



1 General Questions

What's the meaning of the main abbreviations?

- **SHaPoLi:** Shaft Power Limitation
- **EEXI:** Energy Efficiency Existing Ship Index
- **EEDI:** Energy Efficiency Design Index
- **CII:** Carbon Intensity Indicator
- **SEEMP:** Ship Energy Efficiency Management Plan
- **MRV:** Monitoring, Reporting and Verification
- **DCS:** Data Collection System
- **EPL:** Engine Power Limitation
- **OPL:** Overridable Power Limitation
- **MARPOL:** Maritime Pollution
- **OMM:** Onboard Management Manual
- **MEPC:** Marine Environment Protection Committee
- **IMO:** International Maritime Organization

2 Compliance, Rules and Approvals

Please clarify as per convention when our vessels shall practically comply with this convention?

The EEXI technical file needs to be provided until 2023 and the SHaPoLi solution needs to be installed before the first annual, intermediate or special survey in 2023.

Will the SHaPoLi stand-alone solution be accepted by class?

As per EEXI Implementation Guidelines (Rec. 172) from the International Association of Classification Societies: Yes.

What type of approvals do you offer?

DNV and LR type approvals are already available for the MAIHAK Shaft Power Meter. We expect acceptance during annual survey is not an issue. MAIHAK SHaPoLi type approvals are currently ongoing with several classes.

How does stand-alone Maihak SHaPoLi solution comply with MEPC.335(76)?

As per EEXI Implementation Guidelines (Rec. 172) from the International Association of Classification Societies an engine automation-independent solution complies with MEPC.335(76), if it alarms the crew to manually reduce the engine power.

When does the EEXI certification take place?

The certification of EEXI (i.e. revising International Energy Efficiency (IEE) Certificate) will take place at the first annual, intermediate or renewal survey of the International Air Pollution Prevention (IAPP) Certificate on or after 1st January 2023 for ships delivered before 1st January 2023, or at the initial survey of IEE Certificate for ships delivered on or after 1st January 2023. The verification of EEXI shall be completed by the date of the survey.

Does Hoppe provide EEXI and power limit calculations?

No, we do not provide any calculation. The ShaPoLi power limit needs to be provided by the customer.

Is there a time limit for alarming?

There is no MEPC state regarding alarming time limit.

Why your system is called Shaft Power Limitation if it does not limit power by itself??

The continuous sounding alarm requires a limitation by a human - this limitation needs to take place and cannot be cheated.

3 Technical Issues

What is an overridable / a non-overridable system?

Overridable: ShaPoLi, EPL and turbo charger cut-out by a butterfly valve.

Non-Overridable: The system is permanent during ship's operation, e.g. turbocharger dismantling, turbocharger cut-out (by welded or bolted plate), permanent adjustment of fuel index, cylinder cut-off, propeller retrofit with shaft power limitation.

Can I refit my existing Maihak Shaft Power Meter?

Yes, from MDS 2010 onwards. MDS 820 and MDS 840 cannot be updated anymore.

Will Hoppe determine and inform the percentage of limitation?

No, the percentage of limitation/ limited main engine power needs to be provided by customer with the order.

Which technical information and parameters are relevant for the project setup?

The required parameters simply consists of shaft arrangement plan and shaft diameter.

Is it applicable for LNG steam turbine vessels?

Yes, our SPM can be installed on the shaft.

What is the influence on 4-stroke diesel engines with a PTO (Power Take Off)?

There is no influence on the engine technology or PTO's due to the shaft power measurement being located on the propulsion shaft behind any PTO.

How is SPM accuracy ensured?

The torque sensors are calibrated and the shaft power meter just needs to get the zero point set by the crew if necessary. The system informs the crew automatically if this will be necessary. Please find detailed information on the MAIHAK Shaft Power Meter under www.hoppe-marine.com/solutions.

How is the “tamper-proof” requirement ensured?

All software parameters that have an influence on the power measurement and the limit value are locked and can only be changed from the Hoppe headquarters via an encrypted and signed configuration file.

Root access to the file system of the control unit is disabled. SW updates are only possible via encrypted signed SW update files provided by Hoppe. It is not possible to use the configuration file of a different ship.

Torque and RPM sensors are doubled and self-checking each other. There are no adjustment options on the sensors or the electronics. The communication between the components of the system is encrypted and with checksum.

Constant system health check with heartbeat and system downtime will be shown as events in the log. System checks with algorithms for possible limitation breaches during down time.

Due to permanent undeletable recording every manipulation attempt will be verifiable.

Is the system having an auto data-logging when shaft power exceeds EEXI power limit?

Yes. Logging is implemented by default. Beside exceedances, all time series data with relevant contextual information, alarm and event logs within the scope of the solution.

Can an existing HOMIP be used in ECR?

Theoretically yes, we need to check how we would handle the order and the price for this kind of software update.

Can an existing HOMIP be transferred to be used as data logger to reduce the price?

No.

How can you ensure that crew does not cover the buzzer (block the alarm) to run above the EEXI limit without entering the passcode?

For blocking the audible alarm a manipulation of the HOMIP2 PLC will be necessary which is not possible without breaking seals.

But even if the buzzer would be ignored, the system would still show these violations in the undeletable event log.

Will the system have a connection with AMS (Alarm Monitoring System)?

No, but there are upgrade options available (e.g. with a additional PMO system).

Does the type of engine influence the SPM?

No, the only limiting factor is the shaft diameter and speed. Diameter range: 150mm - 860mm, speed max. 1000 RPM.

Does a variable pitch propeller (VPP) influence the SHaPoLi system?

No, the system will also work with variable pitch propellers, as the power is the calculated value of revolutions per minute and torque independent of the propeller pitch.

But in the case of a VPP, it is mandatory to supply Hoppe with the inner shaft diameter, if it is a hollow shaft at the position of installation.

How do you connect to with CPP type coupled gen set?

Does not need to be connected as it is irrelevant for the limitation/ power measurement.

Is an engine or governor manufacturer required for ShaPoLi installation?

No, we do not interact with the engine as our system is a stand alone solution. Second we are limiting the shaft power and not the engine power, so there is also no interaction with fuel injection regarding components like the governor.

Can you interface SPM's from other manufacturer?

No, the system only works with MAIHAK.

Can you use other SPM's cabling?

Yes, but only connections to ECR with 6-point cables.

Are other interfaces necessary?

No.

What is shown on the HOMIP screen?

Main changes are a visualisation of remaining power and if the limit is exceeded. Other parameters are actual power, rpm and heart beat.

How the crew know the system is working normally?

The system provides a visual heart beat indication

- green means the system operate in good condition and normal mode
- yellow means the system is in override mode
- red means ME exceeds the limit or there is a failure in the system.

What is the time frame until the alarm/ pre alarm is triggered after power exceedance?

The time frame for alarming is not yet decided due to missing information from classes and regulations.

For pre- alarming there is no alarming delay, the main alarm might be delayed depending on power exceedance → with a small exceedance by e.g. 1% them alarm might be delayed by a few minutes whilst with a higher exceedance e.g. 10% the alarm might sound immediately

Can you hear the alarm for power exceedance on the whole ship? ?

No, only on bridge, otherwise it would not be a stand alone system.

Is a printer needed?

No printer is needed. The system is logging events automatically.

Is welding work needed?

Yes, a support is needed. Hoppe will provide you with all necessary drawings.

Do I need one or two ShaPoLi systems if I have a configuration of two Main Engines and one shaft (with shaft generator)?

You need one ShaPoLi system as you are having only one shaft. ShaPoLi is limiting shaft power, not engine power.

What happens if a shaft generator is installed?

If a shaft generator is installed, you use a different formula to calculate P_{ME} . In this case, you need to consider auxiliary power and the shaft generator's power as well. For a detailed explanation, please view Hoppe's information document about calculating main engine power.

4 Additional technical FAQ (regarding limit calculation)**Where do you use 75% of MCRLim?**

Non-overrideable (permanent during ship's operation) systems.

Where do you use 83% of MCRLim?

Overrideable systems.

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5 Additional FAQ regarding differences EPL/ ShaPoLi**What is the main difference between EPL and ShaPoLi?**

ShaPoLi = **Shaft** Power Limitation → Shaft Power is limited, limitation behind shaft generator, no limitation of engine power.

EPL = **Engine** Power Limitation → Engine Power is limited.

What are EPL advantages?

"Classic" direct propulsion systems without shaft generator and fixed propeller, small shaft generators with power take out less than the calculates value P_{AE} (As long as $P_{(PTO)} \leq P_{AE} / 0,75$ (= shaft generator with low power output) an EPL system might have an advantage).

What are ShaPoLi advantages?

Installations with shaft generators with bigger power take out, pitch propeller, multi shaft arrangements, diesel- electric propulsion systems.

As long as $P_{(PTO)} \leq P_{AE} / 0,75$ (= shaft generator with low power output) an EPL system might have an advantage, but as soon as $P_{(PTO)} \geq P_{AE} / 0,75$ (= shaft generator with high power output) the ShaPoLi limitation is favourable.

6 Reporting and Information availability

Does the solution includes a visualization?

The solution includes a visualization on the Bridge PLC touch screen and an basic web visualization which can be accessed from every PC connected to the ships network.

How does the reporting to the OMM takes place?

All relevant entries for the Onboard Management Manual (OMM) will be shown on the SHaPoLi display. These need to be transferred to the OMM and signed by the master.

Are there any information available on shore?

Full shore side monitoring is available as an option (Data Butler, Data Inspector).

If the HOMIP is OFF or damaged, will the data still be logged or how the customer can see the data?

The data will not be logged during this period and customer is unable to see any data.

What happens, if the HOMIP or other components are defect?

- Crew have to update the OMM Manual and inform HOPPE to decide which steps are necessary to repair the system
- If no action taken by crew during this stage, a fine will be given by the authority in charge

What happens, if the crew turns off the system although the SHAPOLI is working normally?

- Logging will show when the crew enables the system again
- If the time period for switching off and switching ON exceed the period time frame under below condition:
 - Vessel on zero speed and ME is Stop before the SHAPOLI is switch off and Switch On → system will identify and logging will stated, no manipulation will be logged
 - Vessel on zero speed and ME is stop before the SHAPOLI is switch off and sailing during switch ON → system will identify manipulation and logging will be stated as this

Is the system ready to provide the data to shore as well?

Yes, ship to shore is installed and just needs to be activated.

Commissioning

Does the installation need to be carried out in shipyard, or can be done during normal vessel operations afloat, or during voyage.

Approx. 1-2 days are required, subject to good preparation according to our installation checklist. Can be done during port stay or dry dock. Not during voyage, as the shaft needs to be at standstill.

What is your delivery time?

Delivery time will be provided within our offer. Please get in touch with sales@hoppe-marine.com.

Do I need to order commissioning?

Yes, commissioning by Hoppe approved service engineers will be required.

Where do you offer commissioning?

We offer commissioning from all Hoppe stations and our service network. For other locations please contact sales@hoppe-marine.com to find the best solution.

Can commissioning be done by crew?

No, commissioning needs to be done by approved service technician. But Hoppe provides ShaPoLi trainings.

How long delivery does take?

Delivery up to priority list - depending on first annual service, next dry docking and other parameters.

How can we make sure all preparations are done?

There are commissioning checklists which show all necessary preparations.