

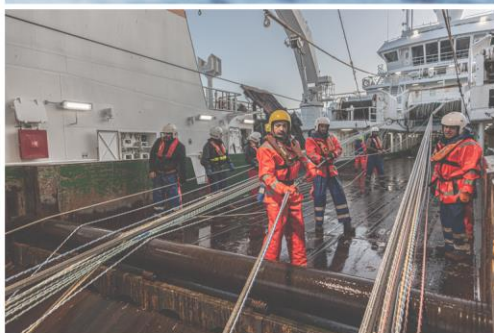


## Sustainable Ship Design Policy

**PP Group wants their newly built vessels to be designed excellent. It needs to be a hydrodynamic, efficient vessel and all major systems should be fully integrated for the best performance. Ship design should be developed to provide optimal fuel consumption, fish handling and safe working conditions.**

All our new and existing vessels must comply with the International Convention for the Prevention of Pollution from Ships (MARPOL). This is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes, divided into 6 annexes:

- Annex I – Regulations for the Prevention of Pollution by Oil
- Annex II – Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk
- Annex III – Prevention of Pollution by Harmful Substances Carried in Packaged Form
- Annex IV – Prevention of Pollution by Sewage from Ships
- Annex V – Prevention of Pollution by Garbage from Ships - Prohibiting the discharge of all garbage into the sea.
- Annex VI – Prevention of Air Pollution from Ships - Setting limits on the emission of Greenhouse Gasses, including CO<sub>2</sub>, sulphur oxide (SO<sub>x</sub>) and nitrogen oxide (NO<sub>x</sub>) from ships



When designing new ships, PP Group takes into account the following principles:

- The design of the ship is made considering the Ship Energy Efficiency Management Plan (SEEMP), which is an operational measure that establishes a mechanism to improve the energy efficiency of a ship in a cost-effective manner.
- We adhere to the requirement of an IHM (Inventory Of Hazardous Materials) certificate.

An IHM report is maintained and supplemented throughout the life cycle of a vessel: from new construction to use. Ultimately, an IHM certificate ensures that the ship can be dismantled safely, with a reduced risk to people and the environment.

A comprehensively compiled IHM can help us minimize risk, potential liabilities, and enhance the safety of our ships' crews by identifying, recording and controlling hazardous materials onboard the vessel, in line with existing and forthcoming legislation.

We assist with our in house management systems, but we can also demonstrate our commitment to safe and environmentally sound practices at the end of the ship's life. An external agency examines the





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existing ships for hazardous substances that are used. These are identified in a report.

Orders that go through our system are screened for IHM (Inventory of Hazardous Materials). Suppliers will make a notification when an IHM order will be delivered. Suppliers will also provide the accompanying documents.

- We select engines of the latest generation with a low specific fuel consumption. This means the engines are more fuel efficient than earlier engine generations. This will result in less grams of fuel necessary to produce a kilowatt of energy.

Furthermore, the engines comply with the IMO Tier III standard. This means a reduction of about 70% of NOx emissions in comparison with the IMO Tier II standard.

- We take into account recovery of maximum surplus energy from exhaust gas and cooling water of the diesel engines into a common heat recovery/central heating system. This recovered heat will be used in the processing of the catch and heating of different mediums on board the vessel.

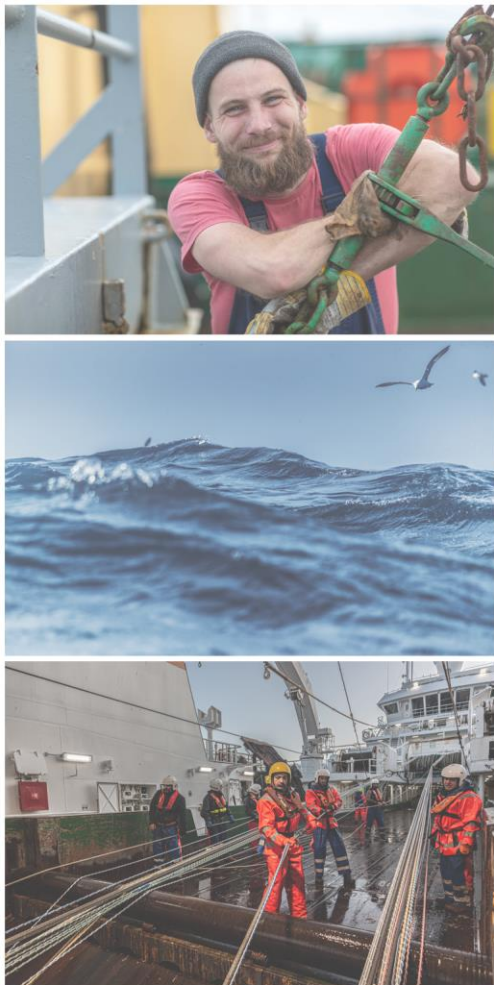
- In order for the vessel not to consume more electrical power than necessary, we select high torque and low rpm winches and also automatic start / stop of major pumps, fans and compressors.

- We select efficient electric winches. Trawl and net hauler winches to be arranged with recuperation of electric energy during shooting and towing. Because we select electrical winches, there is no need to have hydraulic pumps running the whole time the winch is in use. Only when actual power is needed, the winches will use energy.

- We will use LED lights throughout the vessel.

- We select dual rudders, this is optimized for high lift and low drag during towing, and will allow for reduced rudder drag, and thereby improve fuel efficiency.

- We have used CFD (Computational Fluid Dynamics) to optimize the hull lines. Finding the ideal compromise between load carrying capacity (deadweight), sea-keeping ability, draught and slender hull lines for reduced resistance is achieved through iterations and empirical data from our ship designers portfolio. Model testing will be done to verify that our findings are correct. These results will also be shared with the propeller manufacturer to ensure that they can model and build a propeller which suits the vessel in the best possible way.





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- We make sure hull, propeller and engines to be carefully optimized for the area of operation in which the ship is most often found. This optimization is done by the dynamic combinator curve, which is a theoretical graph where all these things are combined.
- We will use shore power provisions of high capacity, with a minimum of 430A – 400V. In this way we can connect the vessel to a shore power connection in port, reducing the emissions in port.
- We will select large dual nozzle propellers with low and variable rpm and pitch for optimized towing. Because of the large blade area, and low RPM, cavitation is reduced resulting in low noise characteristics of the propellers.
- The marine coatings we use on our vessels comply with high environmental and occupational health and safety standards.

### Questions?

If you have questions about this policy or wish to raise a concern please contact the CSR Department of PP Group via [csr@pp-group.eu](mailto:csr@pp-group.eu) or telephone number +31 (0)71 789 00 00 (Monday-Friday during office hours).

*This policy, our procedures and internal audits are designed to ensure that PP Group complies with all applicable laws and regulations and will be reviewed and updated on a regular basis to ensure that it remains current and effective.*

**Approved by the board of PP Group  
Valkenburg, 1 November 2022**

