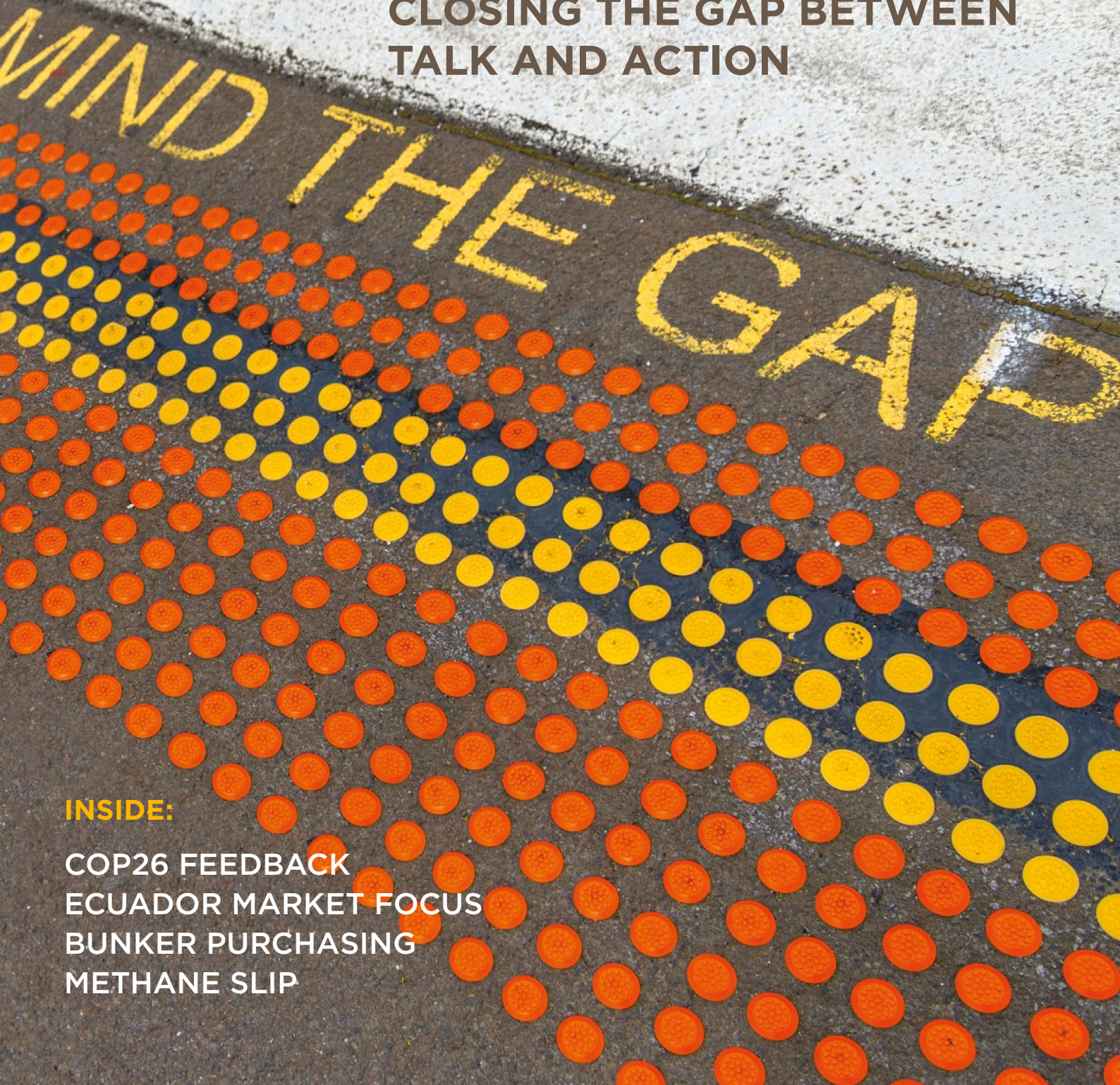


BUNKERSPOT

THE JOURNEY TO DECARBONISATION

CLOSING THE GAP BETWEEN
TALK AND ACTION



INSIDE:

COP26 FEEDBACK
ECUADOR MARKET FOCUS
BUNKER PURCHASING
METHANE SLIP

Answering the call

WinGD looks at the steps that must be taken to support shipping's voyage into a decarbonised future

As world leaders confront the need to curb global warming, the shipping industry is facing the challenge to limit its own contribution to greenhouse gas (GHG) emissions. The International Maritime Organization (IMO) has outlined its ambition to reduce GHG emissions from shipping by at least 50% by 2050 compared to 2008 levels. Marine engine developer WinGD is among those companies taking concrete steps to make this target realistic and achievable.

The global fleet of vessels has doubled in size since 2005, and with the majority still operating with conventional diesel fuels, it is hardly surprising that carbon emissions from shipping grew by approximately 10% between 2012 and 2018. Of the world's total anthropogenic emissions from all sources, shipping contributes almost 3%.

The IMO's 2050 target is seen by maritime leaders such as WinGD as an important message to the industry that decarbonisation must be taken seriously. However, along with other members of the Getting to Zero Coalition, a partnership between the Global Maritime Forum, the World Economic Forum, and Friends of Ocean Action, WinGD believes that clear targets need to be set for shipping to be run entirely on net-zero energy sources by 2050.

WinGD has also indicated its strong support for the Global Methane Pledge, a joint US and EU commitment to taking voluntary actions contributing to a collective effort to reduce global methane emissions by at least 30% from 2020 levels by 2030. This pledge was signed by some 100 nations at the recent United Nations Climate Change Conference (COP26) in Glasgow.

Methane is a powerful but short-lived cli-

mate pollutant that accounts for about half of the net rise in global average temperature since the pre-industrial era. While the pledge focuses on cutting well-to-tank methane emissions, WinGD's technology developments are aimed at curbing methane slip when using methane as marine fuel, thereby reducing tank-to-wake emissions.

WinGD has established a robust and transparent process for validating the new fuels for shipping's decarbonisation, including zero or carbon-neutral fuels, in preparation for their application on board, and use with its range of engines. Meanwhile, the sustainability of the two-stroke X-DF series of engines has been enhanced with the introduction of an intelligent Control by Exhaust Recirculation (ICER) solution that cuts methane slip by approximately 50%. It also improves fuel consumption efficiency in both gas and diesel modes.

CALL TO ACTION

The Getting to Zero Coalition has developed a Call to Action initiative urging governments to commit to decarbonising international shipping by 2050; to support industrial-scale zero emission shipping projects through national action; and to deliver policy measures that will make zero emission shipping the default choice by 2030. Signatories to this initiative, which was delivered to world governments ahead of COP26, include stakeholders from throughout the entire maritime sector.

In responding to the need for concrete actions, WinGD is somewhat ahead of the curve. Since the availability of carbon-free fuels is still a long way away, new fuels cannot be viewed as the only solution. A holistic approach to decarbonisation, taking

'The global fleet of vessels has doubled in size since 2005, and with the majority still operating with conventional diesel fuels, it is hardly surprising that carbon emissions from shipping grew by approximately 10% between 2012 and 2018'



the entire energy system into account, is therefore required immediately. The company has developed an ecosystem of solutions based on enhancing vessel propulsion efficiency and enabling a seamless future transition to new carbon-free fuels, the two primary means for reducing GHG emissions.

'There is no single simple solution for achieving decarbonisation targets. It involves a combination of technology developments to significantly raise efficiency levels, and it will require the adoption of carbon-free fuels. Modern vessels have complex power systems with the main engine central to any advanced integrated solution. We have made serious commitments to ensure that our engines reach the required efficiency levels, and that they are ready to operate with a range of future fuels,' explains Klaus Heim, WinGD CEO.

These commitments have involved extensive investments in, among other things, sophisticated new testing facilities for engines and fuel systems, cutting-edge simulation techniques, and a proprietary process for validating new alternative marine fuels. Test rigs have been designed to specifically assess the compatibility of alternative liquid fuels with existing fuel systems. These test rigs simulate the actual operation of injection systems under varying conditions. All key elements of the systems, such as the fuel pumps, common rail, and injection actuation elements, as well as the injection valves are typically included.

WinGD has also developed a single-cylinder engine that promotes the optimisation of dual-fuel, as well as diesel engine, concepts. This offers greater flexibility and better cost-effectiveness than the company's earlier multi-cylinder test engines and is better suited to early-stage fuel testing. The number of multi-cylinder testbeds with new diesel-cycle and Otto-cycle engines to improve later-stage fuel testing capabilities is also being increased.

FUTURE FUELS RESEARCH

WinGD has successfully analysed a number of alternative clean burning fuels, both in publicly funded projects and in partnership



Klaus Heim

'There is no single simple solution for achieving decarbonisation targets. It involves a combination of technology developments to significantly raise efficiency levels, and it will require the adoption of carbon-free fuels'

with industry stakeholders. At the same time, the company's core engine technology has been developed to accept carbon-neutral or zero-carbon fuels such as bio-diesel and alcohol fuels. Leading European research has also been carried out into injection concepts. The WinGD X-DF dual-fuel engine can already operate with carbon-neutral fuels, including biogas and synthetic LNG without the need for engine modifications,

representing an important step in the transition towards fully decarbonised operations.

The in-depth research carried out into future fuels is supported by the company's extensive field experience with its two-stroke, dual-fuel X-DF engines and X-series diesel engines. There is already an installed base of more than 415 X-DF engines in operation, mostly utilising standard LNG as the primary fuel as a means for lowering emission levels. The use of LNG in a low-pressure X-DF engine can, for instance, reduce GHG emissions by some 20%, compared to those from engines burning heavy fuel oil (HFO).

This engine experience provides a valuable platform for providing insight into gas fuel operations, while preparing for emerging new fuels. The background combination of innovation and experience means that the company is in a position to advise and help its customers, whichever path they choose to follow towards lowering the carbon footprint of their operations and complying with the IMO's GHG reduction targets.

IMPROVING ENERGY EFFICIENCY

The ecosystem of WinGD solutions deploys vessel optimisation and battery-hybrid power systems to improve the energy efficiency and future fuel flexibility of its two-stroke engines. As Heim points out: 'Integrated energy management plays a central role in our vision to power the energy transition in shipping. We continue to make progressive investments into future fuels research, engine control solutions, optimisation, and hybridisation, and this work goes hand-in-hand with the ongoing evolution of our engine portfolio. The ultimate aim is to provide ship owners and operators with the means to meet long-range environmental targets with solutions that are already available and commercially viable.'

In addition to those enabling fuel flexibility, the solutions developed include smart engine monitoring, advanced electronic control, and hybrid energy management systems. WinGD's in-house expertise in engine technology means that all the elements of these complex systems can be optimally integrated. This also forms the basis for advising ship owners regarding the sizing and operation of hybrid energy sources such as batteries.

As part of the company's new offering, all medium and large-bore WinGD engines are supplied as standard with the company's innovative Integrated Digital Expert (WiDE) engine monitoring and optimisation solution. The monitoring and support capabilities work with the WinGD Integrated Control Electronics (WiCE)

'The WinGD X-DF dual-fuel engine can already operate with carbon-neutral fuels, including biogas and synthetic LNG without the need for engine modifications'

system, an advanced, robust engine control solution that meets the connectivity and security demands of future ship energy systems.

A REFERENCE AND AN AGREEMENT

The sustainability and efficiency enhancements developed by WinGD will be utilised to benefit four car and truck carrier vessels ordered by the Japan-based operator NYK Line. The vessels will feature a hybrid energy system comprising WinGD 7X62DF-2.1 LNG-fuelled two-stroke engines, coupled with shaft generators, DC links, and battery systems. The energy system's spinning reserves, peak shaving, and energy flow are optimised to ensure that the main engines operate with prime efficiency, while reducing the use of less efficient auxiliary engines. The system will be managed by WinGD's new Hybrid Control System.

Furthermore, WinGD and Dalian Shipbuilding Industry Company (DSIC) have signed a Strategic Cooperation Framework Agreement aimed at reducing the carbon footprint of new vessels. The agreement represents a strong commitment by the two companies to further develop green technologies that will benefit shipping's voyage towards a zero-carbon future.

Together, DSIC's focus on designing and building green-technology vessels along with WinGD's two-stroke engine expertise can accelerate the move towards greater ship sustainability and alignment with the IMO's GHG targets. 'If we are to be serious about decarbonisation, then the industry needs to share resources and expertise, and collaborate in order to move forward. This agreement is just one example of our commitment to this ambition,' says Heim.

WAKE-UP CALL


The shipping industry's wake-up call to the need to significantly reduce its carbon footprint began with the 2016 signing of the UN's Climate Change convention in Paris by 196 sovereign nations. Consequently, in 2018, the IMO announced its initial strategy setting out a vision to reduce GHG emissions from international shipping, and to phase them out as soon as possible in this century.

Lloyd's Register (LR) estimates the 50% cut in GHG emissions to be equivalent to a real-world reduction of about 85% in operational CO₂ intensity. In other words, ships will have to reduce their output of carbon dioxide by 85% per nautical mile to take account of the increasing number of ships

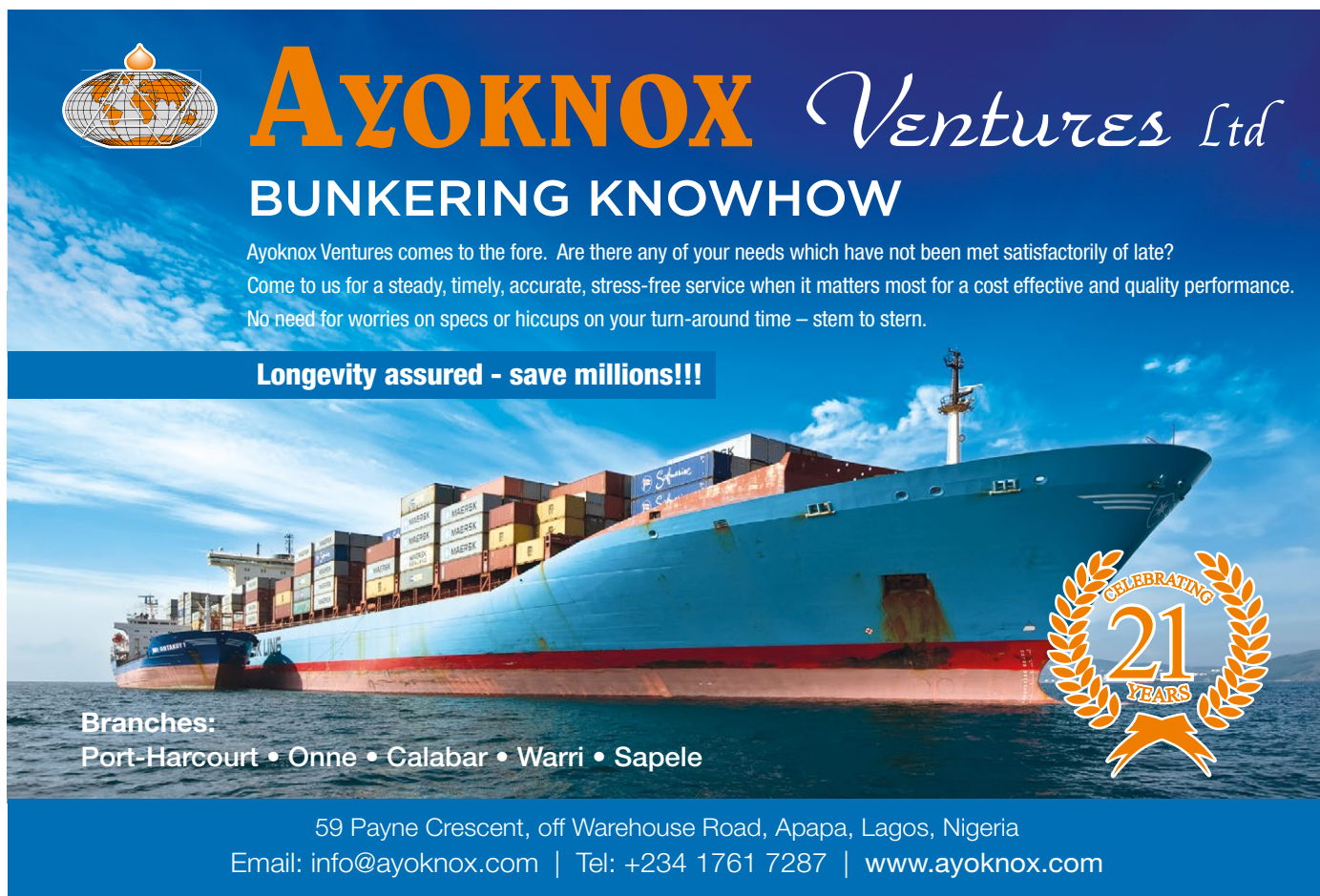
and increased shipping activity over the coming years. As LR rightly admits, it will be a tough challenge for the maritime industry.


New fuels and hybrid propulsion solutions will certainly be part of meeting this challenge. Equipment and operational efficiencies will need to be raised to new levels, along with the phasing out of fossil-based fuels. The Getting to Zero Coalition's Call to Action calls on the governments of the world to play their part, but it is the industry itself that is on the front line of this battle to defeat the need for carbon-based solutions.

WinGD has accepted this responsibility and is fully engaged in doing everything possible to deliver greater efficiency and alternative carbon-free fuels to the maritime sector. The company offers expert training for operators during the industry's transformation, and its ecosystem of systems – including its engines – is designed to not only meet, but to exceed the IMO's target to reduce carbon intensity by 2050.

 Winterthur Gas & Diesel (WinGD) is a developer of two-stroke low-speed engines used for propulsion power in merchant shipping

 Web: www.WinGD.com



 **Ayoknox** Ventures Ltd
BUNKERING KNOWHOW

Ayoknox Ventures comes to the fore. Are there any of your needs which have not been met satisfactorily of late? Come to us for a steady, timely, accurate, stress-free service when it matters most for a cost effective and quality performance. No need for worries on specs or hiccups on your turn-around time – stem to stern.

Longevity assured - save millions!!!

Branches:
 Port-Harcourt • Onne • Calabar • Warri • Sapele

59 Payne Crescent, off Warehouse Road, Apapa, Lagos, Nigeria
 Email: info@ayoknox.com | Tel: +234 1761 7287 | www.ayoknox.com

CELEBRATING 21 YEARS