOX	
Vdc. / Vac. / F. (Hz)	24 / 230 / 50		Weight Peso	1213 lb / 550 kg	
Max. Curr. (A) / Max. Curr. Sc < (kA) / Degree of Prot. Max. Corr. (A) / Max. Corr. Cc < (kA) / Grado di Prot.	32 / 10 / IP54				
Customer Name / PO Cliente / Nr. Ordine	TECNOVA HT OEM CUSTOMER / PO#12342016				
As per Secondo	IMO Res. MEPC.177(58)(NTC2008) , IEC 60092-504/2001-03				

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE