

A HEALTHY AND SAFE WORKING ENVIRONMENT

Security Initiatives

At BW LPG, we are committed to protect the security of our seafarers, vessels and cargo. Our counter-piracy strategy is guided by the principle of defence and we have measures in place to deter attacks and safeguard the well-being of crew on board. We were one of the first ship operators to implement the International Ship and Port Facility Security (ISPS) code, which contains rules and requirements for carriers and terminals to significantly improve vessel and port security against international terrorism.

“Maritime security is a commitment we take very seriously; keeping our seafarers out of harm’s way, protecting our assets and keeping customers’ cargo safe.”

Prodyut Banerjee
Vice President, BW LPG Operations



BW LPG’s fleet security team follows a set of rigorous operational procedures, and relies on a number of intelligence resources to evaluate the risk of sea routes, and provide guidance on the most strategic route of travel.

- To professionally handle the many transits through High Risk Areas (HRAs), we have a designated Global Head of Security responsible for monitoring and acting on security matters impacting seafarers and the fleet.
- All vessels transiting high-security areas follow a set of regularly updated guidelines which respect various reporting requirements as defined by the UK Maritime Trade Organisations, the Maritime Security Centre (Horn of Africa), various national authorities, flag states and charterers.
- Anti-piracy gear, such as razor wire and water hoses, are fitted on board vessels to deter hostile boarding.
- We employ ex-navy seals and royal marine guards onboard our vessels, who train our seafarers on handling dangerous and high security situations.
- Our vessels comply with international and flag state security requirements.
- BW LPG complies with BMP 4 for planning, entering, transiting and exiting HRAs in the Gulf of Aden and Indian Ocean.
- Voyages in areas of concern are based on decisions made using formal risk assessments.

ENERGY MANAGEMENT

Energy efficiency enables us to remain competitive

At BW LPG, caring for the environment goes beyond being compliant with regulations; it is a fundamental element of our core values. We are committed to keeping the future of our planet in mind wherever we do business.

A significant part of our operations are directed towards achieving fuel efficiency and reducing emissions. We have invested in technology to help reduce our environmental footprint. These initiatives will enable us to manage the environmental impact of our operations while providing competitive energy solutions to our customers.



Political Drivers

- Emissions to air
- Upcoming CO₂ quotas/ levy
- Extension of Emissions Control Areas (ECAs)
- Stronger requirements for low sulphur fuels

Financial Drivers

- Oil and bunker prices
- Growth in emerging markets
- Energy savings – cost savings
- Efficient vessels

Socio-Cultural Drivers

- Legal and ethical responsibility
- Secure health and environment in a proper way

Technological Drivers

- Innovation: New regulations force new technology and designs
- Eco-efficient vessels

Our Approach

BW LPG’s fleet is ISO 14001 certified. We have taken a holistic view on energy management involving the entire organisation and are committed to implementing processes and measures that will continually reduce our impact on the environment.

| | |
|---------------------------|--|
| Reducing Emissions | Steadfastly complying with Low Sulphur fuels in Emission Control Areas around the world |
| Cost Focus | Enabling discharge terminals to return cargo vapours to vessel to create a closed ship to shore system thereby cutting down the emission of hydrocarbons to atmosphere |
| Performance | Utilising Mass flow meters for the delivery of bunkers at select ports; Testing each stem of bunkers for quality control |
| Benchmarking | Ensuring we carry inventory of fuel oil optimised for each voyage and nothing more, thereby minimising deadweight |
| | Driving a performance mindset across the team to enhance availability, utilisation and cost awareness |
| | Being agile in all aspects of Operational and Technical management; Utilising voyage obligations to maintain optimum speeds |
| | Abiding to the highest benchmarks of Tanker Industry Health, Safety and Environmental standards |

ENERGY MANAGEMENT

We monitor our CO₂ emissions and remain well prepared for the upcoming European Union's CO₂ Monitoring Reporting and Verification (MRV) regulation and International Maritime Organisation's CO₂ Data Collection System (DCS). BW LPG is a member of Workgroup 5 for environmentally friendly shipping (WG5).

WG5 consists of five leading shipping companies such as BW, Klaveness,

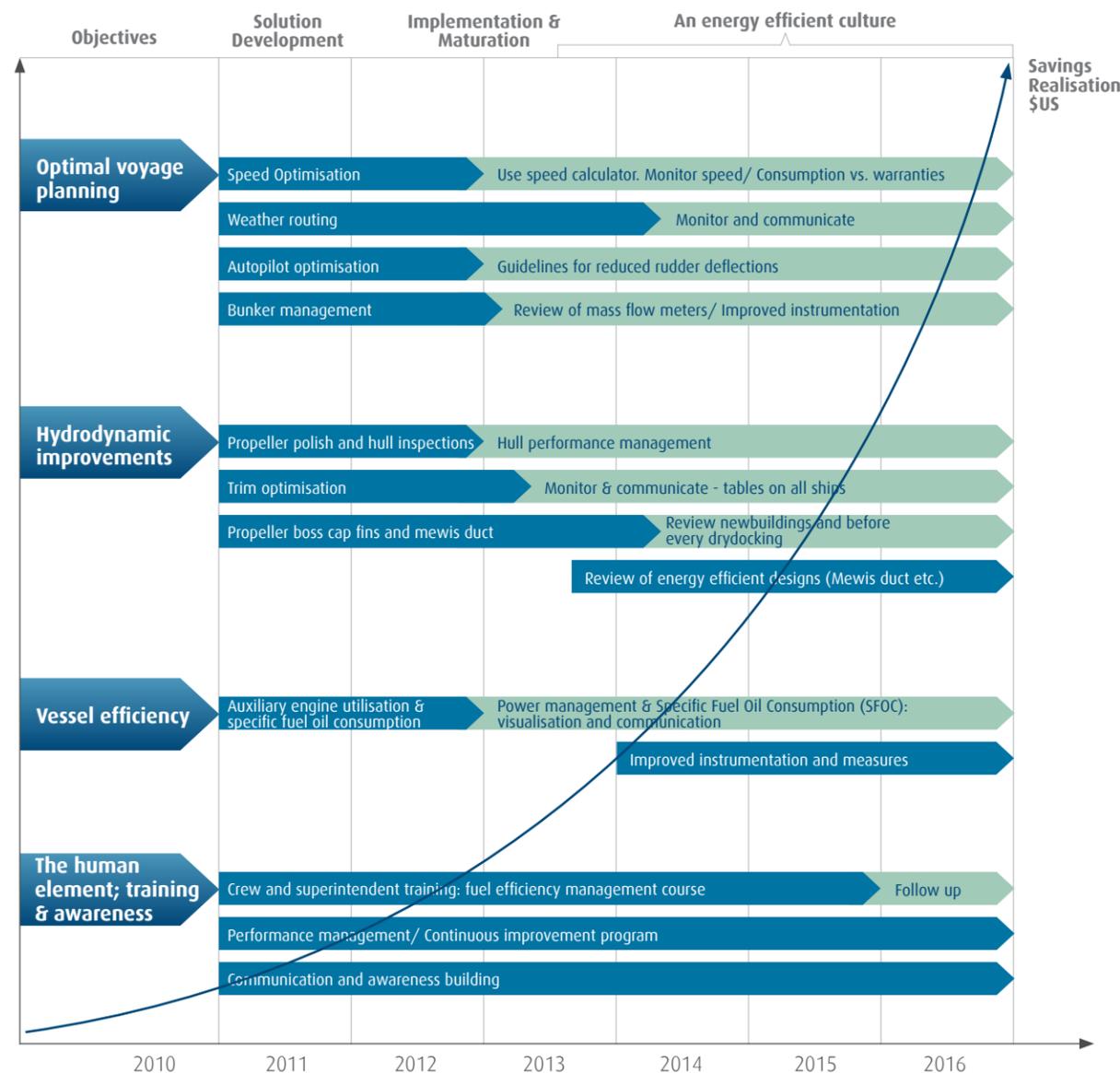
Wilhelmsen, Grieg Star and Solvang Shipping Group. WG5's purpose is to make a contribution towards the Norwegian Shipowners Association's environmental vision of "Zero harmful emissions to air and sea." We meet regularly to benchmark our environmental efforts and performance.

We also evaluate the environmental performance for all newbuildings which includes hull and propeller design machinery,

choice of antifouling system, instrumentation that can improve our fuel performance monitoring and fitting of energy saving devices such as Mewis Ducts and Propeller Boss Cap Fins.

The Company ensures all newbuildings support energy efficient operations, enabling our assets to remain competitive in the market.

We have in place a comprehensive, holistic energy management programme that spans across the organisation, from commercial to technical, involving various stages of planning and implementation, aligned with our identified objectives.



"Only with careful and continual monitoring of fuel efficiency will we achieve the desired optimisation, operational costs and a tangible reduction in environmental impact."

Kevin Knott
Senior Manager, BW LPG Operations

Operational effectiveness in fuel management

Procuring bunkers for each vessel is just one functional aspect of operations. We strive to go beyond on every occasion and ensure that we carry the ideal inventory of fuel oil on board at any one time. Carrying just the right amount of fuel ensures we maximise on cargo carrying capacities and reduce transporting excessive 'deadweight' during long voyage legs.

We work to achieve the ideal combination of optimised costs and a tangible reduction in our impact to the environment.

1. A steadfast approach to getting the best quality fuel, meeting both environmental and technical criteria, and at the most economical price globally. We employ Mass Flow Metered barges for all bunker deliveries where available.
2. Ensuring that our vessels are appropriately stocked with the optimum inventory on board. Our contracts include laden voyage bunkering options, allowing for minimum bunker inventory.



Mass flow meter onboard one of our VLGCs



Bunker operations underway onboard VLGC BW Volans

3. Monitoring daily service consumption to ensure that machineries are at peak performance; promptly alerting the vessel and her technical superintendent to attend to inferior performance. Operators scrutinise daily reports from the vessels as well as end of voyage reconciliation of bunkers remaining on board.
4. Routing sea voyages through a path of least weather resistance. Professional weather routing services are utilised for every trans-oceanic voyage.
5. Endeavouring to arrive in ports just in time, to avoid near shore idling and emissions.

Communication is key to achieving these objectives. Ship managers, charterers, port agents, brokers and vessels are all kept closely aligned both during pre-fixture commitments and during the post fixture voyage execution. The operations department form the hub for this activity.

ENERGY MANAGEMENT

A modern and fuel efficient fleet

By investing in newbuilding programmes with HHI and DSME, BW LPG has enhanced its VLGC fleet with the addition of 12 brand new, fuel efficient carriers. These vessels enable us to deliver fuel efficient and competitive transportation services to our customers on a global basis.

In addition to improved hull and propeller designs, state of the art hull coating and energy saving devices, BW LPG's newbuildings are equipped with:

- Electronic engines with online Pressure Mean Indicator measurement (PMI) enabling us to better tune and maintain a low fuel oil consumption
- Coriolis mass flow meters connected to the vessels automation system
- Kyma torque and thrust meter
- Ship@web logging computers that capture all parameters in the ship automation system including navigation, engine and fuel data. This provides automated data and a much higher resolution of available data that can be used for the analysis of vessel performance.

All eight ships from HHI are enrolled into Jotun's Hull Performance Service.



VLGC BW Leo exiting the Enterprise Terminal in the U.S.

"We took delivery of state of the art newbuildings, setting a new standard in fuel efficiency for this type of vessel. These vessels allow us to deliver fuel efficient, high performance services to our customers."

Serge Schwalenstocker,
Newbuilding department, BW LPG



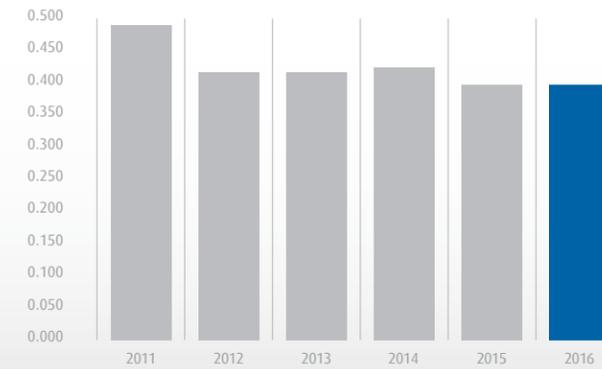
Mewis Duct Installations
Fuel cost: USD 250/mt
Average saving laden: 7%
Average saving ballast: 6%
Payback time: 2.6 years



Propeller Boss Cap Fins
Fuel cost: USD 250/mt
Average saving: 2% ballast/laden
Payback time: 1.9 years

CO₂ Emissions

(tonnes/nautical mile)

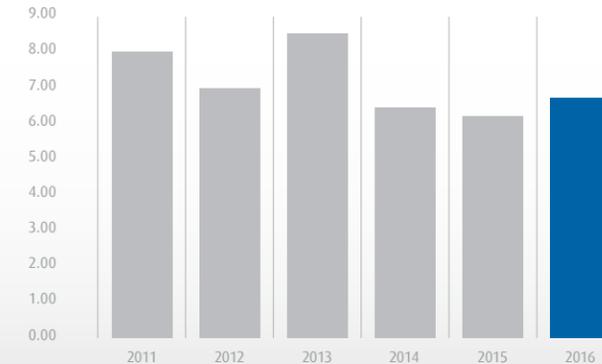


CO₂ emissions are proportionally linked to the reduction in our vessels' fuel consumption. Since the energy management project started in 2011, our carbon footprint has been reduced by 20%.

We managed to maintain carbon dioxide tonnes per nautical mile as the same level as 2015. This can be attributed to the applications of various energy reducing solutions continued in 2016.

SO_x Emissions

(kg/nautical mile)



We aim to reduce our sulphur oxide emissions through the purchase of bunker with reduced sulphur content.

We saw a small increase in emissions between 2016 but have overall reduced sulphur oxide emissions by 22.6% since 2013.

(*graphs include all BW LPG vessels managed by BWFM and is based on total fuel consumed (ME, AEs, Boilers and incinerator)

Average landed plastic waste

(m³)



All vessels are equipped with compactors and we avoid using disposable plastic bottles for drinking water.

We communicate regularly with our ship handlers about reducing the amount of plastic waste landed by our vessels.

All landed plastic waste is disposed for recycling.