



Successful retrofit in maritime technology

How HYDAC optimises your large engines in terms of filtration and oil conditioning

The maritime industry is one of the most heavily regulated industries in the world. The safety of ships and their crews is a top priority – which is why the international regulations for ship design and operation are very strict. Emissions reduction is a key component of these regulations, and this affects heavy diesel engines in particular. In recent years, the requirements that ship engine exhaust emissions have to meet have continuously increased. In response to the Tier III standard that came into effect in 2016, the International Maritime Organization (IMO) is setting tighter limits for greenhouse emissions such as nitrogen oxides and sulphur oxides. Ship engine builders have therefore started using common rail systems to reduce fuel consumption and emissions. This has led to new requirements for efficient fluid management in ship engines. Furthermore, modern large two-stroke engines are equipped with hydraulic systems, and failure of these systems may result in the machine coming to a complete stop. Most ships have only one main engine, however, which is why the availability of the engines is the top priority for the shipping company.

To meet these requirements, engine manufacturers constantly have to develop their engines. They need to ensure that their engines meet the latest emission requirements, while working reliably and economically. Key components such as hydraulic oil filters play a major role here, especially those for use with servo oil in large engines. HYDAC supplies many filtration solutions for oil conditioning to tackle the above-mentioned challenges effectively – find out more about them here.

A case study: How HYDAC optimises the heavy diesel engines in the maritime industry

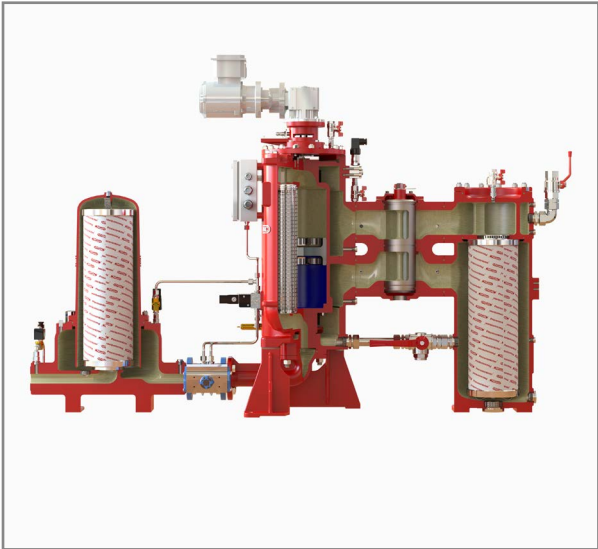
One year ago, a shipping company turned to HYDAC for help with a problem they were having: the existing hydraulic components from a market competitor were failing to provide the desired service lives due to the ingress of contamination and inadequate hydraulic oil conditioning in the main engine. This meant that the two-stroke main engine had a high risk of failure, resulting in increased maintenance for the hydraulic system and greater costs.

For this application, the market competitor was only using one 6 µm oil filter with a purely protective filter function – HYDAC, on the other hand, offered the customer a 3 µm filtration solution with automatic contamination discharge via the filter cartridge. A filter cartridge, also known as a Sludge Treatment Unit (STU), was inserted in the back-flush line of the HYDAC oil filter. This solution offers better engine protection while enabling optimal oil conditioning via the filter cartridge. It was also necessary to keep levels at or below the engine manufacturer's specifications for servo oil (XX/16/13) in accordance with ISO 4406. The customer also wanted the service life of the Fuel Injection Valve Actuator (FIVA) and the hydraulic pumps to be extended to achieve greater system availability while reducing maintenance costs and ship operating costs for the engine.

The HYDAC solution: retrofitting heavy diesel engines with the AutoFilt® RF9

What sets the HYDAC AutoFilt® RF9 apart is its patented hydropneumatic back-flushing technology and secure media separation.

The technological approach taken by our HYDAC marine diesel power experts was to optimise the engine’s lubrication oil circuit with the HYDAC AutoFilt® RF9 system. Our experts proceeded as follows: the first step was to assess the existing system – this resulted in the decision to retrofit the engine system with the HYDAC AutoFilt® RF9. The strategy involved using a HYDAC AutoFilt® RF9 with 3 µm filter elements to protect the engine’s hydraulic components and a Sludge Treatment Unit (STU) with fine filter elements as a contamination trap to condition the lubrication oil. The HYDAC AutoFilt® RF9 for servo oil was retrofitted into the existing system. The system parameters were checked using the HYDAC data logger CMU. Our experts from the Fluid Care Center (FCC) checked and assessed the hydraulic oil quality. In the final stage, we worked with the customer to examine all the tests and sample analyses – the final approval and acceptance with the “Certificate of Approval” was performed by the engine manufacturer.



HYDAC AutoFilt® RF9 – automatic filter for heavy diesel engines with a filter cartridge in the bypass filter and Sludge Treatment Unit (STU)

The result:

The result is a system that is more efficient and reliable than conventional systems. After the first successful installation, additional orders were placed for the HYDAC AutoFilt® RF9 solution. The manufacturer’s international franchise engine builders have also started using the HYDAC solution in their

hydraulic oil circuits. The HYDAC AutoFilt RF9 can be used both as a retrofit and for new systems. Maintenance costs are minimised and oil quality is improved with the comprehensive design which combines protective filters and oil conditioning.

Design	Filtration	Back-flushing
Large filter area in a compact design	Continuous fully automatic filtration	Hydropneumatic back-flushing
Filter elements are held securely	Large open filter area	Strong cleaning pulse
Flow-optimised housing design	Filtrate flow not interrupted	Reliable media separation – filtrate and flushing gas cannot mix together
Intelligent control system	Low pressure loss	Cleaning without pressure drops
Can be heated up externally for highly viscous fluids	Tried-and-tested HYDAC filter element technology	Individually adjustable back-flushing intensity
Low maintenance and easy to service	Oil conditioning via filter cartridge with fine filtration	Low flushing gas consumption
		Low back-flush volume

Special features of the HYDAC AutoFilt® RF9 solution

You too can benefit from robust filtration technology and high-efficiency back-flushing – combined in one system.

HYDAC represents 60 years of experience in hydraulics, systems and fluid engineering – experience the benefits first-hand.

Your advantages with the HYDAC AutoFilt® RF9 solution



Improvement in lubrication oil quality

by reducing the contamination content
in the hydraulic oil – verified by particle
measurements.



Reduced component wear

by avoiding premature failure and
extending the service life of the Fuel
Injection Valve Actuator (FIVA) and
hydraulic high-pressure pumps.



Operating cost savings for the shipping company

thanks to a low-maintenance and
service-friendly filtration design –
with no unscheduled maintenance.



Get in touch with us today and
contact our experts:

prozess-technik@hydac.com