Deepwell Cargo Handling Systems
FOR PRODUCT AND CHEMICAL TANKERS
The Wärtsilä Svanehøj deepwell cargo pump system for product and chemical tankers is the most flexible, cost-efficient and environmentally friendly cargo handling solution today. Our energy-efficient electric system offers savings of 11-25% compared to hydraulic alternatives.

All of Wärtsilä’s combined expertise and know-how is integrated in our pump systems for safe offloading a wide range of liquid cargoes. We offer the widest range of deepwell pumps in the market for product and chemical tankers. Our pumps can be combined into high-quality deepwell cargo pump systems, powered by quiet and efficient electric drives that are fast and easy to install.

**Complete Solutions with low risk**
A Wärtsilä Svanehøj solution is a turnkey solution, which minimises the risk at every stage of the vessels lifetime. We guarantee high reliability, minimised risks, operational flexibility, financial and efficient lifetime operation and many other benefits – all wrapped up in customised and innovative solutions. All Wärtsilä solutions include world-leading technical support throughout the lifecycle of the systems through our worldwide network.

**Efficient and Cost-Saving**
On all aspects, the overall lifecycle costs of an electric deepwell pump solution are significantly lower than other available solutions. This means low initial costs at the shipyard, low lifetime operational costs due to minimum maintenance requirements. The fuel savings are also significant. The Wärtsilä deepwell pump solutions supports the IMO’s Energy Efficiency Design Index (EEDI), which helps yards and owners to meet the continuously increasing demands of the EEDI.
Reliability and Low Maintenance
Every component of the electric deepwell cargo pump system is designed for a long, serviceable life. The system has a proven reliability with minimum maintenance. The electric pumps are mounted on deck which provides easy access, allowing more space for cargo and no pump room is needed. The enhanced sealing and enclosure make our e-motors extremely resistant to the harsh environment on any ocean tanker. The pumps have proven to be exceptionally reliable. For heavy duty applications we can provide deepwell pumps with a documented MTBR (Meantime Between Repair) of 25,000 hours.

User Friendly Operation
The modular systems HMI ensures that the operation can take place from various locations and panels depending on preference. It is customised according to charter/class/owner requirements and preferred degree of automatic and/or manual operation. Touch screen user interface or push button solutions are available.

Health, Safety and Environment
Electric systems ensure safe and reliable operation with limited exposure to the surrounding environment. This environmental friendly cargo system includes low power consumption, lower CO² emission (11-25% lower than hydraulic pump solutions), low vibration levels and an extremely low noise level of just 80-85 dB (A). The electrical deepwell cargo system has a proven track record of Zero major incidents during more than four decades, which is your security for a safe and reliable cargo system.
The Wärtsilä Deepwell Cargo Pump System

Electric Drive System
The electrical drive system with its frequency converters enables the pump to run at full variable speeds. The result is optimised pump performance at any offloading conditions and with any cargo. The entire electric drive system are delivered in a cargo switchboard, fully wired, and ready to be placed on board.

The electric drive system is customised for each vessel and contains the scope of monitoring, flexibility and redundancy that you require. We always offer a solution that fits your needs.

Local and/or Remote Control
Each pump allows local and remote operation. A local control panel is installed in front of each frequency converter on the cargo switchboard for manual start/stop of the pump and discharge. It comes with an interface for a remote control panel and/or the ship control system (SCS). The remote control panel is installed in the cargo control room or the wheelhouse.

The pumps can also be operated from a local operator panel at each pump on deck. Speed panels come in different designs, depending on customer requirements for redundancy and flexibility, as well as requirements for special degrees of automatic operation.

Frequency Drive Systems
The Wärtsilä Svanehøj cargo pumps are designed for use with frequency converters. The frequency converter provides significant energy savings and facilitates long-distance, online service. No matter where you may be located in the world, the Wärtsilä support technicians are able to immediately access your switchboard online and inspect the system, if necessary.

Savings by Utilisation
Wärtsilä Svanehøj’s electric pump system is more than just a system – it is an integrated solution. The electric system can be utilised for a great number of other features on board. To mention a few: The frequency converters can be used...
for running and controlling the bow thrusters and for driving the shaft generator as a take-me-home feature. The extensive knowledge of our engineers means Wärtsilä can offer a range of vessel types, products and solutions, this enables us with the use of digitisation to offer customers a complete integrated system that no competitor can match.

When you use Wärtsilä’s electric systems for other applications, you render a number of other systems redundant. Ultimately you cut costs. Saving by utilisation is one of the most significant distinctions of our electric system.

**Deepwell Pumps (Cargo/Ballast)**

All Wärtsilä Svanehøj deepwell pumps are designed for operation with frequency converters. This makes the pumps particularly suitable for handling different types of cargoes within a wide range of specific gravity and viscosities. Wärtsilä Svanehøj’s seven different deepwell pump families are the widest product portfolio in the market. Our pump solutions are designed individually to suit any tanker application.

The Wärtsilä deepwell pump range contains single stage as well as multi stage pumps. The centrifugal pumps are designed for reliable and efficient operation. They consist of a submerged pump head, transmission to deck and electric motor. The pump is designed for variable speed drive via frequency converters or other means of variable speed regulation, but can also be operated by direct online (DOL) starting. A range of different pump solutions are available, e.g. the multi suction pump solution where one pump can empty several tanks.

For decades, the Wärtsilä Svanehøj advanced electrical motor design has proved itself as the ultimate and most reliable solution for a motor on open deck. The Wärtsilä Svanehøj e-motor design with enhanced sealing and enclosure makes the motor extremely resistant to the harsh environment on any ocean-going tanker. In standby mode, the electric motors feature an IP67 enclosure, even though the IMO requires only IP56. This has given Wärtsilä a track record with trouble free operation for more than a decade.

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**Additional Components**

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<th>Emergency Portable Pump</th>
<th>Accessories for Emergency Portable Pump</th>
<th>Super Stripping System Manual or Automatic</th>
<th>Other</th>
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<tr>
<td>A centrifugal pump for emptying oil product/chemical tankers. Can be connected to either the ship’s hydraulic system or a hydraulic power pack unit via a ring line. The connection is made easy by quick couplings. Manoeuvring of pump by a flow regulating valve allows for swift and trouble-free handling. A wide range of capacities are available.</td>
<td>Comes with winch and is an optional device for lowering the Emergency Portable Pump into the tank. Other optional supplies are hydraulic hoses (pressure, return and leak) with flow regulating valve, cargo hose and quick couplings. A fully wired hydraulic power pack that fits the Emergency Portable Pump can also be provided.</td>
<td>Wärtsilä provides 3 different super stripping systems which leave less than ½ litre of residue. They are supplied independent of ship size and cargo. An excellent way to drain off the residual liquid in oil product/chemical tankers. Easy to operate and provides maximum reliability due to its simple construction. Available for ships in all classes and sizes including heavy cargo.</td>
<td>If you wish to minimize risk by having one supplier, we can include additional items to the cargo handling system. A few examples of this could be deck heater and tank surveillance system. Let us take the risk while designing your next cargo handling system.</td>
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Electric versus Hydraulic System

The electric cargo pump system has many significant benefits compared to the hydraulic system. Especially when it comes to cost-saving features. Independent and impartial research institutions have conducted comparisons on electric vs. hydraulic cargo pump systems, and some of the key results where the electric system far exceeds the hydraulic:

- 11-25% less power consumption (fuel savings)
- Up to 15 tons less weight
- Up to 60 m² space savings in accommodation
- No restrictions against discharge, due to noise requirements
- Highly reduced maintenance and operational costs (OPEX)
- 40% lower purchasing price.

Report can be acquired from Wärtsilä Pumps.

At Your Service

Wärtsilä’s network of Global Service Centres includes 4,500 field service professionals in more than 200 locations in 70 countries worldwide. 24/7 service provides the spare parts, replacement products and support that will protect your operation.

A Wärtsilä solution equals service and support throughout the lifecycle of your installations and is not only confined to yearly inspections and performance tests. Service and support may also include basic support, installation and commissioning, performance optimisation, upgrades and conversions, as well as service projects and agreements. Also, our spare part packages can include start up, two year spare parts and capital spare parts.

The maintenance on our deepwell cargo and ballast pumps is very limited but we are here to assist you in case an accident should occur. We also offer precautionary service like pre-docking inspection to make sure that your dockings and complete cargo pump system are running smoothly.
Expertise You Can Trust

For more than 45 years, Wärtsilä has developed, designed and delivered more than 20,000 first class, reliable and efficient electrically driven pumps to over 1,300 vessels for shipyards and ship owners in the global marine market. We offer the highest standards of on-time delivery consistency and enjoy a global reputation for proven excellence. Our many years of experience and numerous renowned references are your guarantee that we deliver on our promises. Here are two of our recent deliveries:

4 x 15,000 DWT Product & Chemical Tankers

➢ IGS Award 2016 – the most exceptional contribution to green shipping
➢ Awarded “Top 10 ships of 2016” by Maritime Reporter & Engineering News
➢ Awarded “Guilldroppen” Innovation prize in 2017

- 7 x DW200/250 Multi suction deepwell cargo pumps, each 450 m³/h – 120 mlc
- 2 x DW125/150 Deepwell Slop pumps, each 150 m³/h – 120 mlc
- 1 x DW100/100 Deepwell Tank Washing pump, 100 m³/h – 120 mlc
- 2 x C2G250L-SUB Deepwell Ballast pumps, each 600 m³/h – 35 mlc
- 11 x Electric motors for deepwell pumps on open deck
- 1 x Complete control system, including frequency converters
- 1 x NH80 Emergency Portable pump, including power pack and accessories

2 x 18,600 DWT Chemical Tankers

- 12 x DL132 deepwell cargo pumps, each 330 m³/h - 120 mlc
- 2 x DL100 deepwell slop pumps, each 100 m³/h x 110 mlc
- 14 x Fully automatic super stripping system for each pump/tank
- 2 x C2G200L/SUB ballast pumps, each 500 m³/h x 40 mlc
- 16 x Electrical motors in weather deck execution
- Complete cargo switchboard including DC-Link and Inverters
- 1 x NH80 Portable pump, including power pack and accessories

Other products available from Wärtsilä Pumps

PRS – Pump room systems

ERP – Engine room pumps

EFP – ECA fuel Pumps
Wärtsilä is a global leader in smart technologies and complete lifecycle solutions for the marine and energy markets. By emphasising sustainable innovation, total efficiency and data analytics, Wärtsilä maximises the environmental and economic performance of the vessels and power plants of its customers..

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