



Certificate No:
TAA0000375

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Monitoring System

with type designation(s)
MAIHAK SHaPoLi

Issued to

Hoppe Marine GmbH
Hamburg, Germany

is found to comply with

DNV rules for classification – Ships
IACS Recommendation No. 172 (June 2022) EEXI Implementation Guidelines

Application :

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

Issued at **Hamburg** on **2022-09-21**

This Certificate is valid until **2024-09-06**.

for **DNV**

DNV local station: **Hamburg – CMC North/East**

Approval Engineer: **Jens Dietrich**

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Joannis Papanuskas
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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Form code: TA 251

Revision: 2021-03

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Product description

The MAIHAK SHaPoLi system is a monitoring system designed to comply with the ShaPoLi in the context of IACS Rec.172 (section 6.6, first bullet) of June 2022 for a single propulsion shaft.

The system comprises:

Engine room equipment (HW type approved by TAA00002FX, rev.1):

MDS 31 Vibrating String Sensors
MDS 263 Shaft Measuring Block
MDS 212...222 Measuring Ring Unit (depending on the size of the shaft), including the following components installed on the shaft:
- two vibrating string sensors MDS 31,
- one shaft measuring block MDS 263,
- cover including power transmission,
- cable harness

MDS 260 Transmission Unit, installed next to the shaft.

ECR equipment (HW type approved by TAA00002G0, rev.2)

HOLOK ECR Processing Unit incl. mounting rail, installed in the engine control console

Bridge equipment (HW type approved by TAA0000335):

HOMIP2 Bridge Control Unit incl. mounting rail, installed in the bridge control console
Potential-free alarm contact for external use.

Functionality specified by MEPC.335(76) concerning EPL/ShaPoLi are listed in below table 1. When the system shall be used onboard DNV classed vessels, the vessel-specific configuration shall be reflected in Annex 1.

Table 1: Functions defined in MEPC.335(76)

No	Function	Covered by the subject TAC
1	Power limitation	
1a	EPL - Power limitation	N/A
1b	SHaPoLi - Power limitation	Yes ^{Note 1}
2	Override	
2a	Override power limitation	Yes ^{Note 1}
3	Alarming	
3a	Alarming relevant system malfunctions on bridge	Yes ^{Note 2}
4	Bridge Indication	
4a	Activation of un-limiting mode	Yes ^{Note 1}
4b	Power limit exceeded (visual and audible)	Yes
4c	Indication of limit, shaft speed, -torque and -power ^{Note 1}	Yes
5	Recording	
5a	Shaft speed, -torque and -power recorded in un-limiting mode ^{Note 1}	Yes
5b	Power limit exceeded	Yes
5c	Activation of override	Yes ^{Note 1}
6	Tamper-proof	
6a	-Multiple password levels with Captains PIN -Permanent recording and a locked parameter set -A manipulation detection ensures reliable alarming on any sensor modifications. -Power shortages (blackouts) will be logged as events and alarmed if internal calculations indicate a possible power limitation violation within the timeframe of the power loss.	Yes

Note 1: The subject system is arranged independently of the engine automation system and provides pre-warning as the power limit is approximated, an alarm when the power limit is exceeded, power indication and recording necessary for the navigator to manually limit the power as specified in IACS Rec. 172, Section 6.6.

Note 2: System failure need to be alarmed to the bridge by the external alarm system using the alarm output contact.

Technical specifications:

Power supply ECR and bridge unit: 100 - 240 VAC / 50...60 Hz

Communication between HOMIP2 (Bridge) and HOLOK (ECR): Ethernet

Communication between MAIHAK Transmission Unit (Engine Room) and HOLOK: RS485

Software SHAPOLI V1.x

Approval conditions

This Type Approval covers hardware and software as listed under product description.

The vessel IMO number, Configuration and software version are shown on the HOMIP main HMI screen and shall be recorded in the OMM.

The external alarm contact is to be connected onboard to ensure MAIHAK ShaPoLi system failure alarm on the bridge.

When the type approved software is revised (affecting all future deliveries) DNV is to be informed by forwarding updated software version documentation. If the changes are judged to affect functionality for which rule requirements apply a new functional type test may be required and the certificate may have to be renewed to identify the new software version.

Application/Limitation

Use of the MAIHAK ShaPoLi system on DNV classed vessels subject to EEXI overridable power limitation do in general require acceptance by the vessel's Flag State Administration.

Whenever any of the functions listed in Table 1 are implemented on a DNV classed vessel, a signed copy of Annex 1 in this TAC shall be filled in and submitted to DNV.

If the subject system shall be applied in ShaPoLi-arrangements with automatic power limitation as specified in MEPC.335(76), such use case is subject to case-by-case approval.

Tests carried out

Functional tests according to document "Technical Documentation Test Instructions & Specifications MAIHAK ShaPoLi Shaft Power Limitation, doc. No. F11803-09040-DOC, witnessed July 21st 2022.

Marking of product

Measuring Ring Unit MDS: Manufacturer, Part number, serial number;

Shaft Measuring Block: Material number, type designation, serial number

Sensor: Punched serial number;

Transmission Unit MDS260: Material number, type designation, serial number,

HOLOK: Manufacturer, part number, serial number;

HOMIP2: Manufacturer, part number, serial number;

System label: Manufacturer, system name, power supply ratings, order/ship no., drawing number, year of production, origin.

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



Job Id: 262.1-037985-1
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Annex 1: Ship specific configuration



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Annex 2: Overall description of functionality and variants in Table 1