# Posidonia Today

No. 3 Wednesday 8 June 2022

# Nordic knowhow on electric propulsion heads south



DNV signed a memorandum of understanding yesterday with Saronic Ferries to develop Greece's first electric ferry for short-sea routes in the Argosaronikos region. The MoU is a key moment not only for the ferry company which has set an ambitious goal of an emissions-free fleet by 2040, but also for Greece's vast domestic ferry network.

"We operate the largest fleet in the Saronic islands," declared Joseph Lefakis, a partner in Saronic Ferries, "which are located only a few miles away from the port of Piraeus, Greece's largest port, where decarbonisation will matter most. Our goal is to partner with forward-thinking stakeholders, such as DNV, and materialise the first fully-electric ferry in Greece."

A second partner in the ferry company, George Papaioannides, commented: "Our mission is to operate a purely emissions-free fleet by 2040 to The MOU signing took place at the Posidonia 2022 trade fair. From left to right: Ioannis Chiotopoulos, SVP, Regional Manager South East Europe, Middle East & Africa, at DNV Maritime, Joseph Lefakis, partner of Saronic Ferries, George Papaioannides, partner of Saronic Ferries.

all our destinations. We are taking a step towards a cleaner world, and we envision our operation in the Saronic Islands to be the inspiration for others to initiative more green fleet renewal projects in Greece.

The country's ferry network offers tremendous potential for electrification,

both for short voyages and on longer routes. And much of the country's ferry fleet is old and relatively inefficient.

However, Knut Ørbeck-Nilssen, DNV's CEO, Marine & Offshore, has pointed out that Greece's existing regulatory framework is designed for conventional vessels and will require some changes. He also believes that first-movers may require incentives because significant investments in new ferry technology will be required.

Ørbeck-Nilssen was speaking to *Posidonia Today* after DNV staged a seminar for the Greek ferry community a few days before Posidonia opened. He said that exclusively electric ferries, probably up to about 100mtr in length, would be suitable for short routes in relatively sheltered waters. Larger hybrid vessels, on the other hand, would be more suitable for longer distances.

Both would provide substantial emissions-cutting benefits at sea and, importantly, during frequent port calls. A growing number of ports, he pointed out, are adopting new strategies on the use of auxiliary engines, with shore power arrangements now high on ESG agendas.

DNV has been a pioneer in the development of battery technology,

having developed the first industry rules for battery propulsion. Close to half of all vessels with battery installations operate in Norwegian waters. The classification society also has a track record of working with customers to assist in the efficient move from conventional to electric propulsion.

Ørbeck-Nilssen emphasised a range of similarities between ferry routes in the Nordic region and Greece's own domestic network. And he described how certain routes in the north had been classified as green ocean corridors, on routes such between Sweden and Denmark, for example, and other ports and terminals across the region.

"It's important to understand that we will be on a journey," he declared, "but it's important to get started. And it's wider than just the shipping community." He stressed the need to engage with the wider ecosystem, citing cooperation with energy producers and fuel development specialists as examples of this collaboration. Greece, he pointed out, has significant potential to provide electrical power for ferries from renewable energy.

He cited scope for offshore wind and solar power development, both in fixed and floating installations. Combining these opportunities could generate scope for Greece to have 'green corridors' of its own, with ships powered by renewable energy on a growing number of ferry routes. This would open up new business opportunities, create jobs, and lead to the development of more local expertise, he said.











## **Building trust to support** safe green innovation

Matthieu de Tugny, President of Bureau Veritas Marine & Offshore (BV) is adamant that for shipping's decarbonisation transition to succeed, the industry needs one element above all: trust. Only with trust can the new fuels, designs and technologies needed to decarbonise the industry become a reality and this makes the role of classification more important than ever, he told Posidonia Today last Friday.

The range of options being developed today to reduce emissions from shipping is quite extraordinary, he said. From engines capable of burning hydrogen or ammonia as fuel, to voyage optimisation software, to a wide range of kites and sails that harness the power of the wind to curb fuel consumption and emissions.

However, much of this new landscape remains uncharted, he pointed out. Although the decarbonisation ambitions were set before the technology to achieve them was even available, technology is now evolving faster than the regulations needed to apply it safely. For individual shipowners, therefore, retrofitting innovative clean tech solutions on their existing vessels, or building vessels so they can burn a zero-carbon fuel not yet available at scale, can feel like a leap of faith.

After all, not all shipowners have the luxury of fleets so large that they can gamble on one or several options without putting the future of their company in jeopardy should they make the wrong bet. This is an issue that particularly resonates in Greece, the world's largest shipowning nation, controlling about 20% of the global fleet - and therefore having to make the bulk of decisions that will affect the entire industry, and in doing so will impact the world's climate

Given the level of investment at stake, owners want reassurance that new technologies are safe, reliable, and will deliver the emissions reductions they promise, he continued. This is where classification societies play a fundamental role, providing the trust, expertise and validation needed to support safe

In tangible terms, this means supporting industry pioneers, in Greece and around the world, as they develop and deploy innovative solutions to decarbonise their vessels. BV works closely with shipowners, shipyards and technology developers, he said, helping them assess and mitigate risk, and validating their compliance with rules and regulations. Following a tried-and-tested approach, BV is currently helping Jiangnan Shipyard Group develop the world's largest ammonia-powered Very Large Ammonia Carrier (VLAC), with a capacity of 93,000 cumtr.

Another example is its partnership with wind propulsion pioneer Zéphyr & Borée. BV has validated the company's unique concept of wind-propelled wing-sails for an open-top 1,800 teu container ship. Involved from the very early stages, BV has meticulously reviewed designs to ensure the feasibility of the concept and identify

"As an industry, we know that action is needed to ensure our fleets are ready for the challenges ahead," de Tugny declared. "We also know that doing the right thing for our oceans, for the planet and for the bottom line can be aligned. Achieving our common goals will require unprecedented innovation - and collaboration. Our role at BV is to unite industry pioneers by challenging and by validating, thereby creating a world of trust."

> Partnership validates BV's unique concept of wind-propelled wing-sails.



## **ABS** grants approval for stern tube-less ship concept

**ABS has granted Approval in** Principle (AIP) to Thordon Bearings, the National Technical University of Athens, and the Shanghai Merchant **Ship Design and Research Institute** (SDARI), for a stern tube-less ship concept which would eliminate costs in several respects.

The design includes removing the stern tube casting, employing seawater for lubrication, as well as the creation of an irregular-shaped chamber to allow in-water inspection and maintenance while afloat. The system eliminates the costly process of removing the stern tube for inspection in drydock, cutting the maintenance interval down from two weeks to a single day. Furthermore, the system allows an optimised engine placement which potentially increases cargo space.

The concept is liable to save shipowners hundreds of thousands of dollars over the course of a ship's lifespan, by eliminating inspection time in the yard, as well as the need for oillubricated stern tube seals. The system will also eliminate oil leakage from the stern tube, which is both a major cost to the shipowner, and a source of oil pollution and clean-up costs for ports.

"The concept of using sea water as a lubricant is well-established and the proposed design takes this further by removing the stern tube casting, decreasing the shaft line length, reducing the engine room space and increasing the cargo space," said Chris Leontopoulos, Director Global Ship Systems Center, ABS Athens.

ABS also says that the system can eliminate the Barred Speed Range, a band of RPMs common to most directdrive diesel engine ships. Opening up the entire RPM range, ABS says, will simplify compliance with both the EEXI and CII requirements.

"The elimination of the Barred Speed Range and the creation of an aft chamber to enable in-water inspection, enable significant efficiencies and cost savings for operators," added Lentopoulos.







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#### List of Confirmed Conferences & Seminars at Posidonia 2022

	Organiser	Event Title	Posidonia Venue	Time	Contact Organiser
WED 8/6	Hellenic Marine Environment Protection Association	HELMEPA Conference	Conference Hall	10:30-14:30	helmepa@helmepa.gt
	вімсо	No Turning Back: Decarbonisation in practice	Seminar Room Central	10:30-14:30	et@bimco.org
	Digivalue	d> MarinS - The Ultimate Software Solution for the Marine Insurance Industry	Seminar Room 1A	10:45-12:30	kelly.dimitriou@digivalue.eu
	National Technical University of Athens	The initiatives of NTUA for technology transfer and promotion of innovation and entrepreneurship	Seminar Room 2A	10:45-12:30	jprousal@naval.ntua.gr tsap@central.ntua.gr
	Admiralty Maritime Data Solutions	Navigating the Maritime Future	Seminar 1B - Sponsored by Admiralty	11:00-13:30	events@ukho.gov.uk
	Shipmedcare	Panel discussion on Medical Teleconsultation for commercial vessels. Ask the experts	Seminar Room 1A	12:45-14:30	info@shipmedcare.com
	DNV	DNV Event	Seminar Room 2A	12:45-14:30	joanna.bouintoumi@dnv.com
	Ocean Technologies Group	Powering the People that Power World Trade - enabling our maritime professionals in a time of change	Seminar Room 2B	12:45-14:30	contact@oceantg.com
	Hyundai Global Service	HHI Group Seminar	Seminar Room 1B - Sponsored by Admiralty	13:45-15:15	suyeonpark@hyundai-gs.com
	WISTA Hellas	Women at sea	Seminar Room 1A	14:45-16:30	wistahellas@wista.gr
	RINA	RINA Event	Seminar Room 2A	14:45-16:30	elli.ferentinou@rina.org
	The Embassy of the Republic of Korea - IOBE	3rd Korean - Hellenic Maritime Cooperation Forum	Seminar Room Central	15:30-19:00	fchristidi@iobe.gr; ksmin20@mofa.go.kr
	Admiralty Maritime Data Solutions	Meet the UKHO experts	Seminar Room 1B - Sponsored by Admiralty	15:30-18:00	events@ukha.gov.uk
	Danica Crewing Specialists	The Importance of employing a Diversified Crewing Strategy	Seminar Room 1A	16:45-18:30	jensen@danica-maritime.com
	Green-Jakobsen A/S	Strategically driving and directing human performance using the Delta Method	Seminar Room 2A	16:45-18:30	m.progoulaki@green-iakobsen.com
	One Sea	One Sea Press Briefing	Seminar Room 2B	16:45-18:30	amanda.buchan@j-l-a.com
7HU 9/6	Global Maritime Club in association with Seatrade Maritime	Global Maritime Club Summit	Conference Hall	10:30-19:00	Emma.Howell@informa.com
	American-Hellenic Chamber of Commerce (AmChamGRI/ North American Marine Environment Protection Association (NAMEPA)/ U.S. Commercial Service, U.S. Embassy Athens	3rd Trading in US Waters: Towards a Decarbonized Maritime Sector by 2050, Seminar	Seminar Room Central	10:00-15:15	v.tseritzoglou@amcham.gz maria.georgousi@trade.gov executivedirector@namepa.net
	School of Mechanical Engineering, Aristotle University Thessaloniki & Atmospheric Composition Research, Finnish Meteorological Institute	H2020 SCIPPER and EMERGE Projects: Monitor and decrease emissions of shipping	Seminar Room 1A	10:45-12:30	scipper.project@gmail.com androniki.maragkidou@fmi.fi jaakko.kukkonen@fmi.fi
	RINA Consulting	Engimmonia Project	Seminar Room 2A	10:45-12:30	info@engimmonia.eu
	SHIPSERV Ltd	Powering Simple, Secure and Sustainable Trade in the Maritime Economy	Seminar Room 2B	10:45-12:30	akriskoviecaite@shipserv.com
	Admiralty Maritime Data Solutions	Navigating the Maritime Future	Seminar Room 1B - Sponsored by Admiralty	11:00-13:30	events@ukho.gov.uk
	DataPorts consortium	DataPorts H2020 Project – Cognitive Ports of the Future	Seminar Room 1A	12:45-14:30	anbelpel@upv.es
	Hellenic Institute of Marine Technology	New Technologies 2023, 2030, 2050 and Beyond	Seminar Room 2A	12:45-14:30	info@elint.org.gr
	ABS, Global Ship Systems Center - Joint Development project with ABS, SDARI (CSSC), Thordon Bearings Inc. and National Technical University of Athens	Stemtubeless Vessels	Seminar Room 2B	12:45-14:30	cleontopoulos@eagle.org
	Orca Al	Enhance fleet safety and efficiency with AI and computer vision algorithms	Seminar Room 1B - Sponsored by Admiralty	13:45-15:15	keren@orca-ai.io
	Economia Group - Kerkyra Publications SA	Winning Shipping Strategies	Seminar Room 1A	14:45-16:30	chzabeta@economia.gr
	A.S. Prote Maritime Ltd	Effectively Supporting anti-Piracy Measures and Contributing to the Recovery of Hostages and Vessels by using UAS; the Active Role of the Aboard System ARSx2	Seminar Room 2A	14:45-16:30	info@a-s-prote.com
	Sea Commerce (America) Inc. Houston Texas	Decarbonization: Rise of methanol as a future-proof marine fuel	Seminar Room 2B	14:45-16:30	salavi@seacommerce.co
	American-Hellenic Chamber of Commerce (AmChamGR)/ SHIPPINGInsight/ U.S. Commercial Service, U.S. Embassy Athens	SHARK TANK Event	Seminar Room Central	15:15-16:30	v.tseritzoglou@arncham.gr c.walker@shippinginsight.com
	Admiralty Maritime Data Solutions	Meet the UKHO experts	Serninar Room 1B - Sponsored by Admiralty	15:30-18:00	events@ukho.gov.uk
	Hellenic Electricity Distribution Network Operator S.A. (HEDNO S.A.)	Supporting the Proteus plan for the decarbonization of the maritime sector via the electrification of ports	Seminar Room 1A	16:45-18:30	jprousal@naval.ntua.gr
	Venlys Maritime Specialisation Services	Human Machine Safety Culture: a strategic element for the Human Performance in Shipping	Seminar Room 2A	16:45-18:30	info@venlys.com
	Hyundai Welding	Introduction to HiBallast NF and other products: Hyundai Welding Seminar 2022.	Seminar Room 2B	16:45-18:30	srcho@hyundaiwelding.com
	Isalos.net & Real Time Graduates Conference – Under the Auspices of Greek Shipping Co-Operation Committee, INTERCARGO and the Hellenic Engineers Society of Great Britain (HESGB)	At the Helm of Global Shipping: Ensuring Continuity in times of Change	Seminar Room Central	17:00-19:00	cp@gratia.gr
FRI 10/6	Young Executives & Students (YES) Forum	YES to Shipping Forum 2022	Conference Hall	10:30-17:00	info@yes-forum.com
	Metropolitan College/ Maritime Academy	4th International Conference on Maritime Education - The Impact of geopolitics on the future of shipping	Seminar Room 1B - Sponsored by Admiralty	10:45-14:30	vapostolopoulou@mitropolitiko.edu.gr
	National Technical University of Athens	Port Facilities for Small Crafts and Yachts in Greece	Seminar Room 2A	10:45-12:30	dgiantsi@mail.ntua.gr
	SPARES CNX	The answer to Inventory mis-management: A Data-Driven Solution that creates Value out of Chaos	Seminar Room 2B	10:45-12:30	mohit.khemani@sparescnx.com
	Union of Greek Shipowners	Press Conference	Seminar Room Central	11:00-13:00	posidoniapress@extrovert.gr
	Turku University of Applied Sciences	MarlSOT – Next Generation Training in Maritime Safety	Seminar Room 1A	12:45-14:30	uha.saarinen2@turkuamk.fi
	University of the Aegean-Department of Shipping Trade and Transport	Performing amidst high uncertainty: shipping resilience	Seminar Room 2A	12:45-14:30	mlambrou@aegean.gr
	Alpha Marine Consulting (AMC) in collaboration with University of Birmingham (UoB)	Ship Decarbonization Technologies & Human Factors Development: A Zero Accidents – Zero Emissions Sustainability Goal	Seminar Room 2B	12:45-14:30	posidonia@alphamm.com
	Teamworks & Online Data	The contribution of Digital Technologies to the development of Shipping and MultiModal Transports: Strategies, Policies, Actions and Developments	Seminar Room Central	13:00-17:00	p.triantafyllou@teamworks.gr info@teamworks.gr
	Economic Development Board Mauritius	Mauritius: Your Next Destination for Maritime Services and Ship Registry	Seminar Room 18 - Sponsored by Admiralty	14:45-16:30	rachna.ramkhalawon@edbmauritius.org

### Crew welfare now a priority in Idwal surveys

Marine survey company, Idwal, has added questions relating to crew welfare to its ship inspection template in a bid to monitor and improve conditions for seafarers. The company's Senior Marine Surveyor, Thom Herbert, a former seaman, told Posidonia Today that including questions relating to crew welfare was a passionate project for him.

Twelve new questions have been added to Idwal's survey list, with a focus on objective questions designed to highlight specific issues and possible resolutions. Questions address issues including wi-fi availability, gym facilities, training resources, access to bonded stores, availability of extra rest periods, and access to catering.

Herbert said that his six years at sea on oil and gas tankers trading in Africa and South America had given him first-hand experience of the challenges faced by seafarers and the tasks they are expected to perform.

"Internet access made a huge difference at sea and, within that, there's a huge difference between having access, having metered access, and having no access at all," he said. "Seafarers can be well-paid, but not always enough to offset the sacrifices of

being away from home. Internet access helps create a bridge between home and sea. {\it '}

Many of the new questions relate to issues raised repeatedly in the Seafarers' Happiness Index, a measure developed by seafarer charity, Mission to Seafarers, of which Idwal has become a sponsor. The latest edition of the index showed seafarer

happiness at an all-time low as the pandemic and Russia's invasion of Ukraine have raised more challenges, extending periods on board, and straining relationships both on ships and at home.

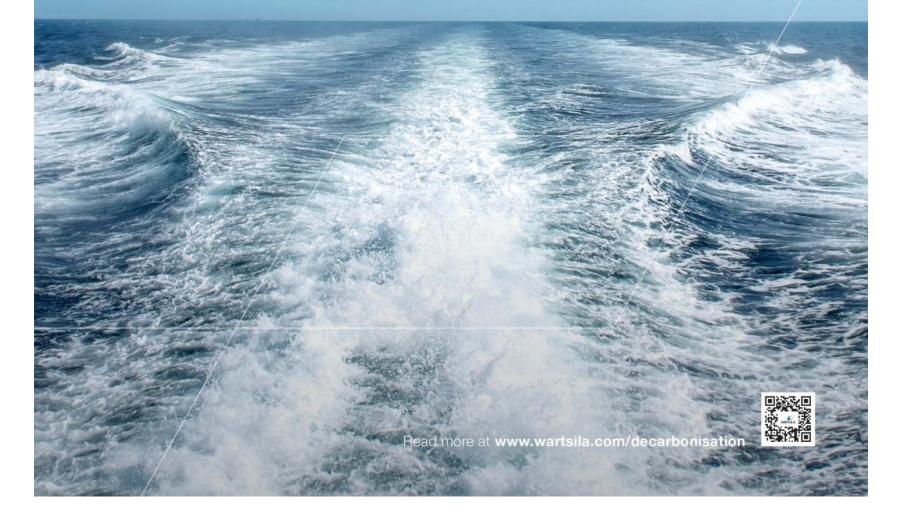
Idwal's surveys are undertaken for a range of principals. They include finance houses, banks, and other entities seeking to quantify risk.





# LEADING THE WAY TO DECARBONISATION

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### Methanol retrofits viable, likely, says Auramarine CEO

Exhibiting one of the first ever
Methanol Fuel Supply Units at stand
4.116, Auramarine CEO John
Bergman believes that there will be
a future for retrofits of various
vessels to run methanol, particularly
those with multi-fuel engine
technology, which would offer an
immediate route to
decarbonisation, assuming the new
fuel is available in sufficient

#### volumes

Various recent developments are set to grow the available base of green methanol fuel, including a number of deals with potential suppliers by container giant Maersk Line. Green methanol can be manufactured using a combination of renewable solar, wind or hydroelectric energy and captured carbon from burning fossil fuels, meaning that, used on a ship, it

would completely offset vessel emissions.

"You can retrofit many two stroke and four stroke engines to use methanol," Bergman told **Posidonia Today**. "It is viable for existing vessels as well as newbuilds. There are vessels with dual fuel engines which can be usefully converted into methanol. I'm very much expecting to see conversion projects for existing ships."

The advantage of converting existing hulls to use methanol lies in avoiding the emissions of new CO<sub>2</sub> in the construction of entirely new eco-ships. Shipyards use emissions in welding, procurement and transport of raw materials, and many other elements of construction.

But there are unique considerations for using methanol. Methanol handling systems would have to be explosion-proofed, because of the high risk of methanol evaporating in hot conditions, which could trigger an explosion. "As methanol is a low-flashpoint fuel, you need to have all

the components in an explosion-proof (ATEX) area."

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Asked if he thought methanol would win out over its rival next-generation fuels, Bergman hedged his bets. "I think there will be multiple winners," he said. "A single fuel will not solve all the problems in the world. There are over 100 ports where you can bunker methanol, and I think it is the most viable option."



Auramarine CEO John Bergman

# Auramarine's Methanol Fuel Supply Unit

## Global measures essential to promote green fuel

International measures such as carbon pricing are essential in the development of technology and infrastructure for zero carbon fuels for shipping, says ClassNK President and CEO, Hiroaki Sakashita.

In an interview with *Posidonia Today* Sakashita said that based on ClassNK pilot projects for green fuels, ammonia was progressing well as a technical solution. However, it was not currently an economically viable solution. Therefore, international policies to support such developments were "indispensable as no-one can make the investment in the future fuel supply chains without the economic feasibility".



Hiroaki Sakashita: International policies to support developments are indispensable.

"International, mandatory, policy measures, that is a kind of carbon pricing, are essential to provide the investment for the technology or the infrastructure, and that will make it economically viable for investment – without that no-one can proceed," said Sakashita.

The correct body for such a policy would be the IMO, although Sakashita noted the European Union was already proceeding with its own Emissions Trading System (ETS) for shipping. However, Sakashita does not believe the EU scheme will offer sufficient scale.

"Without the international framework the effect to promote the investment it would be a bit small. To promote action worldwide an international framework is indispensable. I think the governments and the industry have to collaborate," he explained.

On a more national scale in Japan, ClassNK has been involved with maritime industry collaborations which have received strong support from the government. The Planning and Design Centre for Greener Ships set up in 2020 has seen the country's normally competitive shipyards come together to collaborate on future ship designs.

"Over last two years the Japanese shipbuilder started to collaborate to develop

next generation vessels, which aim to be carbon neutral. That is quite unique because before that each shipbuilder tend to develop new vessels by themselves, now they start to collaborate," Sakashita said.

Japanese shipbuilders remain favoured by a number of Greek owners and have been active in ordering newbuildings in the last 18 months. "Quite a lot of the Greek owners put the orders in Japanese shipyards. There are a certain number of Greek owners who prefer to put their orders in Japanese yards," noted Sakashita.

Ahead of Posidonia 2022 ClassNK took the opportunity to hold a committee meeting with Greek shipowners and customers to discuss the future course of the shipping industry particularly focusing on decarbonisation and digitalisation.

"The future picture is not clear at the moment so there are quite a lot of things to be discussed with our customers. We provided our insight on the future course of decarbonisation, upcoming EEXI and CII, and alternative fuels," said ClassNK President and CEO, Hiroaki Sakashita, pictured greeting Commitee members and friends at the society's Posidonia stand. In the near term the introduction of CII is seen as particularly pressing for shipowners and ClassNK is bringing in new services to support shipowners with it coming into force. It is also enhancing its services to shipowners that go beyond just meeting mandatory rules.



# Attica takes innovative ferry travel further

Greece's Attica Group has taken high speed ferry travel in Greece to a new level with delivery of the new high-speed catamaran, Aero 1 Highspeed from Brødrene Aa shipyard of Norway. The Aero 1 Highspeed is the first of the three Aero catamarans ordered in January 2021, which will be deployed in the Saronic islands, replacing existing ferry capacity within the group.

With a total investment of €21m (\$23.52m), the new state-of-the-art Aeros boast an ultra-modern design

and innovative features that will upgrade significantly the travel experience for the over 3m passengers travelling annually on the Saronic routes. Deployment of the new Aeros will increase the total capacity on these routes and will contribute to further economic development of the islands and their local

communities

The vessel at full load has a maximum speed of 32.2 knots, total length 36mtr, width 9.7mtr and carrying capacity of 150 passengers.

Upon delivery of the Aero 1
Highspeed, Attica CEO, Spiros
Paschalis, said: "In these challenging times, Attica Group remains focused on providing first class sea transport services to our passengers, with new, innovative and more environmentally friendly vessels, to the benefit of our islands and their people, and to the Greek tourism and economy."



# Coating helps Enterprises Shipping to cut carbon

The Restis group's Enterprises
Shipping & Trading SA (EST) has
selected PPG SIGMAGLIDE 1290
biocide-free silicone fouling
release coating to improve the
energy efficiency and reduce the
carbon emissions of its fleet.

EST aims to improve its environmental performance through investments in energy-efficient technologies. The company selected PPG Sigmaglide 1290 coating for its ability to reduce the frictional resistance of the fleet's hull surfaces, which decreases power demand and related emissions.

EST vessels that were retrofitted with energy-efficiency technologies are demonstrating a power reduction of more than 20%. PPG Sigmaglide 1290 coating has been a major contributor to this performance.

"EST is a pioneer in energy-efficient operations and is committed to minimising its environmental impact," said George Sarris, President,



EST. "Our investment in PPG Sigmaglide 1290 coating is a major contributor to our goals of achieving the maximum efficiency potential of our fleet and not only meeting but exceeding the carbon reduction goals set by the IMO.

"PPG Sigmaglide 1290 silicone coating can help shipowners comply with Imo regulations by contributing to a significant speed improvement and increased operational efficiency," said Ariana Psomas, PPG segment director, newbuilding and drydocking, Protective & Marine Coatings.



#### Posidonia 2022 Shuttle Bus Programme

ROUTE 1: Athens International Airport Metro Station - Metropolitan Expo

• Tuesday 31 May - Sunday 5 June (build-up period)

Roundtrips throughout the day from 7:45 to 20:15

· Monday 6 June

Roundtrips throughout the day from 11:00 to 21:00

. Tuesday 7 to Thursday 9 June

Roundtrips throughout the day from 10:00 to 19:30

Friday 10 June

Roundtrips throughout the day from 10:00 to 18:00

Note: Shuttle Bus runs every 30 minutes Note 2: Route 1 services Sofitel at Airport

#### ROUTE 2: Syntagma Square (Syntagma sq. & Fillelinon str. corner) - Metropolitan Expo

• Tuesday 7 to Thursday 9 June

Departures from Syntagma Square: 9:00, 9:30 and 10:00 Return from Metropolitan Expo: 18:30, 19:00 and 19:15

Departures from Syntagma Square: 9:00, 9:30 and 10:00 Return from Metropolitan Expo: 16:30, 17:00 and 17:15

#### ROUTE 3: Doukissis Plakentias Metro Station - Metropolitan Expo

Roundtrips throughout the day from 11:00 to 21:00

• Tuesday 7 to Thursday 9 June

Roundtrips throughout the day from 10:00 to 19:30

Roundtrips throughout the day from 10:00 to 18:00

Note: Shuttle bus runs every 30 minutes

#### ROUTE 4: Glyfada Old Town Hall (on Possidonos Avenue/ opposite the St. Constantine & Helen Orthodox Cathedral) - Metropolitan Expo

• Tuesday 7 to Thursday 9 June

Departures from Glyfada Old Town Hall (on Possidonos Avenue/ opposite the St. Constantine & Helen Orthodox Cathedral): 9:00 and 10:00

Return from Metropolitan Expo: 18:30 and 19:10

· Friday 10 June

Departures from Glyfada Old City Hall (on Possidonos Avenue): 9:00 and 10:00 Return from Metropolitan Expo: 16:30 and 17:15

## **DNV** celebrates 100 years in Greece



Inclement weather failed to dampen spirits, as DNV marked its 100-year presence in Greece, at the Glyfada Golf Club, the evening of June 6.





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