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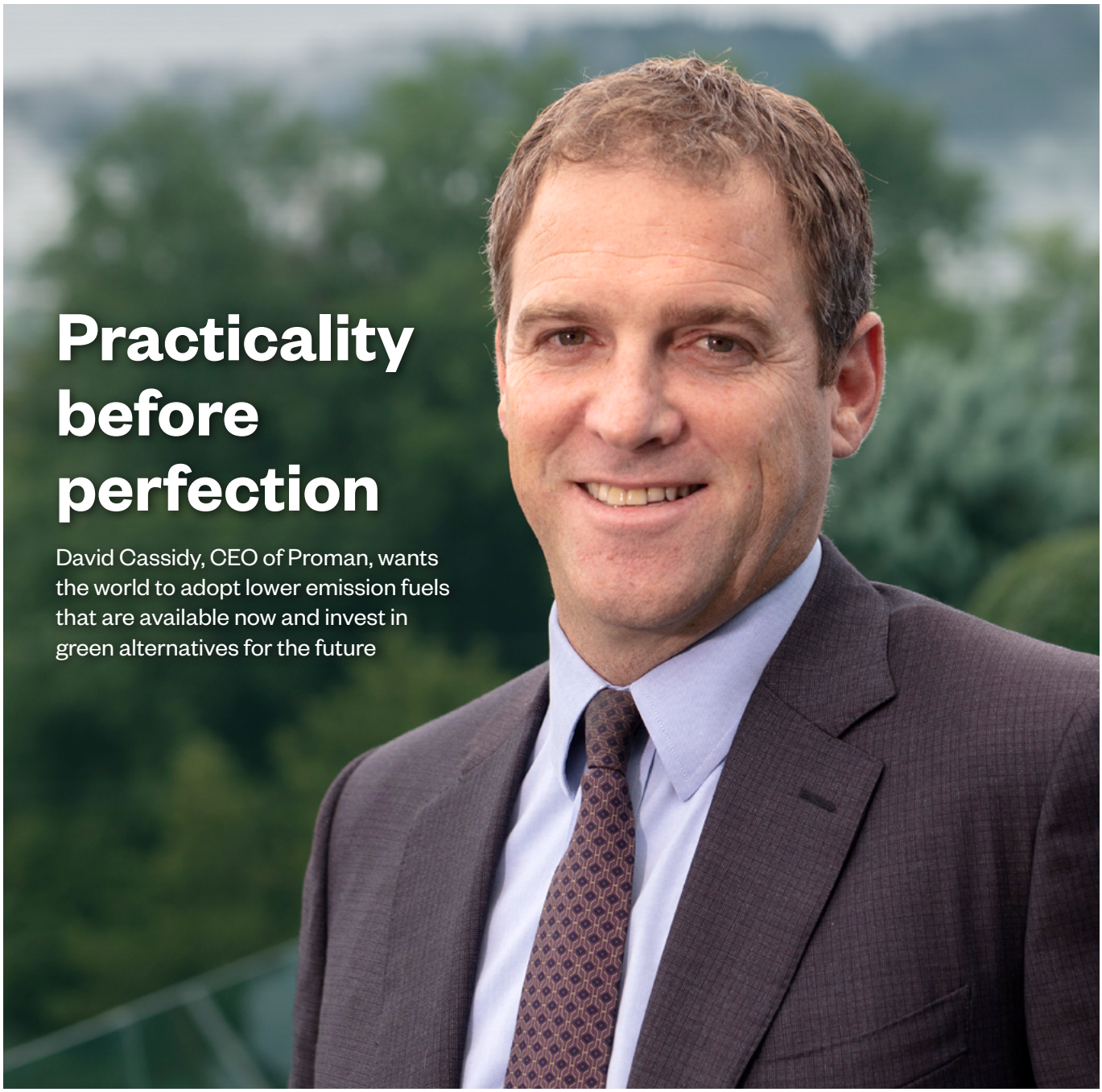

Practicality before perfection

David Cassidy, CEO of Proman, wants the world to adopt lower emission fuels that are available now and invest in green alternatives for the future

Don't delay on greener fuel choices

David Cassidy, CEO of Proman, says shipping should act now and use viable lower-emission alternative fuels available now to meet climate targets

Q As the second largest methanol producer in the world, what interest or trends is Proman seeing from industry and governments in seeking to use methanol as a cleaner, alternative fuel?

A Methanol is a viable transportation fuel that's been used in the automotive industry for more than 20 years, particularly in China, where you have 100% methanol fuel blends, as well as blends down to 5-10-% methanol. The rail sector has also shown interest in a shift away from diesel due to its higher oxygen value and cleaner burning properties. Other countries have adopted methanol as part of the fuel pool, notably Israel.

While there has been resistance to methanol from sectors used to using competing fuels, in recent years this resistance has dropped. There is now international interest in methanol as a fuel and for shipping it has forced its way to the front of the queue for many. There has been attention from the tanker market and the likes of Maersk early on, but now, likely driven by the 2030 and 2050 emission targets, as well as an education on the benefits of the fuel, we're seeing interest across every type of vessel, from ferries to tankers and containerships, as well as bulk carriers. It has been pretty dramatic in the past 18 months.

Regarding the order book, demand has grown exponentially. We were at just over 200,000 tonnes two years ago, and we're over 3 million tonnes of demand for the coming years. And almost every month there's another batch of new orders that go out.

Q What do you see as the biggest challenges to the growth of your industry?

A The biggest concern we have is that we are not working within a level playing field. We must ensure that regulators and governments don't try and pick a winner. Education is key, as is demonstrating the benefits regarding job growth.

Ultimately, we need to have the right calculations, we need to have better sharing of data and we need to ensure we're talking about life cycle and well-to-wake analysis. Frankly, I think we should be encouraging every fuel and making sure that we're going with the science and not with emotion or lobbying.

Q Out of all the green fuel options available to shipping, why should maritime leaders opt for methanol and what percentage of the future maritime fuel mix do you think it will represent?

A Leaders are focused on reducing CO_2 emissions, and grey methanol, made from natural gas, addresses that with an instant quick win of between 10-15% reductions. But many

Proman recently completed their first ship-to-ship methanol bunkering in Rotterdam, pictured

have realised we need to look at the total emissions carbon profile and the need to reduce particulate matter, sulphur and nitrous oxides. The overall profile of methanol is attractive when you apply this lens too.

If you combine conventional methanol available today with other methods such as carbon capture, then you are looking at blue methanol with carbon reductions of 40-50%. We are a firm believer in carbon capture and have three separate projects underway in the UAE, Trinidad and the US.

With next generation plants you can achieve closer to 60-70% reductions, before you even reach green production methods.

Regarding the percentage it will make up for shipping, we've always been agnostic towards this as long as we can contribute to making the industry cleaner. Low carbon intensity methanol is available now, it can be built on a massive scale to help achieve 2030 goals, and will be good until 2045. We need to get more methanol vessels on the water without having to wait for the perfect solution. Then green methanol is around the corner and it becomes more about a matter of price.

Q Cost and availability are two major roadblocks for maritime transitioning to alternative fuels. When do you see methanol costs falling into a level of affordability for shipping?

A I think we've been able to prove that methanol from natural gas is competitive when compared to MGO or VLSFO, and the likes of Maersk and Stena Bulk have been proving this.

Independent research from Argus Marine Fuels backs up what we're saying, and shows that grey methanol is the cheapest alternative marine fuel currently available now compared to VLSFO. While we firmly believe methanol is the cheapest alternative, I also believe that as a planet and as a species we need to get past discussions on costs. We need to pay more for the fuel so we can invest in the development of greener fuels faster. Industry wide taxes, such as global market based measures that shipping is calling for, would help accelerate the investment needed to get there.

Governments incentives for lower carbon and renewable fuels must also play a role to ensure there is a level playing field and is something we are seeing the British government, the EU and the likes of Canada implement.

Q What governments are you working with around the world to create renewable methanol or ammonia?

A We are partners with the regional government in the Varennes Carbon Recycling project, near Quebec, to create a carbon-recycling and biofuels plant where we can sell on the renewable methanol it produces, which is substantially less carbon intensive.

Our development team has a number of similar projects in development all over the world; North and South America, mainland Europe, Australia, Asia, in the UAE.

Currently, traditional major maritime fueling centres, like Houston, Rotterdam, Singapore or near the Panama Canal, actually have massive methanol storage, so it is convenient for shipping switching over. However, it's very easy to see how new hubs could develop. If you look at the sheer number of other ports that actually have methanol storage, then all you need to do is convert a diesel barge into a methanol barge.

Carbon capture: a solution out of thin air?

The miracle of carbon capture promises guilt-free use of conventional ship fuel to support shipping's transition to green alternatives. Does progress on land give cause for hope as operators seek to avoid expensive decarbonisation options?

When the Intergovernmental Panel on Climate Change (IPCC) released its latest climate mitigation report in April, there was little doubt about the role that carbon capture and storage (CCS) would have to play to contain global warming. In its chapter on the systemic transformations needed to meet Paris Climate Agreement objectives, the authors state unequivocally that 'deployment of carbon dioxide removal is unavoidable if net zero CO_2 or GHG emissions are to be achieved'.

Carbon removal measures range from long-term, environmental management practices such as reforestation to immediate technology solutions such as the capture and storage of carbon dioxide at the point of generation – such as power stations or industrial plant – or direct from the atmosphere.

For Dr Raphael Slade, Head of Science for the IPCC working group responsible for the report, which path you choose matters.

"I find it very scary that carbon dioxide removal is baked into all scenarios in which we meet Paris Agreement obligations," he told *ICS Leadership Insights*. "Natural, landscape-scale solutions like reforestation are cost effective. But others, including many around CCS are much more speculative."

Cost and uptake

Cost-effectiveness is a crucial factor. According to the International Energy Agency (IEA), around 65% of operating CO_2 capture capacity is at natural gas processing plants, one of the lowest-cost CCS applications. But new developments are increasingly targeting other applications. By 2030, annual capture capacity could amount to around 70Mt from hydrogen production, 70Mt from power generation and 20Mt from industrial facilities producing cement, steel and chemicals.

Those developments will come from a very low base. There are around 35 commercial facilities applying CCS to industrial processes, fuel transformation and power generation, with a total annual capture capacity of almost 45Mt CO_2. Under current initial plans, that could reach 220Mt a year by 2030, with the addition of a further 200 or so projects.

Carbon capture at a wood derivatives factory. Credit: Shutterstock/Julio Ricco

But even at that level, says IEA, deployment would remain far below that needed for a net-zero scenario.

Slade says the technology is not yet mature enough. This challenge was highlighted in September when a joint venture partner opted out of the world's biggest carbon capture project, at the coal-fired Petra Nova power plant in Texas. Power company NRG Energy sold its 50% stake in the carbon capture facility for a tiny fraction – less than half a percent – of the power plant's construction costs.

According to the Institute of Energy Economics and Financial Analysis, NRG's costly exit is due to the poor performance of carbon capture at the coal plant. The CO_2 capture rate at Petra Nova was meant to be above 90%, but may be as low as 55% according to filings with the US Environmental Protection Agency. Technical problems led to the plant failing to meet its 85% uptime requirement. And in May 2020 the unit was taken offline and is only expected to return to service mid-2023.

Marine interest

However, both onshore and now in maritime, greater attention is being given to carbon capture, and efforts are being made to accelerate its technological maturity and effectiveness. In just one month alone before this article was published (September 2022), two high-profile reports were released from a classification society and an innovation centre, with another maritime decarbonisation institution launching its own multilateral study.

The latter study is being carried out as a cooperation between the Global Centre for Maritime Decarbonisation, the Oil and Gas Climate Initiative (OGCI) and Stena Bulk. Project REMARCCABLE is the world's first project aimed at demonstrating end-to-end shipboard carbon capture at scale. Over three years it will build and test a marine carbon capture system onboard a Stena Bulk medium range tanker, targeting at least 30% CO_2 capture (equivalent to around 1,000kg/hr).

For shipping, as for land-side stakeholders, interest in carbon capture is being driven by a belief it has a core role to play in decarbonisation; there is simply no other option. If IPCC's scenario forecasting relies on carbon capture to reach Paris Agreement goals, shipping too – in the absence of any imminent influx of cheap zero-carbon fuels – must also look to that solution, regardless of maturity or current cost levels.

According to Georgios Plevrakis, Vice President of Global Sustainability, ABS,

What is CCS?

Carbon capture and storage (CCS) is the process of capturing and storing carbon dioxide (CO_2) before it is released into the atmosphere from industrial processes, such as steel and cement production, or from the burning of fossil fuels.

There are three steps to CCS: capturing the CO_2, transporting it via pipeline or ship, and storage, often by injection into rock formations deep underground.

Capture of CO_2 is done using three main different methods: post-combustion, pre-combustion and oxyfuel. Post-combustion technology removes CO_2 from flue gases created from burning fossil fuels, while pre-combustion methods are carried out before the burning of fuel and are achieved by converting the fuel into a mixture of hydrogen and CO_2. Oxfuel technology produces CO_2 and steam by burning fossil fuels with nearly pure oxygen. To learn more click here.

such challenges are not insurmountable and should not hold back research, development and investment in the solution. He told *ICS Leadership Insights* that the hydrogen and carbon value chains are intertwined and both will be critical to shipping's decarbonisation. Carbon capture has a crucial role to play in abating emissions and captured carbon will be essential in providing the feedstock that will be needed to create carbon-neutral fuels, he noted.

> **We will need all the solutions that are available, including CCS, to meet decarbonisation targets**
>
> **Georgios Plevrakis, Vice President of Global Sustainability, ABS.**

Current signs are that post-combustion, on-board CCS will be even more costly and energy intensive than land-based solutions, at least initially. Nonetheless, Plevrakis acknowledges that it is 'all hands to the pump' for shipping's decarbonisation. "We will need all the solutions that are available, including CCS, to meet decarbonisation targets," he says.

Market making

While there is work to be done to overcome technical barriers to CCS onboard ships, it is the storage – and what happens to carbon after storage – that poses the most complicated questions. In land-based carbon capture, much of the CO_2 is either sequestered deep underground or used for 'enhanced oil recovery' – pumped into the furthest recesses of oil fields to force out the stubborn remnants of lucrative oil reserves.

But finding a market for carbon captured at sea could be a tougher proposition, says ClassNK Abdul Rahim, European Managing Director at Japanese classification society ClassNK.

Speaking to ICS, Rahim notes that it is the quality of carbon captured that matters. He describes a pyramid where the base – the lowest quality of carbon that can be captured – is destined for sequestration in reservoirs. The middle layer is carbon that can fetch a price for industrial use, including the production of carbon-neutral fuels. But the sharp end of the pyramid – and the pinnacle of the price that ship operators will get for their captured carbon – is the food industry. Selling carbon to carbonated drinks companies will be one of the biggest prizes of all.

The problem, says Rahim, is that today only 10-15% of captured carbon (even on land) is of a sufficient quality to sell even for mid-priced industrial usage. If ship operators want to recoup their installation costs, they will be hoping for technology that can capture carbon at a better and more lucrative quality.

It is clear that investment, research and development are all needed if CCS is to prove a viable option for use on board vessels. But, for many, as clean green fuels are still a way off, carbon capture still has a place in the industry's future to help it achieve net-zero emissions by 2050.

UAE rail programme boosts port connectivity

The ambitious development of the UAE National Rail Network, or Etihad Railway, has reached a milestone with the connection of what is set to be the nation's largest inland freight terminal, based at the Industrial City of Abu Dhabi (ICAD).

It is one of many multi-billion projects underway or being explored by governments globally, including in Australia, Poland and Colombia, as well as major e-commerce giants such as Amazon, as they seek to boost economic growth and stabilise global supply chains. However, such projects pose massive costs and logistical challenges, including a lack of rolling stock, drivers and redundancy of tracks and capacity at port rail yards.

The main line of the UAE National Rail Network extends from Ghuweifat on the border of the Kingdom of Saudi Arabia, and passes through the emirates of Abu Dhabi, Dubai, Sharjah and Ras Al Khaimah. Credit: Etihad Rail

The ICAD terminal forms part of the UAE's wider Maritime Network Initiative. It will operate 24/7 and its owners forecast an annual throughput of 15m tonnes of bulk goods, 1.5m tonnes of general cargo and 116,600 teu.

H.E. Eng. Hessa Al Malek, Advisor to the Minister for Maritime Transport Affairs, UAE Ministry of Energy and Infrastructure told *ICS Leadership Insights*, "The railway freight terminal will act as a logistics hub for heavy industries enabling a seamless distribution of raw materials and machinery for manufacturers, in addition to facilitating better connections to vital trade infrastructure, such as ports." Read more here.

Active role for shipowners in improving CII regulations

How shipowners report their Carbon Intensity Indicator (CII) rating will have a big impact on future efforts to improve the measure, ICS has said. Companies should ensure they are gathering and reporting data that can be used to support changes to how ratings are calculated when the measure comes into effect from 1 January 2023.

While the CII rating will initially be determined using one of two approved reporting metrics, the regulation includes a further four alternative or trial metrics – the Energy Efficiency Operational Indicator (EEOI), Energy Efficiency Performance Indicator (EEPI), gCO/berth.nm (cbDIST) and gCO_2/m.nm (ciDIST) – that could better represent ship efficiency in some sectors. These could be approved in a review of the scheme to take place before 1 January 2026. But their inclusion will need to be evidenced.

"Which metric you use can have a big difference on your CII rating," explained ICS Technical Director Chris Waddington. "For the four trial metrics, ship operators will need to collect additional data from day one." Read more here.

OEMs focus on data collaboration amid shipowner pressure

Ship technology suppliers are aiming to submit a proposal to IMO on improving data sharing to appease growing discontent among shipowner customers. The CIMAC digitalisation strategy group is developing a position paper to present to the Maritime Safety Committee in 2023, suggesting ways to make greater collaboration feasible to improve safety, efficiency and operational insight for shipowners.

The group chairman, ABB Marine & Ports head of regulatory affairs Eero Lehtovaara, told *ICS Leadership Insights* that suppliers acknowledge that owners expect better data services and are developing their own solutions. He added: "Shipowners are building operating centres to combine analysis rather than get it from us. They are the ones having to invest rather than suppliers." Read more here.

World Bank and IAPH aim to 'close the gaps' in global port infrastructure

The World Bank and the International Association of Ports and Harbors (IAPH) recently published a report called 'Closing the Gaps', outlining future infrastructure challenges and revealed their next steps to tackle them.

IAPH Managing Director Patrick Verhoeven told *ICS Leadership Insights* that a follow-up output from the report is a guide based on the experience of ports that have successfully integrated innovation into their, business models. Other anticipated outputs include a new suite of safety-related port bunkering and terminal tools for zero-carbon fuels and a guide for ports looking to establish a structured approach to resilience. Read more here.

ICS in Action

A round-up of ICS news and activites over the last month

ICS Secretary General addresses the UN General Assembly

ICS Secretary General Guy Platten addressed the UN General Assembly Second Committee on 13 October on the role of shipping and the importance of trade and logistics in getting food and energy to the world.

At the Second Committee event, Platten stressed shipping's vital role as "an integral cog" in the supply chain. He noted the strong power of collaboration and ICS' continued work to engage with governments and intergovernmental bodies including the IMO, ILO, WTO, WHO and UNCTAD "to collectively address issues of mutual interest".

Despite challenges posed by the war in Ukraine and the green transition, Platten concluded: "History has shown that we are resilient and by working together we will strive to ensure that we continue to provide an effective, efficient and reliable maritime transport service to safeguard global food and energy security for all." Read more here.

Shipowner organisations submit input on EU rules for vessel sharing

The World Shipping Council (WSC), ICS, and the Asian Shipowners' Association (ASA) have submitted their input to the European Commission, calling for a renewal of the Consortia Block Exemption Regulation (CBER) and demonstrating how vessel sharing contributes to the EU policy goals of reducing transport emissions, increasing competitiveness and improving efficiency to reduce costs.

Vessel sharing benefiting the EU is regulated through the Consortia Block Exemption Regulation (CBER), which expires in April 2024 and is now under review by the European Commission's DG COMP. Read more here.

ICS Barometer Survey to close end of November

Time is running out for members to take the ICS Maritime Barometer Survey 2022. The anonymous responses gathered from maritime leaders will be used in an ICS report to pinpoint trends and systemic risks and opportunities facing the maritime industry. The report findings will be shared with members and help maritime leaders make better informed decisions and engage with external stakeholders. Don't miss the opportunity to give your unique perspective from your sector, business or country.

To take the survey click here.

Diversity and inclusion essential for shipping's green transition

The recent ICS Leadership Insights Live event, *A Pathway to Greater Diversity in Maritime*, demonstrated how vital it is for shipping to adopt diversity, equity and inclusion (DEI) into its business operations.

Speakers Karin Orsel, CEO MF Shipping and Chair of the ICS Diversity Panel, Maria Antoniou, Group HR, Morgan Advanced Materials and Kathryn Upson, VP Partnerships & Strategic Implementation, BP Shipping outlined best practices and the business imperatives for companies and the wider maritime industry to adopt DEI..

Antoniou said that there are not only moral but business and legal imperatives for companies to to focus on diversity, noting that often demonstrating action on DEI is one of the most important considerations for investors.

Orsel stressed: "Shipping has a long way to go on diversity in shipping, and as we move into the energy transition we must widen the pool of talent coming into the industry."

Talking about work being done at BP, Kathryn Upson said: "There are too many people all over world who don't have equal access to opportunities. We want to create a business where everyone feels safe and can bring their best self to work".

ICS launched a Maritime Diversity and Inclusion Charter early 2022 and will soon launch a Diversity and Inclusion Toolkit.

International Chamber of Shipping

ICS is the principal international trade association for merchant shipowners and operators, representing all sectors and trades and over 80% of the world merchant fleet.

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