DNV·GL

TYPE APPROVAL CERTIFICATE

Certificate No:
TAA00000U7
Revision No:
1

This is to certify:

That the Emission Monitoring System

with type designation(s)
S-Keeper 7

Issued to
TECNOVA HT SRL
Pregnana Milanese, MB, Italy

is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft

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**

Issued at **Høvik** on **2020-06-19**

This Certificate is valid until **2022-06-18**.
DNV GL local station: **Italy/Malta CMC**

Approval Engineer: **Ingrid Hagen Johansen**

for **DNV GL**
Digitally Signed By: Sneen, Ståle
Location: DNV GL Høvik, Norway
on behalf of

Jan Tore Grimsrud
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: **262.1-021161-2**
Certificate No: **TAA00000U7**
Revision No: **1**

Product description

The TecnovaHT S-Keeper 7 Marine Emission Monitoring System is designed for continuously measure the concentration of NO_x, CO_2, SO_2, CO, O_2, 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)
NOx (g/kWh)	MODBUS
SO2/CO2 ratio	MODBUS
NO,CO,SO2,CO2,O2,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

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.

Type Approval documentation

Document No	Title	Rev	Date
THT-SK-00001-EL-1	S-Keeper 7 – Wiring Diagram	3	2019-08-27
THT-SK-00001-LY-1	S-Keeper 7 – Layout & Component List	3	2019-08-26
DP02-F	Onboard Monitoring Manual for gaseous emissions with Tecnova HT S-Keeper 7 Marine Emission Monitoring System	01/00	2015-07-15

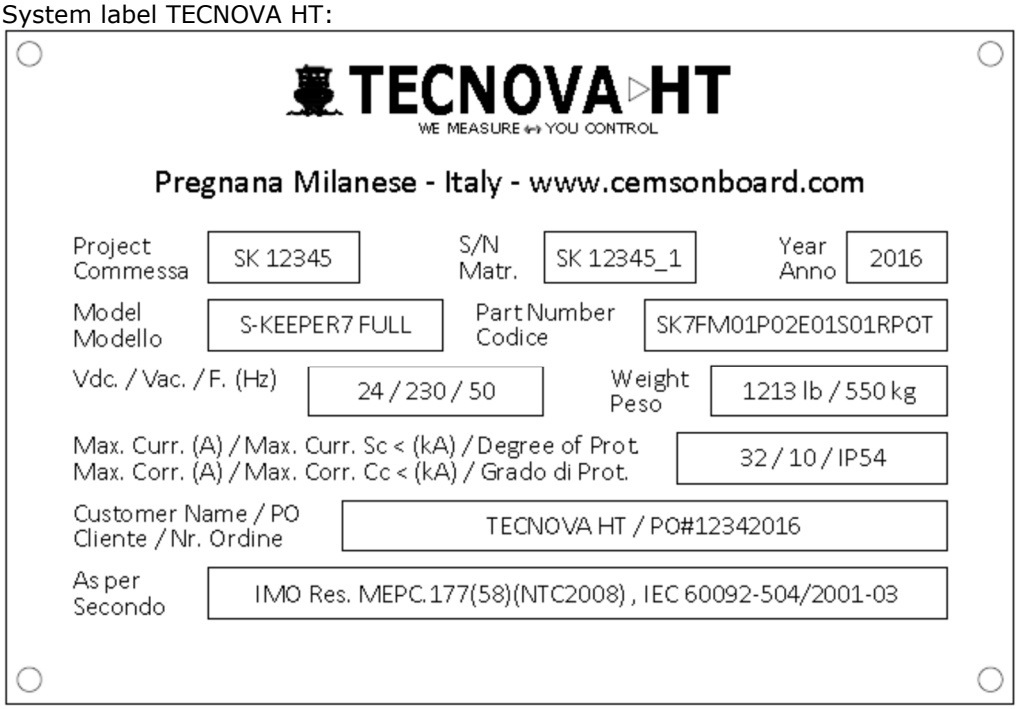
MOD 05.04.1	Type approval Tecnova HT S-Keeper 7 Marine Emission Monitoring System	002	-
387415TRFEMC	Test Report EMC	1	2019-11-29
400105-1TRFEMC	Test Report EMC (Radiated emissions)	1	2020-05-29
0031\ME\CMP\20	Test Report – Dry Heat, Damp Heat, Cold	00	2020-05-18
TesLab 154069A	Environmental Test Report - Sampling probe – Vibration test	1.36	2015-05-16
RAT-MTL-ELE20-024	Vibration Tests on Tecnova HT S-Keeper 7 Continuous Emissions Monitoring System	00	2020-05-12
MOD 07-36	S-Keeper - Verbale collaudo interno	5	2015-09

Tests carried out

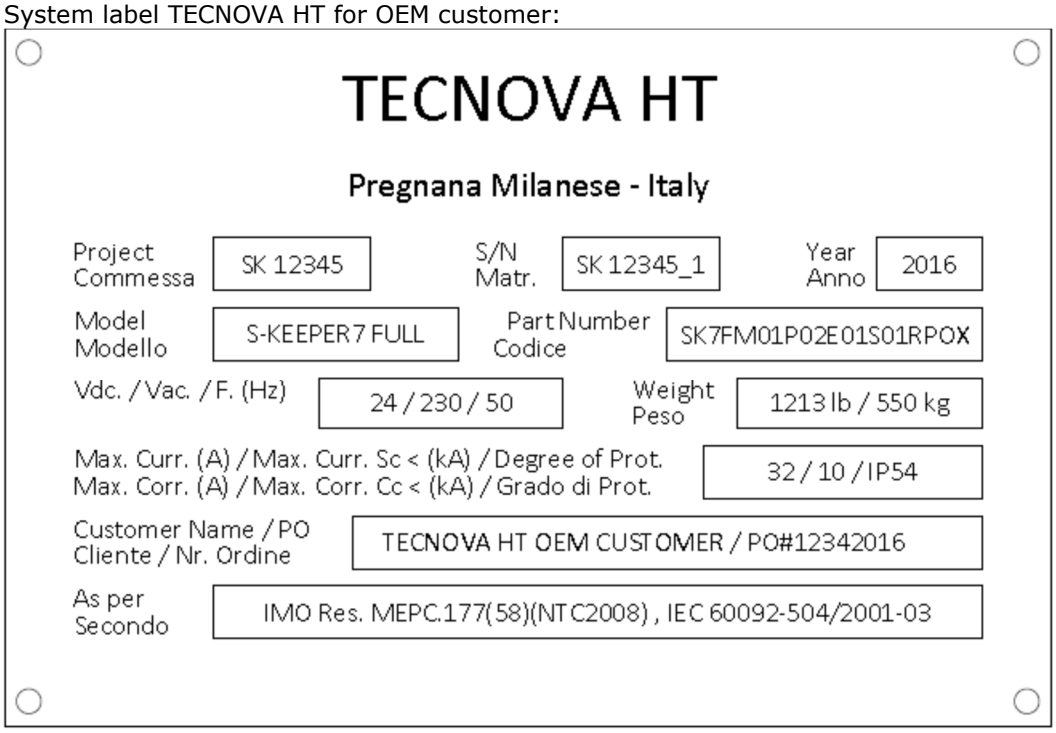
Applicable tests according to:
- Class guideline DNVGL-CG-0339, November 2016
- Type Approval Test

Marking of product

System label TECNOVA HT:



System label TECNOVA HT for OEM customer:



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