

SHIPPING LEADERS COLLABORATE IN LANDMARK METHANE ABATEMENT TECHNOLOGY TRIAL.

Lausanne, Switzerland 11th of September 2023 – Major maritime industry players have come together in a collaborative effort to implement Daphne Technology's groundbreaking SlipPure™ methane abatement solution onto the Angelicoussis Group's LNG carrier *Maran Gas Chios*.

With Daphne Technology SA as the technology provider, the project involves the integration of their innovative SlipPure™ system onto a liquefied natural gas (LNG) carrier, signifying a significant pilot initiative. Key players within the maritime industry, including Lloyd's Register (LR) as the independent auditor, Maran Gas Maritime Inc. as the ship operator, Wärtsilä as the engine provider, Shell International Trading and Shipping Company Limited (Shell) in the role of charterer of the vessel and project co-ordinator, and DNV providing the relevant class approvals for the retrofit, have embarked on this joint endeavour to reduce methane emissions.

Daphne Technology's SlipPure™ solution, which was last year awarded approval in principle from [LR](#) and [DNV](#), is an after-treatment system that reduces methane emissions of LNG-fuelled engines, so-called methane slip. Methane slip results in increased greenhouse gas (GHG) emissions and ground-level ozone.

Methane slip has been significantly reduced in modern engines thanks to continuous development of combustion technologies, but remains a challenge in LNG-powered vessels using older engine technologies. Daphne's SlipPure™ technology allows for the further abatement of methane in exhaust gas to negligible¹ levels and is complementary to Wärtsilä technologies and developments.

This trial, which will see Daphne Technology's system retrofitted to one of the Wärtsilä 34DF auxiliary engines on board the LNG carrier *Maran Gas Chios*, will facilitate the technical assessment and system feasibility analysis on SlipPure™ technology, supporting maritime stakeholders involved in the gas sector to de-risk their assets. For the SlipPure™ solution, HAZID and HAZOP workshops have been completed by LR as part of LR's Risk-Based Certification process.

Daphne Technology's PureMetrics™ solution will also be installed onboard the *Maran Gas Chios* throughout the trial period, and LR will handle the dissemination of the data as an independent third-party verifier. PureMetrics™ is an advanced system that directly measures and reports real-time GHG emissions, eliminating the reliance on fuel consumption estimates and ensuring

¹ Meaning that the technology effectively reduces methane emissions to an extent where they no longer significantly impact the overall environmental footprint.



compliance with European Union Monitoring, Reporting and Verification (EU MRV) and International Maritime Organisation Data Collection System (IMO DCS) regulations. PureMetrics™ was awarded approval in principle from [LR](#) in June 2023 at Nor-Shipping.

Panos Mitrou, Global Gas Segment Director, Lloyd's Register, said: *"LR is pleased to work alongside industry leaders on this joint development project as the maritime industry raises critical challenges in addressing methane emissions from shipping. LR's AiP has enabled this technology to proceed to a milestone pilot application, and the learnings from this trial will support gas industry partners in de-risking their gas assets."*

Andreas Spertos, Technical Director at Maran Gas Maritime Inc., said: *"Maran Gas sees LNG as a readily available and mature fuel which offers substantial GHG reduction compared to the standard fuels used in shipping. At the same time, we are aware that the reduction of methane slip from dual-fuel marine engines to levels that are technically achievable is a key aim for the sustainability of LNG as fuel. Operating a very large fleet of LNG Carriers of different propulsion technologies, Maran Gas believes that addressing methane slip will help release all the potential of LNG as a low GHG emissions fuel."*

Joining this project together with Shell, LR, Daphne and Wartsila and deciding to install the Daphne SlipPure™ methane abatement solution on one of our ships shows our commitment to work jointly with high-profile partners towards exploring solutions to handle the methane slip. We look forward to seeing the results of the SlipPure™ trial installed onboard our ship ."

Steve Brown, Technology Manager at Shell, emphasises: *"Reducing methane emissions is a top priority for the maritime industry, and this trial of innovative technology on an operational ship marks an important milestone. LNG is the lowest-carbon marine fuel available at scale today, and this project, combined with efforts to reduce upstream methane emissions, will help to enhance LNG's decarbonisation potential even further."*

Grant Gassner, Director, Integrated Systems & Solutions, Power Supply – Wärtsilä, says: *"Investing in methane slip reduction technologies forms a very important part of our wider strategy, ensuring we can continually improve the environmental and economic performance of our customers. Cross-collaboration with stakeholders across the maritime industry is key to this, with projects such as this playing a pivotal role in developing potential solutions towards eliminating methane slip across the maritime industry. Wärtsilä is grateful for the opportunity to contribute to this initiative, and we look forward to the outcome of the project."*

Martin Cartwright, Global Business Director, Gas Carriers and FSRUs DNV: *"I am happy to see industry leaders collaborating on this trial of Daphne Technology's SlipPure™ system. This initiative aligns with DNV's commitment to facilitating the maritime industry's transition towards decarbonisation. Methane slip can be a challenge in operating LNG-powered vessels, and solutions like SlipPure™, which has received approval in principle from DNV, are important in reducing these emissions. This trial represents a step forward in our collective efforts to mitigate greenhouse gas emissions and increase the sustainability of the maritime sector. We look forward to the insights this trial will provide."*



Daphne Technology, CEO & Founder Dr Mario Michan ended by saying: *"We are thrilled to see this pilot project taking shape together with industry leaders to address methane emissions with our SlipPure™ solution. By retrofitting our technology onto an LNG carrier, we aim to showcase its effectiveness in reducing methane slip, contributing to a more sustainable and environmentally responsible maritime industry. This collaboration with Lloyd's Register, Maran*

Gas, Shell, DNV and Wartsila demonstrates the collective commitment to tackling greenhouse gas emissions and marks a significant step forward in our journey to decarbonise hard-to-abate industries."

Links:

[LR awards Approval in Principle \(AiP\) for Daphne Technology's SlipPure™ solution.](#)

[LR awards AiP for Daphne Technology's SlipPure™ solution.](#)

[DNV grants Approval in Principle \(AiP\) for Daphne Technology's SlipPure™ solution.](#)

[LR award Approval in Principle for Daphne Technology's PureMetrics™ emission monitoring and reporting system.](#)

[LR award AiP for Daphne Technology's PureMetrics™ emission system](#)

Ends

Notes to editors

About Daphne Technology

Daphne Technology is a Swiss climate deep-tech company, focused on solving the greenhouse gas challenge in tough-to-decarbonise industries. The company develops technologies and scales innovative products to measure and reduce GHG emissions from industrial sources, with a portfolio approach to decarbonisation targeting GHG emission inefficiencies in power generation and energy conversion across the globe.

Daphne's high-tech, innovative approach has attracted global industrial leaders, including Shell Ventures, Saudi Aramco Energy Ventures, Trafigura, AET, Swisscom and JP Morgan, who are committed to enabling an economically sustainable energy transition.

The company has received multiple awards and recognitions, including the Horizon 2020 EU grant, Vaud Innovation Fund SPEI, Swiss Ministry of Environment Award, VentureKick 2020, Climate-KIC 2020, and Venture Business Idea. Daphne has also been featured as a top Swiss Clean Tech and Top 100 Swiss Start-up by VentureLab five times. The company has won several awards, including the Envirotech Maritime Innovation Award in 2021, the inaugural Nor-Shipping Ocean Solutions Award in 2022, and voted the top deep-tech company in Switzerland honoured with the prestigious Deep-Tech/Life Science Award at the 25th edition of the Swiss Economic Forum 2023.

For more information, go to daphnetech.com

For media enquiries, pls contact:

Daphne Technology

Janne Berglund

Head of Marketing, Communication & Branding

M +47 478 02 981

E janne.berglund@daphnetech.com

daphnetech.com/contact