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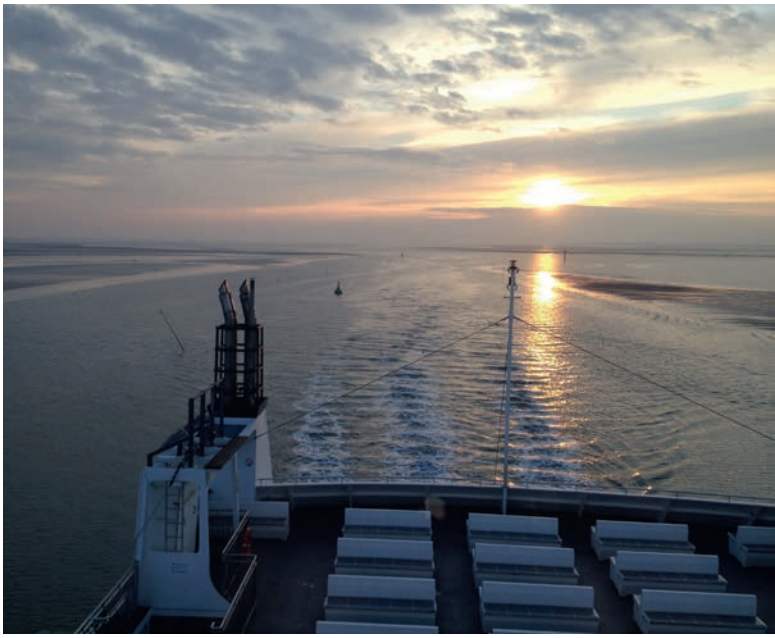
VOITH

Tailor-made propulsion solutions for double-ended ferries

Voith Schneider Propeller

Voith technology for ferries

Be it with or without a car – people want to cross rivers, lakes and straits safely. If there are no bridges, then ferries are required. As floating bridges in an integrated traffic system, ferries are future-oriented, economical solutions.

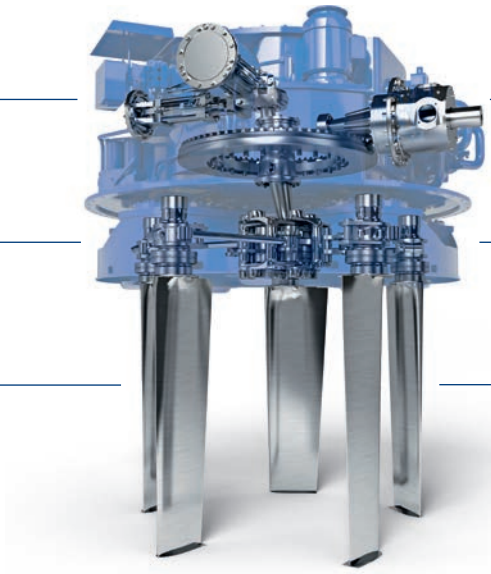


Perfectly matched

Safety, profitability and environmental sustainability are key. Ferries equipped with Voith Schneider Propellers are reliable and efficient, and do what their operators require of them. They steer the vessel with unrivaled precision and response, particularly important in strong currents, crosswinds, tidal streams and with variable water depths.

Voith Schneider Propeller (VSP)

The benefits to you



- Safe and precise maneuvering
- Fast response time
- Robust against floating debris and ice
- High reliability and low maintenance requirements
- Low fuel consumption
- Maximum safety for the vessel and the environment

Possible arrangements of Voith Schneider Propellers (VSPs)

1 With two VSPs on the ship's longitudinal axis as a standard layout

2 With four VSPs if performance requirements are high power and/or in limited draught situations

3 With three VSPs if there is a preferred running direction

4 With two VSPs arranged diagonally for small ferries and/or ferries berthing at concrete ramps

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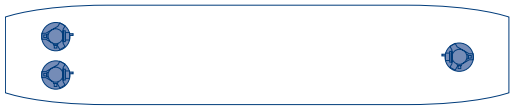

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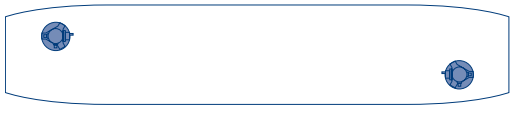


The benefits to you

The Voith Schneider Propeller combines propulsion and steering of the vessel in one single system. This unique system provides extremely accurate propulsion and maneuvering ensuring maximum safety and efficiency operation of your ferry.

Only the blades protrude from the hull, with all other parts located safely inside the vessel, easily accessibile for maintenance. High reliability and long maintenance intervals minimize cost of ownership.

Hull design optimization, high system effiecieny and the typical operational profile of a VSP driven double-ended ferry – lower transit speed due to swift berthing and unberthing – all combined with the implementation of combinator mode guarantee significant reductions in energy and thus fuel consumption and emissions.

Optimized hull design for great maneuverability and hydrodynamic efficiency

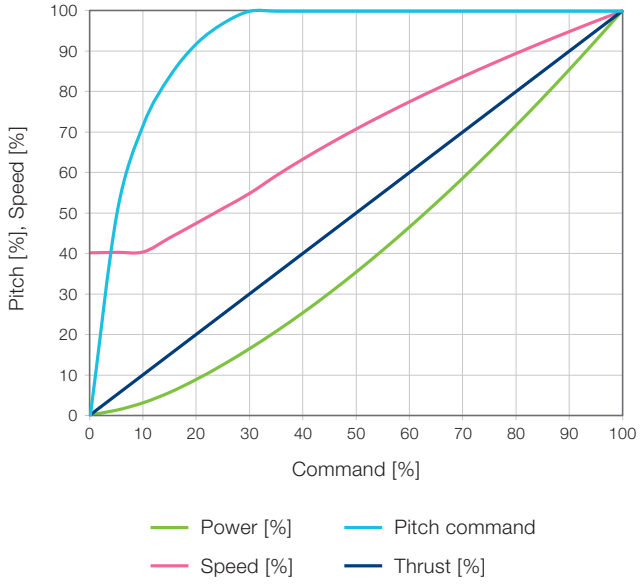
- **Sensitive, stepless thrust variation according to Cartesian coordinates**
- **Safe, swift berthing and unberthing**
- **Identical efficiency in all directions**
- **Symmetrical power distribution between propellers at both ends of the vessel**
- **Easily controlled, redundant steering logically related to the vessel's movements**
- **Lower propeller wash and precise steering avoids erosion at the berthing place**
- **Diesel engines or electric motors can run at constant or variable speed, without any need to reverse the direction of rotation**
- **Robust, low-speed marine engineering design made from high-quality materials**
- **Long service life even in extreme operating environments**

Voith electronic control

Voith offers electronic control systems tailored to the Voith Schneider Propeller (VSP). It comprises a modular hardware and software architecture with numerous control, assistance and interface features.

Fast actuation and exact propulsion system control, remote diagnostics via the Internet and human-engineered control elements are just some of the advantages of this control system.

Combinator mode / ECO mode



The VSP's electronic control system offers operators an optimized fuel-saving mode.

Instead of using pure pitch control and manual speed step selection, the combinator mode comfortably computes and commands linear thrust by combining pitch and RPM automatically in the most fuel efficienct way.

Efficiency is greatly increased by combining high pitch and low speed values while the captain only has to command the desired thrust. This eases workload and allows the crew to focus on other areas, such as rough conditions or emergency situations.

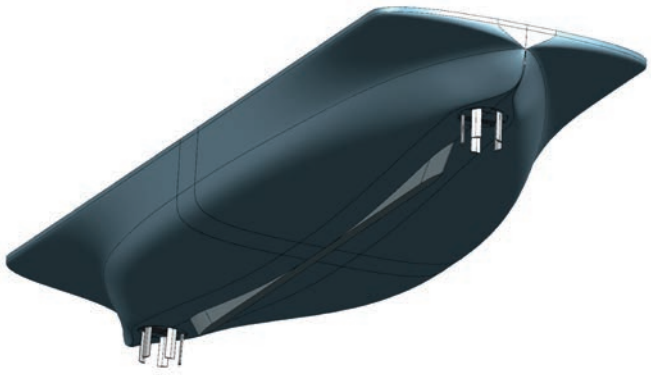
The combinator mode also significantly reduces noise and exhaust emissions as well as machinery wear.

Voith project support

As well as building propulsion systems, we also provide comprehensive support when it comes to developing new vessel designs and solving complex technical issues. Using comprehensive computational fluid dynamics (CFD) calculations, simulator studies and finite elements (FE) structural analyses, we can forecast vessel behavior reliably and give you peace of mind when committing to a major investment. We also conduct model evaluations in our own test tank and at well-known international research institutes. We also regularly perform large-scale measurements to exacting levels of quality.

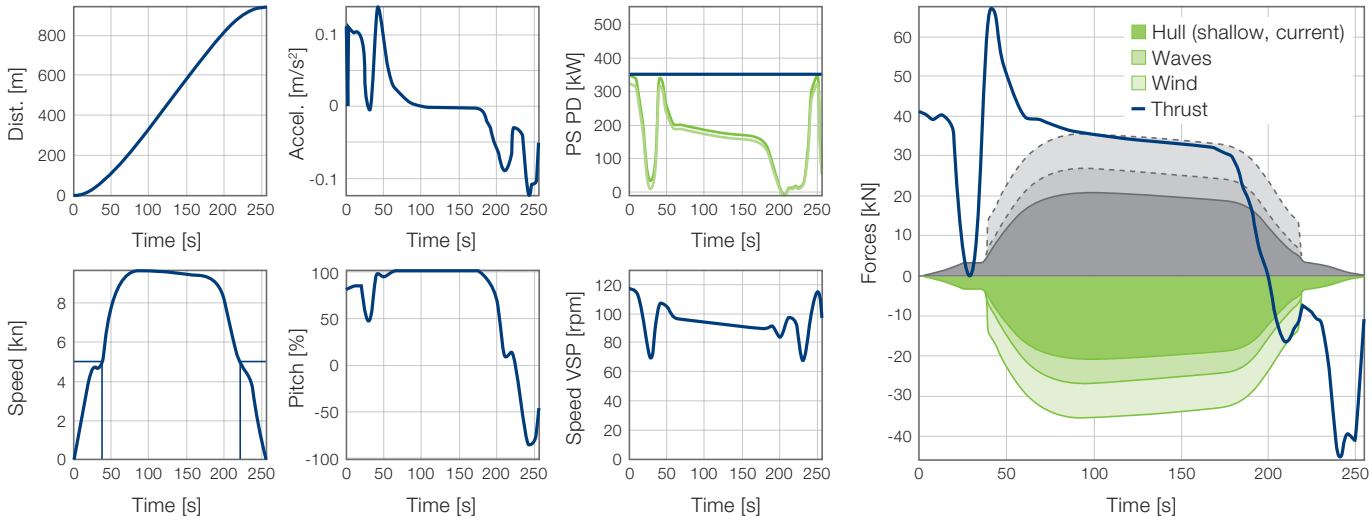
What makes Voith customer support unique is our comprehensive mix of great tools, skilled engineers, a can-do attitude, and powerful hardware and software coupled with decades of experience. We don't just focus on props, we have the entire vessel in mind and are experts in performing all the calculations, simulations and measurements required.

Optimized hull design with CFD



- **Simulator studies & simulator training**
- **Nautical training**
- **Technical training**
- **Model trials in our own test tank**
- **Assistance at model trials**
- **Computational fluid dynamics (CFD) studies**
- **Basic layouts of vessel designs as generated arrangements, lines plans, installation proposals**
- **Speed forecast**
- **Thruster / Hull optimization**
- **Hull design**

Analysis of an existing double-ended ferry connection

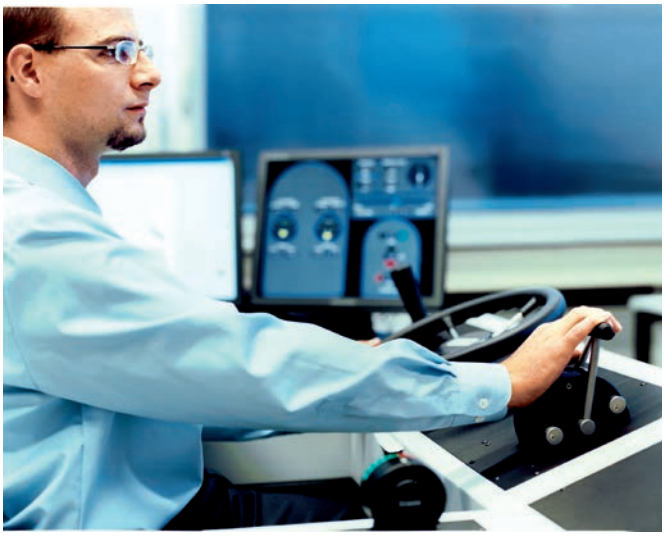


Voith simulator training

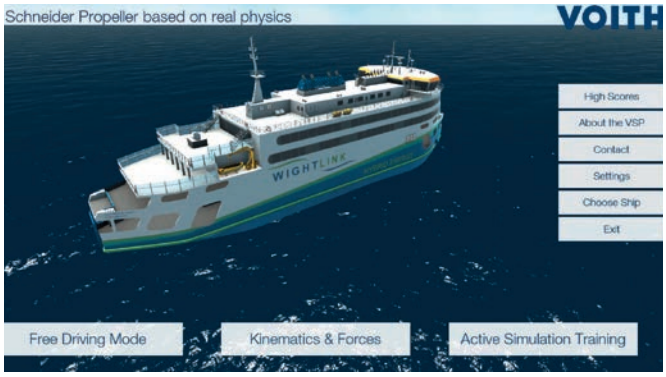
The Voith simulator can be used to imitate various maritime maneuvers using a fully equipped control stand. With the help of software, control signals are applied as they would be by the relevant control system. Monitors display the view from the bridge onto a realistically modeled environment. Vessel speed, current propulsion system settings and fuel consumption are also indicated. The in-house simulator capabilities have proven to be very effective for both training purposes as well as for studies and customer project support.

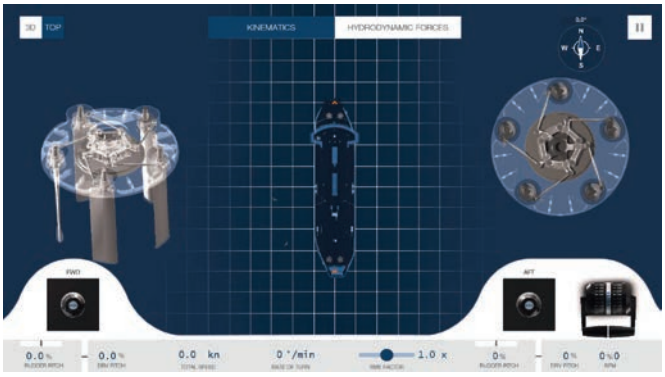
- **Improve steering strategies**
- **Improve fuel consumption**
- **Test new ship concepts**
- **Case studies for customers**
- **Train emergency situations**
- **Create instructional material**
- **Improve simulation technology**

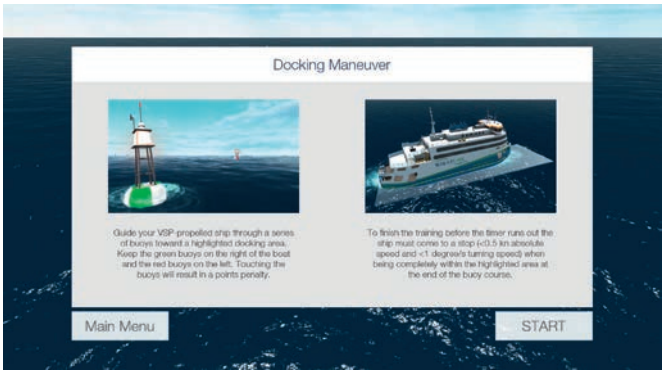
Simulator training



Interactive application Voith iVSP used for familiarization purposes







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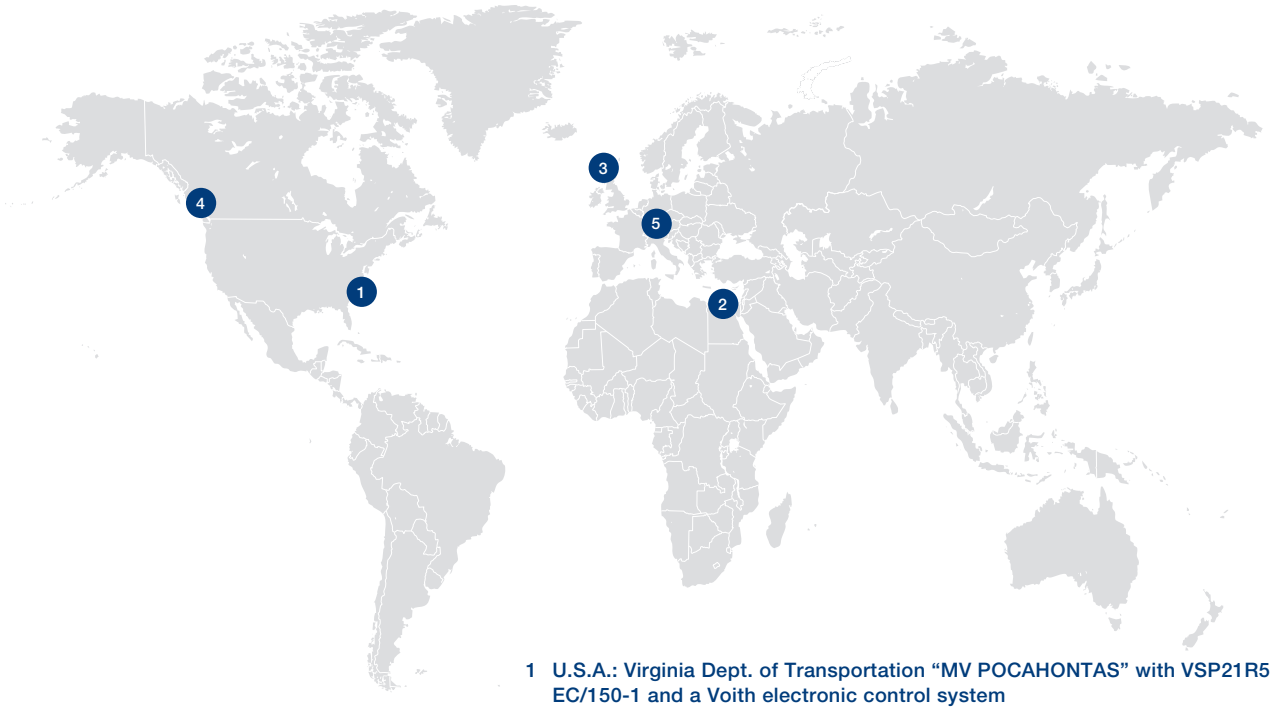
Tailor-made propulsion solutions for double-ended ferries



1 U.S.A.: Virginia Dept. of Transportation “MV POCAHONTAS” with VSP21R5 EC/150-1 and a Voith electronic control system

2 Egypt: Suez Canal Authority “MV SINAI-1” with VSP16 EG/100-1 and a mechanical control system

3 Scotland: CalMalc Hybrid Ferry “MV LOCHINVAR” with VSP16R5 EC/90-1 and a Voith electronic control system

4 Canada: BC Ministry of Transportation “MV COLUMBIA” with VSP18R5 EC/150-1 and a Voith electronic control system

5 Germany: Bingen-Rüdesheimer Fähr- und Schiffahrtsgesellschaft “MV MARY ROOS” with VSP12R4 EC/75-1 and a Voith electronic control system

Remote access

Years of excellence: Voith propulsion systems are in service all over the world, and in a wide range of vessels. For each electronically controlled propulsion system, we have a perfectly matched remote access capability – meaning we can inspect and examine, irrespective of location, without the need to dispatch a service technician right away.

A lifetime partnership

We offer customized service packages covering the entire product lifecycle. With over 90 years of marine experience, Voith customers are in good hands – both before and after the purchase.

As well as innovative service solutions and product support, Voith offers personalized training courses to ensure your operating personnel receive the best training imaginable.

Our focus, throughout, is customer satisfaction, efficient operation of the Voith product, and short repair and maintenance times. Vessels equipped with Voith technology are in service all over the world. To ensure optimum service and minimize response time, we have established a global service network with experienced technicians providing support during installation, commissioning and during maintenance and upgrade work. Naturally, we ensure long-term availability of spare parts for all products.

Technical support

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VOITH

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