

Media Release

Voith Group

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Voith supplies propulsion system for new passenger ferries on Lake Geneva

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- Voith is going to supply two Voith Linear Jets (VLJ) and four Voith Inline Thrusters (VIT) for each of two hybrid passenger ferries operated by CGN SA.
- The components of the propulsion system are optimally adapted to the vessel design and the hybrid propulsion and enable efficient operation with very quiet running.
- Due to the expected relocation of commuter traffic from the road to the lake, the CO₂ pollution in the region will be substantially reduced.

HEIDENHEIM, GERMANY/LUCERNE, SWITZERLAND. In September 2020, Swiss ship builder Shiptec AG engaged Voith to supply the propulsion system for two hybrid passenger ferries operated by shipping company CGN SA (Compagnie générale de navigation sur le lac Léman). With the new ferries the operator aims to massively increase transport capacity between Lausanne in Switzerland and the two French towns Evian-les-Bains and Thonon-les-Bains on the south side of Lake Geneva. Due to the expected relocation of commuter traffic from the road to the lake, the CO₂ pollution in the region will be substantially reduced.

In each ferry, the main propulsion is provided by two Voith Linear Jets (VLJ) type 1140 that are optimally integrated into the hull and thus allow a low draft of between 1.4 and 1.6 meters. The maneuvering is done by two Voith Inline Thrusters (VIT) 550-110 on the bow and two VIT 380-60 on the stern of each ferry. The fully electric RIM drive transverse thrusters have an integrated electric motor and can therefore be easily integrated into the on-board power management system.

When developing the vessels, CGN attached great importance to the safety and comfort of passengers as well as achieving the maximum possible energy efficiency. Voith was therefore in close contact with CGN

and Shiptec from the very beginning in order to adapt the propulsion concept optimally to the requirements. "We first created a digital model of the ferries with our propulsion components," explains Oliver Lenz, Sales Application Manager at Voith. "On our in-house simulator, the operator's captains were able to simulate the in part very challenging crossing, including the effects of currents and wind, even before the delivery of the ferries and convince themselves of the maneuverability of our propellers." The aft section was optimized using CFD (computational fluid dynamics), under consideration of the structural engineering conditions, to enable maximum VLJ efficiency and optimum interaction between hull and VLJ. "Driving the ambitions of our customers defines our role in the industry. Together with Shiptec and the operator we developed an optimal solution," says Lenz.

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The pre-production phase for the first hull sections is scheduled for the end of 2020. Assembly will start in the summer of 2021 in the CGN shipyard hall in Lausanne. The first ferry for the Evian-les-Bains to Lausanne connection will be commissioned at the end of 2022, and the second ferry for the Thonon-les-Bains to Lausanne connection will follow in autumn 2023. With a length of 61.3 meters and a width of 11.4 meters, each ferry can carry 700 passengers. The hybrid propulsion concept allows a peak load cap in the event of high energy demand peaks and switches to electric-only operation under load near the banks. With a drive power of 920 kW per diesel engine and 224 kW per electric motor, the ferries reach a maximum speed of 19 knots.

Maximum efficiency and extremely quiet running

The VLJ has few moving parts, which makes the system robust and easy to maintain. In combination with the nozzle and rotor profile that are specially adapted to the ship, extremely low noise and vibration emissions are achieved. The constantly high efficiency over the entire range of operation makes the compact propulsion concept interesting primarily for wind farm support vessels, yachts, high-speed ferries and comparable applications with a mixed-use profile ranging between slow cruising speed and running at speeds ranging from 18 to 40 knots.

The VIT requires neither a drive shaft nor a transmission. This leads to a direct transfer of the input power, which increases thrust effect and hence efficiency. In systems up to 500 kW, the rotor is supported by a seawater-lubricated plain bearing patented by Voith. This technology ensures low vibrations, extremely smooth running and a compact design.

About the Voith Group

The Voith Group is a global technology company. With its broad portfolio of systems, products, services and digital applications, Voith sets standards in the markets of energy, oil & gas, paper, raw materials and transport & automotive. Founded in 1867, the company today has more than 19,000 employees, sales of € 4.3 billion and locations in over 60 countries worldwide and is thus one of the larger family-owned companies in Europe.

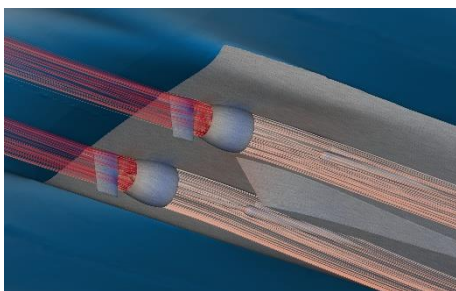
The Group Division Voith Turbo is part of the Voith Group and a specialist for intelligent drive technology, systems as well as tailor-made services. With its innovative and smart products, Voith offers highest efficiency and reliability. Customers from highly diverse industries such as oil and gas, energy, mining and mechanical engineering, ship technology, rail and commercial vehicles rely on the advanced technologies and digital applications of Voith.

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Two VLJs and four VITs power each of the new ferries.
Picture: Omega Architects B.V.



CFD representation of the flow patterns and pressure distribution at a speed of 19 knots. Picture: Voith Group

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