

LEADING THE WAY IN FUEL PUMP SOLUTIONS

Powering a better future



Solutions for the zero-carbon transition

SVANEHØJ
An ITT Company

YOUR PARTNER FOR THE ZERO CARBON TRANSITION

As a global leading specialist in solutions for handling critical cryogenic liquids, Svanehøj is set to make a difference and take pride in having the knowledge and solutions to develop a fast transition to a greener tomorrow.

For decades, Svanehøj has been a trusted name in the marine industry, renowned for our unwavering commitment to excellence and reliability. Our Svanehøj fuel pump program provides reliable solutions designed for every possible future fuel and ensures operational safety and efficiency wherever the fuelling transition will take you.

Our success is built on a meticulous engineering approach and strong customer relationships.

At the heart of our achievements lies our ability to blend technical expertise with a deep understanding of our customers' needs, which allows us to consistently exceed expectations and drive growth, ensuring our customers' needs are always met.

Whether you're a long-standing partner or new to Svanehøj, we support your journey with solutions that power progress.

A FULL-SCALE FUEL PUMP PROGRAM ENGINEERED TO MEET ALL DEMANDS

At Svanehøj, we are dedicated to developing the best and most comprehensive range of future fuel pump solutions to meet the need for carbon-neutral fuels, whether we talk LNG, LPG, ammonia, or methanol. Our leading technology is developed based on our extensive background and knowledge from the maritime industry, and our proven and reliable pump technology is already part of more than 1000 Svanehøj fuel solutions operating in vessels around the world to advance the green transition.

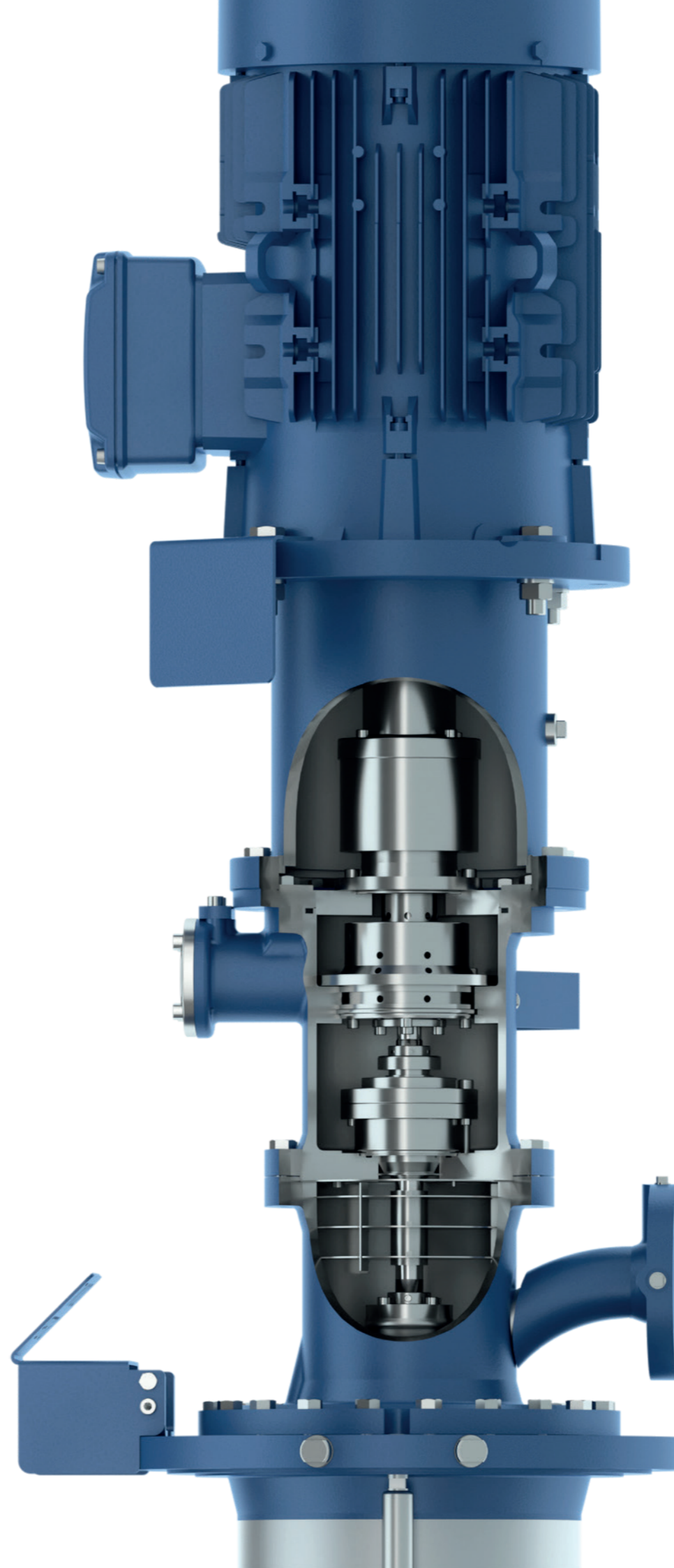


Svanehøj is dedicated to deliver the most efficient fuel pump solutions for the maritime industry.

Søren Kringelholt Nielsen, CEO Svanehøj Group A/S

Start decarbonizing with proven fuel pump technology

Our DW Fuel Pump is renowned for its outstanding performance and reliability and it provides a solution that not only support eco-friendly LNG-fuelled vessels but also alternatives such as LPG, ethane, methanol and ammonia. The DW Fuel Pump is developed in close collaboration with designers of fuel gas systems and is designed to safeguard a steady, reliable fuel gas supply with a fast response to changes in engine load, ensuring an optimised efficiency.



Specifications

The fuel pump is a classic multistage centrifugal pump made of cryogenic stainless steel with a standard zone 1 marine motor. The pump's electric motor is located outside the fuel tank, which eliminates the excess of heat and pressure, which in other cases often results in a significant energy loss when motors are located inside the fuel tank. Thanks to the unique deepwell design, the consumption of energy and fuel are continuously optimised and gives you a reliable and optimized solution.

Operating parameters

- **Capacity:** 0.25 - 35 m³/h
- **Head:** 20 - 400 mlc
- **NPSHR:** 0.25 mlc
- **Temperature:** -163°C - 50°C

Advantages and benefits of the DW Fuel Pump

- Independent of weather conditions, sloshing, and thermal conditions.
- No tank connections below liquid level and no electrical components inside the tank.
- Steady, reliable supply of fuel.
- Fast response to changes in engine load.
- No gas leakage from the tank.
- Dual fuel function: The pump can be used with both LNG and other fuel types such as ethane and LPG.
- Pump can be retracted, even with gas in the tank.
- Minimised contribution to boil-off gas.

Shaped by many years of maritime experience and state-of-the-art technology, the CS Fuel Pump is an innovative and durable submerged fuel pump for LNG, designed with a self-cleaning filter and a high-efficiency electrical motor.

THE FIRST SUBMERGE PUMP EXCLUSIVELY PRODUCED FOR MARITIME PURPOSES

Dedication and details make the difference

As a critical liquids specialist, we know the importance of dedication and detail, and the Svanehøj CS Fuel Pump is a great example. The CS Fuel Pump builds upon many features that distinguish the renowned DW Fuel Pump, making Svanehøj one of the most trusted names in marine solutions. The simplified design and innovative key components improve reliability and efficiency, while providing the global community's need for meeting emissions regulations.

Permanent magnet motor

Attracting higher efficiency

The new permanent magnet motor is crucial to the performance of the CS Fuel Pump. More efficient than induction motors or motors with field windings, the electric motor delivers significantly better results. It is designed by Svanehøj's expert engineers and is the result of continuous research and improvement.

Self-cleaning filter

Purer uptime for the pumps

The self-cleaning filter is perhaps the most unique feature of the CS Fuel Pump. The surface and high flow around the filter enables efficient removal of particles, resulting in less wear and tear, longer service intervals, and maximum uptime for the pumps without clogging or loss of power.

Standardized shaft design

Designed for improved maintenance

Any kind of downtime is costly, which is why the CS Fuel Pump is equipped with a standardized shaft design. This ensures easy disassembly and assembly during service and inspection, and improved maintenance every single time.

Operating parameters

- **Min. design temperature:** -165°C
- **Design flow:** 12 m³/h
- **Design head(s):** 1-stage 120 mlc, 2-stage 200 mlc, 3-stage 280 mlc, 4-stage 360 mlc
- **Head per stage:** 80 mlc
- **Speed:** Variable 3000 – 6000 rpm
- **Control method:** VFD
- **Media:** LNG

Technical characteristics

- **Electric motor:** CS5, CS12, CS24
- **Rated motor current:** 42A, 42A, 60A
- **Rated motor power – output:** 20 kW
- **Electric motor type:** Permanent magnet, derated for VFD
- **Filter:** Internal filter for cooling and lubricating flow
- **Filter type:** Self-cleaning under operation

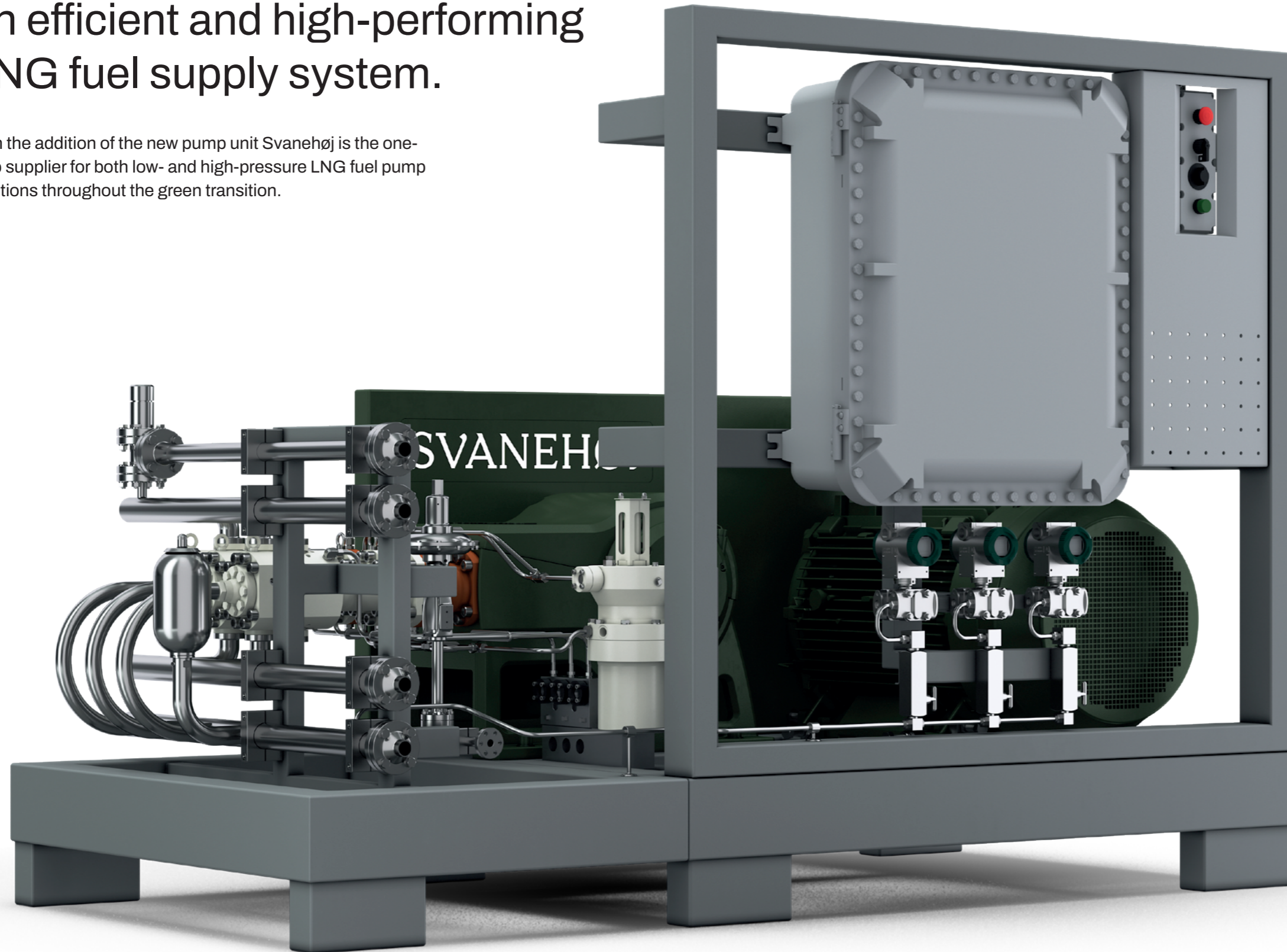
Product materials

- **Pump casing/discharge branch:** Stainless steel
- **Pump chambers:** Aluminium/bronze
- **Impellers:** Stainless
- **Wear rings:** Carbon/hybrid bearing
- **Shaft:** Stainless steel
- **Line shaft bearings:** Carbon
- **Bolts and nuts exposed to cargo:** A4 stainless steel
- **Thrust bearing:** Ball bearings



The HPP Triplex Pump Unit is designed to meet the demand for an efficient and high-performing LNG fuel supply system.

With the addition of the new pump unit Svanehøj is the one-stop supplier for both low- and high-pressure LNG fuel pump solutions throughout the green transition.



Specifications

The Svanehøj HPP Triplex Unit is a high-pressure LNG fuel pump solution for two-stroke engines. It is a compact unit with belt-drive system and three combined cold ends, designed to meet the maritime industry's demands for leak-free fuel supply components with long service life.

Operating parameters

- **Media:** LNG
- **Min. design temperature:** -163°C
- **Design pressure:** 420 bar
- **Max. working pressure:** 380 bar
- **Capacity:**
 - Triplex 5: 11.5-83 L/min. (0.7-5.0 m³/h)
 - Triplex 11: 25-183 L/min. (1.5-11.0 m³/h)
- **Service interval:** Enhanced service intervals

Advantages and benefits of the booster pump

- Long service intervals and superior serviceability via new LP sealing system.
- High efficiency and low pressure drop with new inlet valve design.

The NH3 Fuel Pump sets new standards for high-pressure applications with enhanced safety and reliability.

Svanehøj now introduces a new addition to our product portfolio - the NH3 Fuel Pump. With this launch Svanehøj offers a unique ability to provide both Low-Pressure (LP) and High-Pressure (HP) fuel pumps. Svanehøj is the only supplier offering this dual capability, leveraging the same trusted pump technology for both pressure ranges. This consistency across LP and HP pumps not only simplifies the installation process but also reduces the complexity and cost of maintenance, as customers benefit from a unified proven approach.

Specifications

The NH3 Fuel Pump represents the latest advancement in ammonia fuel pump technology, engineered to handle high-pressure applications with the highest standards of safety and reliability. Utilizing Svanehøj's well-proven pump technology, this pump features a simple yet robust design, ideal for managing the complexities of ammonia as a fuel. Its hermetically sealed construction eliminates the need for mechanical shaft seals, thereby eliminating the risk of leaks and enhancing safety in all operational environments.



Operating parameters

- **Model:** HP NH3 Fuel Pump (10-stages)
- **Fuel:** Ammonia (NH3)
- **Type:** Centrifugal
- **Inlet pressure:** 20 barg
- **Outlet pressure:** 85 barg
- **Head:** 1200mlc (w. 10 stages, $\Delta p = 65\text{bar @ SG} = 0.55$)
- **Capacity e.g.:** 30m³/hr @ 5840 rpm
37m³/hr @ 6000rpm (max)
- **Control Method:** VFD
- **MTBR:** 20.000 hrs.
- **Motor:** Standard flameproof (Ex de) motor
- **Very small footprint (height, width, length):**
S2100mm, 780mm, 1420mm

Advantages and benefits of the NH3 Fuel Pump

- **Simple and Reliable Design:**
The NH3 Fuel Pump is grounded in well-proven pump technology, delivering a simple yet reliable design based on Svanehøj's extensive experience with ammonia.
- **Unmatched Safety with Hermetic Sealing:**
Safety is critical when working with complex fluids like ammonia. The NH3 Fuel Pump's hermetically sealed design eliminates mechanical shaft seals, removing the risk of leaks and ensuring top-tier safety.
- **Extended Operational Life and Reduced Maintenance:**
With a Mean Time Between Repairs (MTBR) of 20,000 hours, the NH3 Fuel Pump is designed for heavy-duty use, significantly reducing maintenance needs and ensuring long-term operational reliability.
- **Compact and Efficient Installation:**
The NH3 Fuel Pump's compact footprint allows for easy installation, even in space-constrained environments, making it an ideal choice for modern applications where space and efficiency are paramount.
- **Unique Dual Capability – LP and HP Pumps:**
Svanehøj is the only provider offering both Low-Pressure (LP) and High-Pressure (HP) fuel pumps using the same advanced pump technology. This ensures consistency and reliability across different pressure requirements, simplifying both installation and maintenance for customers.



ONE-STOP SERVICE ALL OVER THE WORLD

Svanehøj has designed, engineered, and built pump solutions for almost a century, and we are proud to offer one of the strongest service solutions in the market. With highly skilled and service-minded teams, we ensure well-prepared and cost-efficient one-stop service worldwide.

Even the most reliable equipment needs service to remain reliable. Renowned for extensive expertise and a collaborative mindset, Svanehøj Service Solutions performs preventive maintenance, repair, and field service for LNG carriers and FSRUs.

Wherever you are located or operating, our dedicated teams provide services that meet the highest demands and needs.

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