

## Press Release

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### **Voith and Fuglesangs Subsea to Revolutionize Subsea Boosting by a Topside-less Solution**

- **Voith and Fuglesangs Subsea to develop advanced pump drive and coupling system**
- **No topside installations needed for subsea boosting**
- **Topmost reliability combined with extensive cost savings**

**Crailsheim, Oslo:** Voith and Norway's Funglesangs Subsea AS (FSubsea) signed a collaborative agreement to develop hydrodynamic variable speed drives for advanced subsea pump applications. Due to a Voith torque converter integrated in the pump on the sea floor, Variable Frequency Drives (VFDs) on topside will no longer be required for speed control. The system reduces CAPEX investments by up to 70 percent and saves several hundred tons of topside equipment, making subsea boosting economical already at an early stage. Furthermore, operators benefit from a reliable, simple and compact technology.

Against the background of existing wells depleting as well as growing step out distances, subsea boosting is becoming increasingly important in offshore oil exploitation. However, topside modifications, complex electronics and extensive umbilicals are a bar to profitable and reliable operations. In order to tackle the existing limitations, Voith and FSubsea joint forces for an innovative drive solution that provides enhanced performance and durability at significantly reduced cost.

#### **Leading Technologies Leveraged for Topside-Less Pumping**

Within the subsea industry FSubsea stands out by its seal-less technology and its Hydromag (US pat. pending) magnetic coupling. The recent cooperation enhances this portfolio with Voith's expertise of hydrodynamic variable speed drives used in the oil and gas industry, power industries and the mining sector. "Our torque converters have proven their worth over decades and under highly challenging situations," states Martin Kaufmann,

Managing Director Variable Speed Drives at Voith. “Designed with a focus on reliability and simplicity they perfectly fit with FSubsea’s approach of autonomous subsea pumps. We are looking forward to jointly develop a truly innovative topside-less system.”

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Today’s subsea boosting systems depend on a topside VFD with several hundred tons of weight and extensive module size. Integrating such technology on a platform or FPSO confronts operators with far-reaching challenges and costs. In contrast, the solution developed by Voith and FSubsea aims on the integration of a torque converter (mechanical variable speed device) in the pump unit based on the sea floor. Combined with the Hydromag technology which provides a hermetic pressure barrier between the process and the motor cooling fluid, this allows to completely omit any barrier fluid system and electrical control units.

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### **Making Long Step Out and Brownfield Expansions Profitable**

The novel pump drive and coupling system convinces with its self-sufficient design. No topside facilities, sea floor based auxiliary pumps, hydraulic fluid connections and signaling cables will be required for subsea boosting. Thus, it reduces CAPEX as well as OPEX costs by up to 70 percent while dramatically simplifying the whole setup.

As the system is independent of any umbilicals besides electric power it paves the way for profitable long step outs far beyond current possibilities. For an increased oil recovery rate in brownfield and greenfield operations, solely an additional motor starter is required on existing platforms and FPSOs to enable them for subsea boosting application.

Fuglesangs Subsea AS was created as a subsea technology spin-off from Fuglesangs AS, established in 1916. The subsea company builds on the former parent’s more than 34 years’ experience working with challenging pumping and sealing applications in the subsea, mining, offshore, naval submarine and specialty process markets. The company has a strong team who has delivered more than 30 pumps designed for the deep seas. FSubsea’s involvement includes several subsea pump qualification projects involving oil service companies and western oil majors.

Voith Turbo, a Group Division of Voith GmbH, is a specialist for intelligent drive solutions. Customers from highly diverse industries such as oil and gas, energy, mining and mechanical engineering, ship technology, rail and commercial vehicles rely on advanced technologies from Voith Turbo.

Voith sets standards in the markets for energy, oil & gas, paper, raw materials, transport & automotive. Founded in 1867, Voith employs more than 20,000 people, generates €4.3 billion in sales, operates in over 60 countries around the world and is one of the largest family owned companies in Europe.\*

\* Excluding the discontinued Group Division Voith Industrial Services; previous-year figures adjusted.

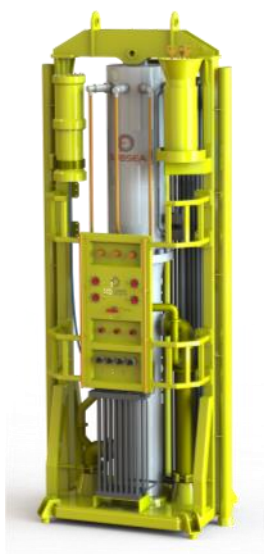
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Directly integrated into the pump, the Voith torque converter guarantees highest reliability in subsea speed control.



FSubsea's Omnisec ECM will cut subsea boosting costs by up to 70 percent.



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The innovative pump drive and coupling system works topside-less and requires a minimum of umbilicals.

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