



Media release

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GF Piping Systems & Foreship Study: Pre-insulated plastic piping systems make passenger ships more efficient

Due to increasing sustainability regulations, the maritime industry is in need of technical solutions that are highly efficient but also financially viable. As a new study by GF Piping Systems and Foreship shows, HVAC applications on passenger ships offer significant potential for improvement. Comparing a baseline steel piping system with pre-insulated polyethylene pipes in an air conditioning chilled water system revealed that plastic is more efficient in four areas: It decreases fuel consumption, reduces greenhouse gas emissions, lowers costs, and slightly improves EEXI and CII values.

HVAC systems on passenger ships play a crucial role as they add comfort and a more luxurious experience onboard. However, they are energy intensive and increase both fuel consumption and emissions. Additionally, they require substantial piping networks that are often made of post-insulated steel which is heavy and susceptible to corrosion. On the other hand, advancements in plastic piping solutions mean that materials such as polyethylene could potentially be a more suitable alternative that increases the efficiency of the ship. To find out, GF Piping Systems, the Swiss flow solutions provider, and Foreship, an international ship design and engineering company, collaborated in 2021 to conduct an energy efficiency study that verifies these claims.

The study was based on a simulated 150.000 GT cruise ship. The calculations consisted of three phases: During the first phase, the performance of the baseline steel system and polyethylene COOL-FIT system by GF Piping Systems was measured by comparing the electrical power draw of the chillers and pumps within the air conditioning system. In the second phase, these results were used to calculate fuel savings, emissions reductions and cost-effectiveness. Finally, the study quantified the effect of these savings on the Energy Efficiency Existing Ship Design Index (EEXI) and the Carbon Intensity Indicator (CII).

The data taken from the cruise ship simulation shows consistent improvements in four key areas, as Teemu Tanninen, Senior Specialist Energy Efficiency and HVAC at Foreship, explains: "Installing the pre-insulated COOL-FIT system made from polyethylene saved up to 112 metric tons of fuel per year, reduced greenhouse gas emissions by up to 373 metric tons per year, and could save an estimated \$3,8 million USD over the course of 25 years. Furthermore, we were able to improve the EEXI and CII values by 0,2%".

Roberto Chiesa, Head of Business Development Marine at GF Piping Systems, believes that the results of study offer valuable insight: “The whole maritime industry is currently working on a more sustainable future. However, many solutions are still on the horizon or very expensive. Our study shows that even small actions, such as proper design and piping material choice in the HVAC system, can have far-reaching positive effects for the entire ship. We believe they can be part of a holistic approach to make shipping more sustainable.”

The full study can be accessed here: <http://gfps.com/content/dam/gfps.com/brochures-and-flyers/en/gfps-00076-brochures-whitepaper-en.pdf>

Press contact:

Constanze Werdermann, Global PR Manager
constanze.werdermann@georgfischer.com
+41 76 33 99 218

GF Piping Systems

As the leading flow solutions provider for the safe and sustainable transport of fluids, GF Piping Systems creates connections for life. The division focuses on industry-leading leak-free piping solutions for numerous demanding end-market segments. Its strong focus on customer-centricity and innovation is reflected by its global sales, service, and manufacturing footprint and its award-winning portfolio, including fittings, valves, pipes, automation, fabrication, and jointing technologies.

GF Piping Systems has its own sales companies in 31 countries, which means it is always by its customers' side. Production sites in 36 locations in America, Europe, and Asia ensure sufficient availability and quick, reliable delivery. In 2021, GF Piping Systems generated sales of CHF 1'971 million and employed 7'686 people. GF Piping Systems is a division of Georg Fischer AG, founded in 1802 and headquartered in Schaffhausen, Switzerland.

www.gfps.com

Pictures



HVAC systems on passenger ships play a vital role – but their weight and energy consumption negatively impact efficiency.

Source: Ivan Kmit –
stock.adobe.com



Polyethylene piping systems such as COOL-FIT 4.0 by GF Piping Systems can increase fuel efficiency, lower emissions, and reduce costs on passenger ships.

Source: GF Piping Systems



Roberto Chiesa, Head of Business Development Marine at GF Piping Systems, believes that plastic piping systems can help make the maritime sector more sustainable.

Source: GF Piping Systems