

# Maritime sector looks at reducing emissions

## DANAOS Shipping outlines the future

INTERVIEW WITH PROFESSOR TAKIS VARELAS, DIRECTOR, DANAOS RESEARCH CENTER (DRC)

### Will innovation in shipping reduce carbon emissions by 2050?

Emissions reduction and environmental sustainability is on everyone's lips these days in shipping. International Maritime Organization (IMO) has adopted regulations to address the emission of air pollutants from ships and has adopted mandatory energy-efficiency measures to reduce emissions of greenhouse gases from international shipping. A target of at least 50 percent reduction in total annual GHG emission from ships is pursued for 2050 compared to 2008 figures while at the same time there will be efforts to even achieve a zero-emission shipping operation. Under this scope, it seems that the only path to follow to reach the destination is to start thinking differently and invest in innovation. Retrofit solutions and emission control technologies would be one way to reduce emissions. Change to low emission fuel types (biofuels, Low Sulphur oil, etc.) or alternative energy sources (batteries, fuel cells, nuclear power etc.) could lead to greener shipping operation. All these abatement measures have pros and cons and at the same time benefits brought forward looks quite controversial in reference to

environmental impact. Industry needs time to consider options, experiment with different solutions and assess effectiveness of each innovation in terms of cost and reliability.

### How would you describe the EU's efforts in reducing emissions in the sector?

European Union embraces the global initiative for environmental sustainability. Strategic framework of EC policy consists of three consecutive steps. **1.** Monitoring, reporting and verification of CO<sub>2</sub> emissions from large ships using EU ports (MRV regulation) **2.** Greenhouse gas reduction targets for the maritime transport sector and **3.** Further measures, including market-based measures, in the medium to long term. Within this framework we should highlight the strong motivation of Research community to foster policies against pollution in EU waters. European Union funds conglomerations from distinct disciplines which are working together with the maritime industry to better understand the different environmental processes, the impacts of

human activities and of climate change on marine environments, and the socio-economic impacts of the protection of the marine environment.

### What are some of the challenges facing shipping today?

Fuel emission reduction is one topic that the industry is encountering today. On the other hand, challenges still remain the same throughout the years and have to do with safety, security and operational efficiency in terms of energy, cost and quality in shipping service. What is changing are the means to handle those challenges.

### How has the shipping industry changed in the lifespan of Danaos?

DANAOS established in 1972 and all these years it is called to address challenges and meet changes and trends in shipping management. DANAOS is rather considered a leader rather than

a follower to this principal and natural need of constant change and progress. At the forefront of innovation for environmental sustainability our Research and Development department studies a great number of energy efficiency improvement measures and innovative vessel retrofit solutions that improve fuel efficiency while working on emerging technologies for energy saving and emissions' reduction, including LNG for propulsion, SCR for NOx reduction, SOx scrubbers, etc.

We are participating in a number of EU research programmes with a strong motivation to apply innovation and creative thinking across all aspects of maritime operation. In fact, we are currently engaged in twelve EU Research and innovation projects including initiatives for more energy efficient and less polluting European waterborne transport. Among those stands AIRCOAT project which invests in biotechnology by developing a game-changing hull coating technology that reduces the frictional resistance of ships leading to energy efficiency and FIBRESHIP project which designs large-length ships built entirely with composites (FRP materials) implying a significant weight reduction thus saving fuel consumption and resulting in reducing greenhouse gas emissions and underwater noise.

### Is the skill set necessary for green shipping there?

Down that road of constant change workforce in shipping needs to adapt. Maritime is digitalized, turning to more autonomous operation and new skill sets becoming a necessity. Data analysts, software engineers, Research engineers employed in maritime companies to apply creativity and innovative thinking in traditional shipping operations. Youth is playing a massive role to this open



call for innovation and bundled with the experience and knowledge of the oldest they are moving industry into the next era of modern shipping service.

### Moving the world's goods is a massive task, how do we see future innovations changing in another 50 years?

In this era of modern shipping, digitalization and de-carbonization are watch words for the coming years. So the question is what does the future hold for shipping in the field of innovation and technology? If we could name a few trends those are: Application of advanced materials in shipbuilding or coating focusing on nanotechnology, autonomous application onboard with less human interaction in decision

making, robotics and drones remotely interfered in critical operations (search n rescue, inspection, etc), enhanced ship connectivity (5G) to allow real-time decision making in ship management and autonomous operation from ashore and new technologies applied in power and propulsion with alternative fuels, energy-saving devices, renewable energy and hybrid power generation all potentially playing their part in the vision for zero-emission shipping. Needless to say that all these challenges are in the center of DANAOS research attention. ●

1. A target of at least 50 percent reduction in total annual GHG emission from ships is pursued for 2050 compared to 2008 figures. Photo: Avigator Fortuner