

SHTP 2020 YEAR

edition

SOUTH AFRICA'S TOP MARITIME MAGAZINE

Environment

Ocean awareness takes the global stage

Ingpen on the Ocean

Unlocking skills base critical to ocean economy

Prasheen Maharaj

Inside SanDock Austral Shipyards' dynamic development plan

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SOUTH AFRICA'S TOP MARITIME MAGAZINE



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The background of the advertisement is a high-angle photograph of an offshore oil rig in the ocean. The rig is a complex of yellow and white metal structures, including platforms, stairs, and pipes, supported by several large yellow legs. In the foreground, a bright orange lifeboat is floating on the blue water, moving away from the rig and leaving a white wake. The lifeboat has a white door and a small white cabin structure.

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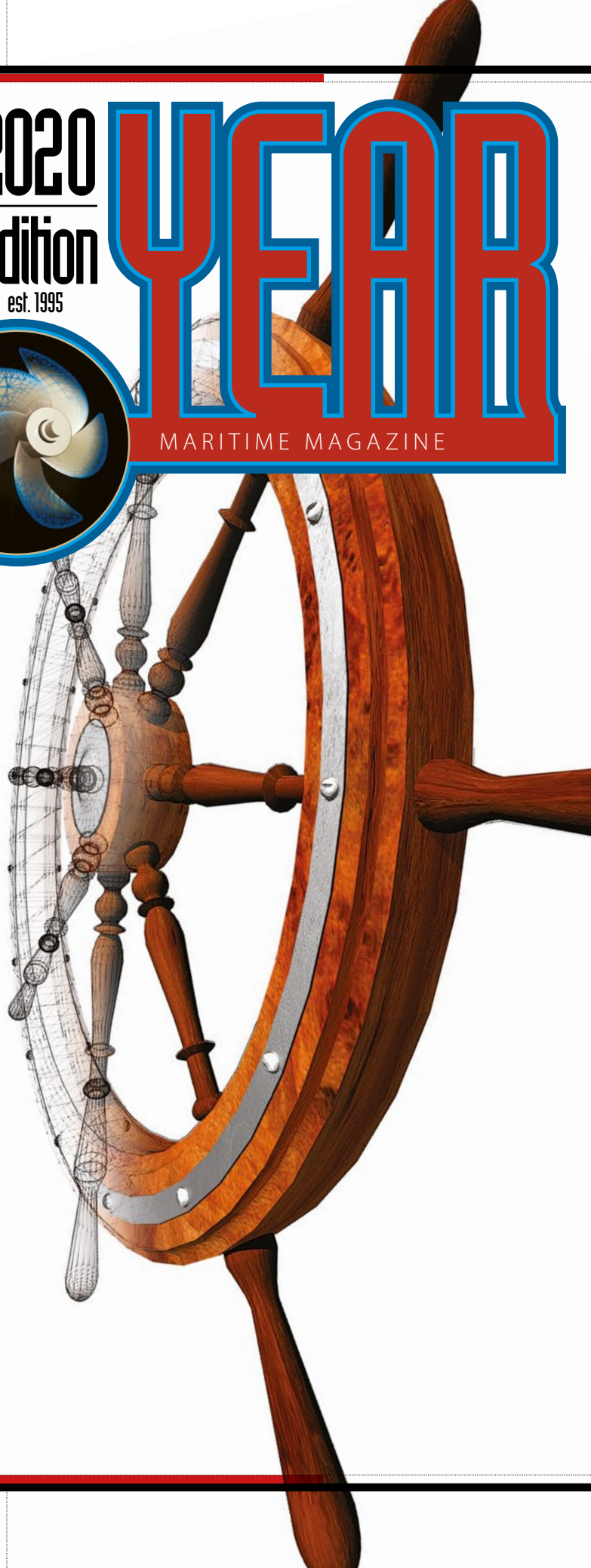
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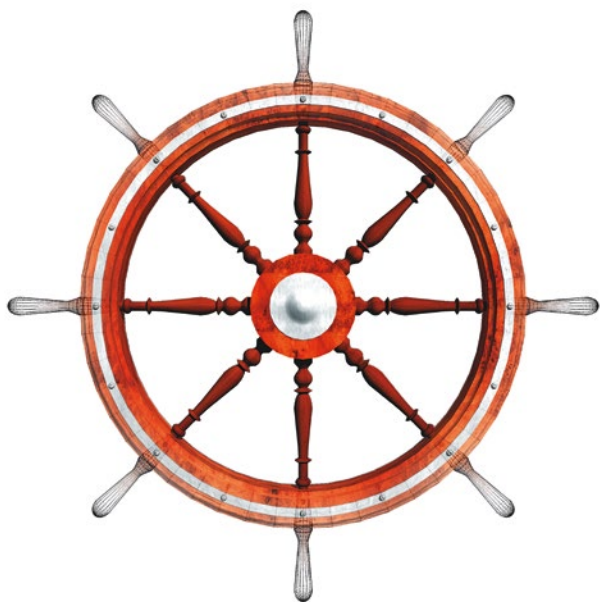


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The future of shipping, challenges and possibilities

An unmanned cargo vessel has been launched in Norway in 2018, and unmanned cranes and vehicles are operating in the iconic port of Rotterdam already. Fall out of this most probably epic change are still largely unknown, but anyone can understand that maritime work, cargo handling and navigation techniques, maintenance and safety onboard will never be the same again.

Old and obsolete ships, zero-investment “policies”, high fuel consumptions, are not an option anymore in today’s business environment. But necessary research, development and investments come with a cost, and that’s why more and more concentration is seen in all shipping markets. The container sector is setting the trend, and during last two years only Alliances concentrated from 5 to 3, offering 90% of the container capacity of the market; almost all top

ten players put a hand on the wallet to announce buy out of smaller competitors.

Meanwhile, in the wider logistics world, the wave of intelligent rationalization of traffics have taken the forms of a more advanced intermodality, cutting transit time and costs of the door to door deliveries with modern forwarding concept like trailerization and containerization.

Shipping is not only the most used way of moving goods cross border, but it is also the most efficient. Can you imagine the carbon emissions if we had to transport everything by plane. Studies have shown that while containers ships emit about 3 grams of CO₂ per tonne of product for each kilometre travelled—aircraft emit about 435 grams of CO₂ per tonne per kilometre. That represents a 140 fold increase in CO₂ emissions from airplanes over ships doing the same job. That to me is a staggering statistic.

While shipping is already today the most efficient method of moving goods and people around the world, its green bar will be set higher and higher. In April last year the IMO concluded a groundbreaking agreement on CO₂ emissions, “The Paris Agreement for Shipping”. IMO’s ambition is to reduce greenhouse gas emissions by at least 40% by 2030 and 50% by 2050 comparing to the 2008 level. Considering that the fleet capacity will have increased dramatically meanwhile, this means that we will have to reduce greenhouse emissions per ship by 80%. This means basically to aim for a zero-emission ship creation and diffusion.

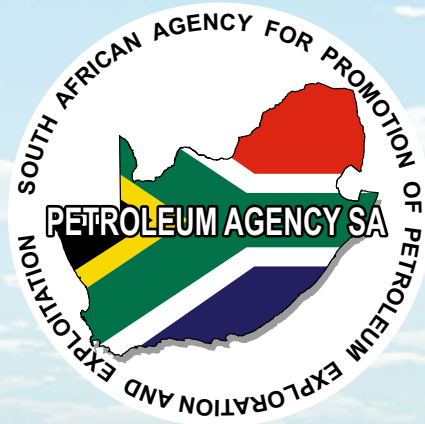
The target set for our community is not small at all. It is more than a mere change in the way of navigating, it represents a fundamental transformation of business concept, something that we retain to be the 4th Propulsion Revolution of the history after sailing, steam and oil. It should be highlighted that fulfilling IMO’s target would decarbonize shipping at a faster pace than all the rest of the world economy, whose emissions are projected to continue increasing for the next 10 years.

We are the leaders of a truly fascinating and important sector for the global economy. The decisions we take will have implications beyond our own board rooms. The 4th Propulsion Revolution is an opportunity for us all to power the global economy and our businesses in an even more profitable and sustainable way. ✨

Emanuele Grimaldi, CEO of Finnlines



Explore



South Africa!



Petroleum Agency SA was established in 1999 by Ministerial directive and is mandated through the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA) together with the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA).

These Acts provide for Petroleum Agency SA to evaluate and promote oil & gas potential exploration and production activities in South Africa, to regulate oil & gas exploration and production industry and to archive all geotechnical data produced through oil & gas exploration.

The Agency acts as an advisor to the government on issues regarding oil & gas exploration and production, and carries out special projects at the request of the Minister.

Our Vision

A diverse upstream industry contributing to energy security through sustainable growth in exploration and development of oil and gas.

Our Mission

To promote, facilitate and regulate exploration and sustainable development of oil and gas contributing to energy security in South Africa.

Petroleum Agency SA, based in Bellville, Cape Town, is responsible for the promotion and regulation of exploration and exploitation of oil and gas (petroleum) resources.

Contact us to find out about:

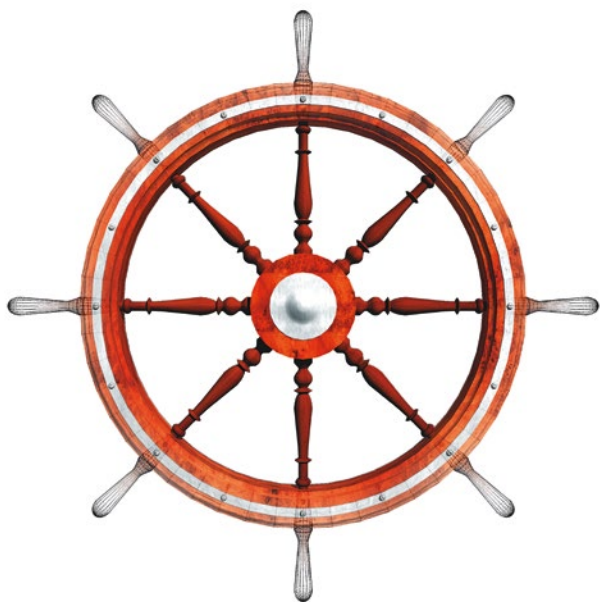
- Onshore or offshore exploration opportunities
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Coronavirus makes for stormy seas

Welcome to another edition of Ship Year magazine. It has certainly been a dramatic 12 months since we last touched down, with the world being gripped by Coronavirus fever and its impact on the economies and supply chains of the world.

Many of the globe's smaller ports are being shut down, causing a funnelling effect into the few arteries that are still open, putting greater stress on the system. It is a double edged sword, the trade of vital resources needed for survival versus the need to close down borders to limit human interaction.

The virus has also shed light on many of the environmental failings of mankind, as we see years of smog and pollution disappear in heavily polluted cities in China. Citizens are seeing clear blue skies for the first time. The massive shutdown of heavy industry has resulted in many polluted rivers running cleaner again.

The crisis presents with an opportunity to get things into perspective. Sustainability is seldom a priority when big business is

pushing for maximum profit, and it is sad that one needs a major pandemic like this to get change, albeit short-term I fear.

One cannot be fooled into thinking that pollution levels will not rise again once this has passed, and heavy industry tries to play catch-up. But it has given people in polluted cities an insight into what cleaner living feels like, and hopefully raises their expectations. It has also increased awareness around sanitation and discrimination.

The full extent of its impact on shipping and logistics is still unknown. Stringent measures are required to stop the spread of the virus and streamline human contact as much as possible. It is vital that all companies take the risks seriously for their staff and make all the necessary safety arrangements.

We are certainly entering uncharted waters, and due care is necessary. However, container ships will now become the lifeline of many smaller countries like Mauritius, who rely on food imports.

In any event, transporting good via sea makes more sense from an environmental point of view, compared to air travel, which requires far more jet fuel per mile. ✿

Gregory Simpson





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With an enviable reputation for integrity and meeting tight deadlines, Namdock is therefore a trusted partner to a wide variety of clients in the local and international maritime maintenance and repair industry.

The aim of Namdock with every project is to ensure the vessel, tug, oil rig (or even general fabrication project) is completed on time, within budget and to the client's specification; and therefore applies the full scope of its skills and experience to ensure successful project completion.



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Full steam ahead for SanDock Austral Shipyards' development plan

SanDock Austral Shipyards (SAS), located close to the Salisbury Island Naval base in the busy Port of Durban, continues to reap the rewards from its floating dock for repairs and maintenance, while scoring a major build with the South African (SA) Navy

SAS is involved in a flagship project where a new hydrographic survey vessel is being built. The project has a massive ripple effect for the local shipbuilding industry in Durban.

Three additional survey motor boats are also slated for manufacture, all of which will be equipped with Hydrographic Information Processing System (HIPS) and Sonar Information Processing System (SIPS) to process acquired hydrographic data.

The delivery of the Hydrographic Survey Vessel and her Survey Motor Boats will significantly enhance the South African Navy's survey capabilities both inside and outside of its territorial waters, taking operations to the next level.

Ship Year editor Gregory Simpson caught up with Prasheen Maharaj, dynamic CEO of SAS, who hopes to steer the black-owned enterprise into calmer waters.

Please tell me about your background, education and rise to the top at SA Shipyards?

I grew up in a so called "Indian Township" in the north west of Durban called Newlands West. I completed my undergraduate and post graduate studies at the former University of Natal-Durban.

During this time I received an academic excellence award and became a member of the Golden Key International Honours Society. I began my career in financial services where I was involved in the insurance industry, international currency and derivatives trading, asset management and corporate finance.

Who were some of the mentors who shaped your outlook on business?

My early influencers were investors and the financial journalist Richard Cluver whose articles and books I read religiously from the age of 11 years.

In my teenage years and young adult life my uncle, Vishnu Sharma, a property mogul, taught me a lot about entrepreneurship and business moral ethics.

"We still hold the record for building the largest vessel on the African continent, the SAS Drakensberg"

While at business school, I met the father of black economic empowerment, Dr Don Mkhwanazi, who shaped my life from a business, political and personal point of view – I was literally his apprentice until his passing last year in July. It was through that I got a seat at the table of Corporate SA and learned to be a principled business leader by applying our knowledge, network and entrepreneurship skills to address the issues of inequality, poverty and unemployment.

What are some of the exciting projects that SA Shipyards has been involved in?

The Shipyard has a long and illustrious history spanning close to 50 years. We still hold the record for building the largest vessel on the African continent, the SAS Drakensberg. We still remain the only company in the country to have built fully fledged war vessels. These include Navy missiles/strike craft and mine hunters.

SA Shipyards was the site for the construction of oil and gas rigs for both Moss gas in SA and Cabinda in Angola. At one time we were the second largest exporter of mega luxury yachts in the world, when we were exporting to a discerning market in Europe and the Middle East. We built a complete floating mining plant for Kenmare Resources for their mine in Moma, Mozambique.

We are at the tail end of completing the nine tug build programme for Transnet, which remains the largest shipbuilding project ever awarded by Transnet to a local company. Another

interesting project was the delivery of a fishing trawler to Lake Malawi. The vessel was completely built, commissioned and tested in SA, before being cut into two pieces and transported in the back of two trucks to Malawi. We've also been awarded a contract by Transnet to build a Cutter Suction Dredger for the Port of Durban.

SA Shipyard's is the only company on the African Continent to successfully complete a full midlife refit on a modern military frigate, the SAS Amatola belonging to the SA Navy. We are at the tail end of completing the Caisson Gate repair for the Dry Dock in East London, which is a strategic project that will create capacity in the Port of East London to repair vessels efficiently. Proudly, we are also in the midway stage of constructing the largest and most complex Hydrographic Survey Vessel currently under construction in the world.

Your plans to expand into Africa: How are they coming along, and what key regions are in focus?

Our plans to invest physically in Africa are progressing slowly. There are many social, economic and political issues that have resulted in us not being able to execute our Africa expansion strategy in the manner we envisioned. We have now re-designed our strategy for Africa and have decided to focus on being a technology partner to shipyards on the African continent. All African countries would like to industrialise and create jobs for their citizens.

They also want their industries to be majority owned by the indigenous people of that country. Our intention is to work with local shipyards to build ships for their country in their country. We start them off as assembly yards with sections/units/blocks being built in SA. Final assembly and integration takes place in the home country of that vessel.

Through a process of cooperation and collaboration, driven by skills development and technology transfer, we will eventually be able to create fully fledged shipyards in other African countries for the construction of small to medium size vessels. We believe that will result in win-win partnerships to help with the greater macroeconomic objectives of making Africa a prosperous and industrialised continent.

We must all realise that, the more successful Africa becomes, the more successful and sustainable we will become as African based businesses. It therefore becomes a business imperative to ensure the success and economic emancipation of the African continent and its people.

Our areas of focus include Mozambique, Kenya, Tanzania, Malawi, Namibia, Angola, DRC, Ghana and Nigeria.

What are some of the latest advancements/innovations in ship building?

The main thrust has been around ships propulsions and lowering of emissions and noise—integrated electric propulsion (hybrid propulsion). The system uses electric transmission instead of mechanical transmission, which eliminates the need for clutches and reduces or eliminates the use of gearboxes. Some of the advantages of using this technology are freedom of placement of engine, less noisy ships, reduction in weight and volume, etc.

The use of Liquefied Natural Gas (LNG) fuelled engines is an alternate fuel for ships because of its environmental friendliness.

In LNG engines, CO2 emission is reduced by 20–25% as compared to diesel engines, nitrogen oxide (Nox) emissions are cut by almost 92%, while SOX and particulates emissions are almost completely eliminated. Moreover, the new generation ship engines are required to comply with the TIER 3 restrictions by IMO. Therefore, LNG solution is the best at the moment.

As a black-owned enterprise, with a strong 67% female involvement, what are the keys to effectively transform an organisation, with smooth knowledge exchanges?

For any social re-engineering process to be successful there must be a very logical reason for it to happen. That's the only way one will get buy-in for the change. I'm a firm believer that if a country does not have a large, economically active and prosperous middle class, that country is doomed.

During the transformation process we will experience all the challenges that SA and Africa at large is currently facing and that we are all too familiar with. Therefore, if we don't bring the majority of the people and an equitable number of females into the middle class, we shall never be a prosperous country. This is the message I send to my employees and other stakeholders.

They will all personally benefit if we can create an economically prosperous SA. As a result, there is no resistance to transformation within our organisation. Our employees and stakeholders don't view it as a compliance or punitive measure. They know that it is a socio-economic imperative that we will all benefit from. Using this approach, we have managed to move transformation from a compliance/punitive initiative into an ideal that is willingly embraced as a personal benefit.

“In the military ships that we have built, we have seen AI playing a larger role in the mission systems of shipyards”

Obviously, when the economic pie is seriously shrinking like we have now, it makes transformation extremely difficult as we will end up replacing people instead of employing more people and supporting more businesses. I think this realisation needs to be understood by government decision makers. They need to understand that all human beings will always fight to protect what they have. So in a declining environment we may end up reversing the gains we have made in the last 25 years of democracy. This environment is a fertile breeding ground for social unrest, which must be avoided at all costs.

Government will therefore have to allow the private sector to play a greater role in the economy, underpinned by a that allows for shared prosperity and equitable participation from both an employment and business point of view.



Knowledge and skills transfer must be imbedded in the culture of an organisation. It must be present in the training programmes and succession planning policies. It must be included in the individual's performance management agreements. It doesn't happen voluntarily. There are very few people who are truly passionate about being mentors and actually want to transfer skills and knowledge.

Given that people are living much longer these days, many people don't want to retire at age 65. So once again, it becomes a business imperative to ensure that knowledge and skills must be transferred. In fact, we have to ensure that knowledge becomes institutionalised and forms part of the intellectual property of the company.

This can be achieved through a proprietary business process mapping system. Once again business sustainability must be at the heart of every initiative. An organisation cannot be left vulnerable as a result of a skills or knowledge deficit or shortage.

Ship repair is always a much-needed service, especially in the busy port of Durban. How has that side of the business performed over the last 24 months?

The ship repair business has been largely subdued over the last few years. This is driven by a number of reasons. The offshore industry has not reached its former highs, despite a substantial improvement in the price of oil and gas. The docks in the ports are not efficient and very expensive.

This has deterred customers away from SA ports; however, this is set to change as Transnet has made a number of investments that will substantially improve the efficiency of the docks and they have promised to have a look at their pricing strategy. There is also a realisation by the private sector (shipyards/

subcontractors/suppliers) that they need to look at their pricing strategy—there is a move away from project profit maximisation towards attracting volumes.

The second issue is that docks, particularly in the Port of Durban, are not sufficiently big enough to accommodate larger ships.

The oil and gas sector is often a vibrant part of the industry; please tell me about your dry docking and related services?

Indeed, the oil and gas sector remains a key market for all shipbuilding and ship repair companies in SA. While as SA we don't have much oil and gas, we are used as a maintenance, repair and overhaul destination by many companies working in Nigeria, Ghana, Angola, Mozambique, etc. The Oil and Gas (market is not price sensitive. It is quality, health, safety and environmentally driven. That's why I feel that as South Africans we have missed out on many opportunities.

We view SHEQ—Safety, Health, Environmental and Quality as a compliance issue rather than creating SHEQ as a business process and culture within our business. If we can ingrain SHEQ into the DNA of our organisations and see it as a business opportunity and imperative, then we have the potential to become the Singapore of Africa when it comes to the . The Covid-19 virus has presented an opportunity as people don't necessarily want to travel out of Africa for their Maintenance, Repair and Operations (MRO) services. If we were ready as a nation and industry, people would be flocking here for services and support. Unfortunately, we have yet to build a reputation as an offshore services hub.

SAS has its own small dock, which is perfect to accommodate the small to medium size support vessels that work in the

"In LNG engines, CO₂ emission is reduced by 20-25% as compared to diesel engines"

offshore industry. We also have access to the Transnet National Ports Authority () dock in Durban. Having the necessary SHEQ ISO accreditations and backed up by a team of skilled technical managers and artisans, we certainly make a compelling case for the O and G industry to support us.

However, I think that O and G customers first need to learn to have confidence and trust in SA as a destination before they can start to trust individual companies. If Transnet can assist in promoting SA as a destination, we can make huge inroads into unlocking the full potential of this sector. I want to point out that Singapore is one of the most expensive cities in the world, yet the offshore oil and gas services hub is one of the busiest destinations in the world. Therefore, if price is not driving this industry, what are the critical success factors that make Singapore so attractive? We need to try and emulate this.

What is your outlook for the ship building sector in 2020, any new exciting contracts on the horizon that you are looking forward to?

We estimate that in SA there is potential for more than R12 billion in potential orders from clients like the SA Navy, Transnet, Department of Transport, Department of Environmental Affairs, etc. These are real projects at the different stages of procurement. In addition, there is a huge pipeline of opportunities coming out of Africa for various applications in the ports, inland waterways and mining industry.

The challenge, however, is whether these clients have sufficient budget and whether they can go through their procurement processes in a timely manner. Therefore, a national shipbuilding financing fund should be developed in order to assist clients who have immediate requirements for vessels but budget is not immediately available. This fund should be financed with money from international and local private sector lenders and ed rather than relying on government guarantees.

Secondly, I have often called for a coordinated fleet acquisitions strategy for SA government owned ships. We can't continue to have a situation where we have little to no work and then too much work and then run out of local capacity. This will enable us to create long term sustainable jobs and a guaranteed demand for the supply and subcontractor supply chain, which can then become more competitive.

For you, what does good leadership entail, and how do you get the best out of your people?

I think I'm a principles-based leader. By this I mean that I address issues based on principles. The Prasheen you meet today will be the same Prasheen you will meet next month. I don't react to situations. I have a moral code or a set of guiding principles by

which I make leadership decisions. I approach leadership matters in accordance with these moral codes and principles, which leads to consistency in decision making. Consistency leads to less volatility and hence more stakeholder trust. Some guiding principles are:

- ✦ My word is my honour
- ✦ Don't associate yourself with mediocrity – strive for excellence
- ✦ Work for the greater, long term good of the stakeholders – don't make expedient decisions
- ✦ Don't burn bridges. We all need each other at some point

The greater shipping sector has massive potential for job creation, how can we best leverage growth in this sector, and revitalise rail infrastructure around the major ports?

Much has been written and said about how to grow this industry and create millions of jobs and create opportunities for new entrants. However, these all remain talks and great ideas—they don't move toward the implementation phase. Operation Phakisa is a strategy to unlock the full potential of the industry.

However, it remains a government document that purely highlights what the government is going to do. It doesn't include private sector projects. My view is that the private sector should be the primary driver of Operation Phakisa, supported by government. The private sector should be the investor in assets and systems that can generate an economic return. The government should be investors in "public" Infrastructure and common user assets. Government is not good at running efficient businesses and systems.

The job of government should be purely to create an enabling policy and political environment for business to invest and create jobs. Government must also be a regulator to ensure that monopolies are not created and that there is no unfair competition.

Government must remove the bureaucracy, red tape and decision-making paralysis that inhibits the good ideas from being implemented. As said before, this needs to be underpinned by a social contract that ensures that there is an equitable sharing of the benefits that flow out of the maritime economy that leads to shared prosperity. The private sector has got to play their part as well. All the ideas are there. I can't say anything that hasn't been said before.

How is artificial intelligence (AI) and robotics playing a role in your business in 2020 and beyond? And how do you balance tech with jobs?

In the military ships that we have built, we have seen AI playing a larger role in the mission systems of shipyards. Within our business itself, we haven't yet identified opportunities for the implementation of AI. Shipbuilding and ship repair are still very much so called "grandfather" labour intensive industries. We are embracing the Fourth Industrial Revolution by capturing far more data than before, which we are using to enhance productivity and efficiency.

New IT systems have made it far easier to cooperate and collaborate with suppliers and subcontractors, thus reducing lead time and improving cost and quality. My current view is that the building and repair of ships are such bespoke projects that to create an algorithm at this stage will not really lead to any productivity gains.

SA Shipyards has many solid partnerships within the industry, how do you foster positive relationships between your mechanical partners?

We firmly believe in a cooperative and collaborative approach to projects. The old saying that the whole is greater than the sum of the parts could not be more relevant to shipbuilding and ship repair given that 70% of the value of most of our projects is spent on the subcontract and/or supply chain. The advent of collaborative tools underpinned by technology has certainly made it easier to execute projects with the supply chain much more efficiently. It has resulted in a lot more transparency and therefore built far more trust between the various project role players. Once trust is established, relationships become solid and there is no hurdle that cannot be overcome.

Beyond the use of technology, good old communication is key to successful project execution. If upfront we define the project goals and objectives via a clearly articulated project charter and a project blueprint, all stakeholders have a clear understanding of the road map and game plan. If they forget, especially if it's a large complex multi-year project, they can also refer back to the project charter and blueprint. These remain a critical communication tool in addition to project meetings and emails, etc.

What is your five-year plan for the SA Shipyards?

We have a five-year strategy that commenced late last year called "Project Phambili". The plan entails the following:

- Doubling the productive capacity of the shipyard through investment in new infrastructure
- Evolving into a primary systems integrator focused on marine engineering technology in order to create opportunities for SMME's to take over our current core competency of fabrication – creating shared prosperity
- Create the capacity to be able to dock the larger size vessels in the Port of Durban
- Diversify our order book in order to avoid over reliance on SA government work
- Expand the work of our foundation, SAS Cares, so that we can have a greater impact on society in terms of our foundations vision of "Being in business for the greater good".

Where do most of your orders come from, and how do you compete with the likes of South Korea on the global marketplace?

Most of our orders for shipbuilding continue to come from the SA government. This is something we are desperately trying to change but our industry is not entirely export ready as yet.



We need rentals to come down and we need our supply and subcontractor chain to become far more competitive. We also need to improve our project and contract management capabilities to a world-class standard. Interventions are underway to achieve this. We don't compete directly with the likes of South Korea, China, etc as we have identified niche markets in small to medium size vessels that are not really on the radar of these countries. Ship repair work comes from the ships calling in to the Port of Durban or neighbouring countries. As a general rule, ships don't specifically call on SA ports to do repairs. We are not considered a destination as yet.

What are some of the success stories where previously disadvantaged people were skilled at the SAS, and worked their way through the ranks?

SAS runs the largest artisan training, internship programme and in-service training programmes in the country. We have had PDI's who have come in as artisans and are now in management and senior management positions. This is in areas of project management, planning, quality control and quality assurance, fabrication, production management. The general manager of Shipbuilding started off his career as an artisan at SAS.

How large is demand for new vessels in the fishing industry, and what are the best strike vessels to protect our fragile fish stocks?

There is currently no demand for new shipbuilding orders emanating from SA. However, the government has developed a fishing vessel fleet recapitalisation strategy that talks about the acquisition of about 1 500 vessels of all sizes. Angola has a substantial fleet of vessels that are laid up and in serious need of refits and rehabilitation. So too has Mozambique. Currently indigenous people are not benefiting from the ocean endowment. These are being exploited by foreign countries thus exacerbating the triple challenges of poverty, inequality and unemployment in the country.

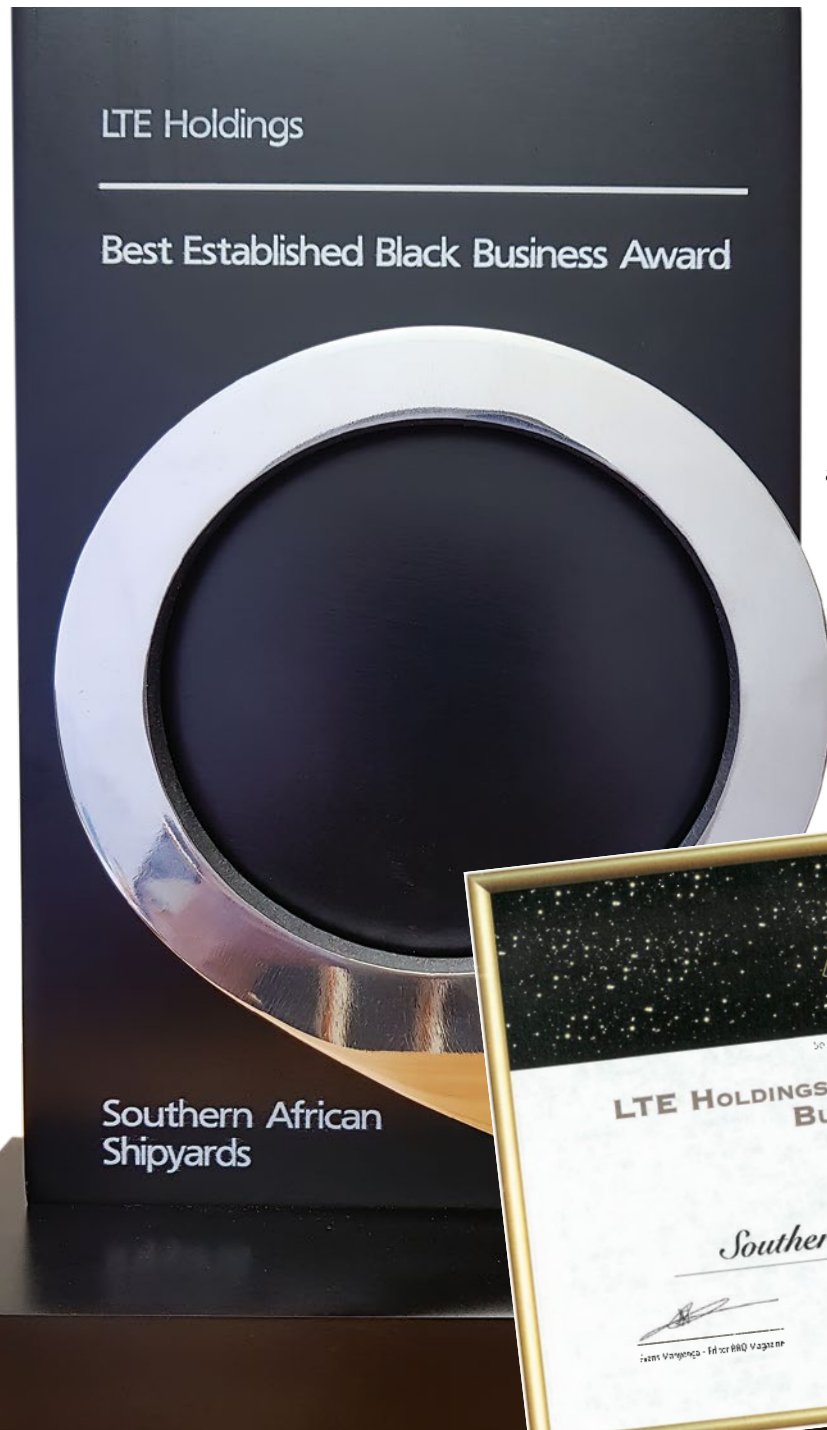
SA needs a "coast guard" type of organisation to police the waters to stop illegal fishing and poaching. The type of vessels must be simple vessels that are cheap to acquire, have low running costs and are easy to maintain. The high costs of operating and maintaining the current fleet of vessels has resulted in the Fisheries protection vessels not spending enough time at sea. Therefore, illegal fishing companies are exploiting this situation. Indigenously designed and built vessels that talk to SA conditions and skills sets are required. 🌐

Gregory Simpson



SA Shipyards honoured at BBQ awards

SA Shipyards recently took home the LTE Best Established Black Business Award at the BBQ Awards held at the Emperors Palace on 13 March 2020



Prasheen Maharaj, dynamic CEO of SA Shipyards (SAS) said: "This national recognition means a lot to us and assures us that we're on our way to being a global player in the maritime sector. We have big plans in the pipeline and look forward to making more waves as we continue to build the African marine legacy."

Now it's time to meet some of the black-owned SMME's that SAS is proud to subcontract/empower, in and around SA Shipyards, who have worked tirelessly to improve performance.





Charles Dlamini
STE Scaffolding

Charles Dlamini, head of STE Scaffolding

Charles S Dlamini is from Nongoma, 300 km north of Durban. He attended school at Nhlophenkulu Primary and Mshanelowesizwe High School and left KwaNongoma in 2002, travelling to Durban to look for a job, so that he could provide for his family back

home. His first scaffolding job in 2002 was for SGB where he started as a general worker, and that was the beginning of his passion and love for scaffolding.

What kind of work do you do?

Our core business is supplying and erecting excess scaffolding and staging, but we also hire and sell foam work and scaffolding.

Tell us about your relationship with SAS and how has it benefitted you?

Our first project with SAS was on Karlissa A, which according to us (STE Scaffolding) was a major success. This experience exposed STE Scaffolding SA to new challenges

We provided quick, effective and efficient solutions to meet SAS's deadlines, because working in the ship repair industry, everything is so fast paced, so one needs to be on top of your game at all times. SAS has definitely given us a platform to showcase our expertise in scaffolding, and we are confident that this is the beginning of a fruitful business relationship.

Tell us about your future plans?

We plan to build an empire over time, that will not only focus on the building industry but also cement our mark in the ship repair industry.

Creating more job opportunities to try and curb the high unemployment rate, and giving back to the community through bursaries for the less fortunate is also important to us.

I come from a poor background, so it is my dream to help as many people along the way as I possibly can, to make their tomorrow a better one through the work we plan on starting in Nongoma.





KJ Mkhize - Mkhize Marine Services

K J Mkhize, head of Mkhize Marine Services (PTY) Ltd
Tell us a bit about your background and how you came to acquire your skills?

I'm a very hardworking and open-minded young man who was born and bred in Empangeni and raised by a single parent. I started working at a very young age for different ship repair companies around Durban, which is how I got skilled and learnt a lot about my trade.

What kind of work do you do?

Mkhize Marine Services (PTY) Ltd is still a growing company based onsite at SA Shipyards. We specialise in sand blasting, painting, high pressure wash, tank cleaning and mechanical hot and cold works, etc.

Elaborate on your relationship with SA Shipyards and how it has benefited you?

We do ship repairs for SA Shipyards as their sub-contractor. They've supplied us with free offices, and we get a steady flow of work coming from SAS.

Tell us about your future plans?

I would like to expand my company and create more job opportunities for unemployed people, which was my aim when I started my company.

Linda Von Benecke, Head of Ujamaa Trading Enterprise (PTY) Ltd
Tell us about your background and how you acquired your relevant skills?

From a young age I have always been the type of person who wants to buck the trend and break every stereotype about women and their abilities. This always translated into me being called a rebel and a tomboy. This spirit within me was one of the key drivers that always pushed me into venturing into industries that are male dominated to prove to myself that I can indeed succeed in industries that women traditionally shy away from.

In the early part of my career, I was convinced that the being in business rather than working for a corporate would be the route for me to finally demonstrate to myself that indeed I can enter and make an impact in a male dominated field. For this reason I pursued academic studies geared towards entry into business, studying for a diploma in business management through Varsity College.

While studying business management I became aware of the opportunities and challenges faced by the maritime industry. During my research into this industry, I was surprised how few black South Africans were involved in this sector. I was even more surprised at the extremely low number of black women in the sector. I suppose the writing was on the wall and my "rebellious" nature arose immediately and I knew from that moment that the maritime industry was my life's calling. In no time, I made a decision to enrol for a course in maritime law. I thought this would be a good way to understand all aspects of the industry while also understanding the regulations around the industry.

True to my nature, I wanted to start from the bottom and serve my time while slogging in the trenches of the industry where seemingly nobody wants to work. I thought that the best way to do this was to work as a customs and clearance agent. I figured that this was the best way to uncover the so-called



Linda Von Benecke - Ujamaa Projects

dirty linen of the industry. I was fortunate to find a job with SA Seaways as a customs agent involved specifically with shipping commodities to China. That was a real baptism by fire and an eye opener into the inner workings of the shipping industry.

During my time at SA Seaways my hunger for knowledge about the maritime industry grew deeper. I literally read anything and everything that I could lay my hands on about the industry. It was at this point that I stumbled upon an article in Business Live describing how a company called SA Shipyards had secured a contract to build shipping vessels for the SA Navy.

I instinctively contacted the company and found the owner was an extremely open minded and approachable person. In no time both he and I were fairly convinced after meeting only once that, insofar as working together was concerned, we were simply a match made in heaven.

Through the guidance and mentorship of SA Shipyard's owner, I found myself involved in large-scale ship building projects. I put my heart and soul into the projects and tried to learn all that I could about the industry – and it paid off. SA Shipyards introduced me to a number of industry players and under their guidance and mentorship I decided to leave the nest and stand on my own. When they introduced me to Ian Serfontein, I knew it was time to leave SA Seaways and this is how my maritime company – Ujamaa – was born.

Ian Serfontein immediately took to me and appointed himself as my mentor in the maritime industry. I am forever grateful to Ian for taking the unilateral decision to appoint himself as my mentor. Today, I believe I have proven to myself that I can indeed buck the trend and play in this male dominated industry as a formidable force.

What work do you do?

The niche focus area that we specialise in at Ujamaa is integrated logistics support (ILS) within the ship building industry. Our responsibility is to acquire and transfer an optimised support system that is balanced, cost effective and sustainable for the SA Navy.

By means of supportability analysis (SA), we optimise functional support, leverage existing resources, and guide the system engineering (SE) process to quantify and lower life-cycle costs (LCC) and subsequently decrease the logistics footprint (demand for logistics). This makes the acquired hydrographic capability product system easier to support, optimises inherent supportability of the hydrographic capability product system to ensure that availability and supportability is in accordance with operational requirements.

We provide the ILS specialist with the enabling support services that are required to establish maintenance and support in the end user environment (SA Navy). That's why we are called Ujamaa (which means togetherness in Swahili) –we work together with our clients to ensure that we deliver the best quality vessels.

What are your future plans?

To be the biggest black female owned company in SA who offer integrated logistics support (ILS) in a male dominated industry. I want to have a big company like SA Shipyards that will create jobs and put the country's maritime sector on the map in the world.

Marcina Majid, head of SAS Cares



Marcina Majid heads up SAS Cares, which is a subsidiary of SA Shipyards. SAS Cares is a skills development, exposure and experience based non-profit organisation.

The organisation was founded on the premise that skills and education go hand in hand when developing individuals and communities. "We want to upskill people and also expose people to the possibilities of careers in the maritime industry," explained Marcina. "It is about getting everybody on the same

level." SAS Cares is proudly "in business for the greater good", which is the motto of the CSI wing.

Marcina's journey to establish the foundation has been varied. "After I graduated, I was employed by a firm of chartered accountants. I was very fortunate in that this was at the time when the black economic empowerment (BEE) codes came out and I started a BEE verification company."

Marcina says that she was in the privileged position of having her children and being able to run the company at the same time. However, she then had a two-year hiatus where she took time out of her working life and reflected on what she really wanted to do.

"We want to upskill people and also expose people to the possibilities of careers in the maritime industry"

She explains further, "It just so happened that I got into the health and fitness industry. I had two gyms that ran consecutively for about six years. During that time, I discovered my love for women's empowerment because I worked first-hand with women. I got to understand the needs and issues in their communities and in their lives as well as the socio-economic impact that they have in society or the lack thereof"

These experiences gave Marcina insight into what she wished to accomplish in her own life. Unfortunately, a hip operation put everything on hold, and she had to stop working in the health and fitness industry.

Consequently, Marcina made the decision to work at SA Shipyards, which at that time had become part of the family business. "That is when I started working with my husband, Prasheen Maharaj, CEO of SA Shipyards. We worked side by side in making a success of the business, but I always felt that I worked better when working on CSI initiatives and playing a supporting role in that regard. From that insight arose SAS Cares and I feel that my purpose is to help others." ❁



Built in Nautic Africa's shipyard in Paarden Eiland, Cape Town, the multi-purpose patrol vessel Khajan was destined for a Nigerian owner, indicative of the demand for South African-built vessels for the offshore oil and gas sector in West Africa. Among its portfolio of newbuildings, the other Cape Town-based shipyard, Damen, has a number of similar vessels for that sector. *Photograph : Brian Ingpen*

Ingpen on the Ocean

If the quest for more employment in the maritime industry is to have any credence, it's time to phase in a cabotage regime in South Africa. While earning good revenue from moving the country's cargoes, most shipping companies trading to South Africa or along the coast do not employ its officers and ratings, and, with some laudable exceptions, neither do they train local cadets.





If the quest for more employment in the maritime industry is to have any credence, it's time to phase in a cabotage regime in South Africa. While earning good revenue from moving the country's cargoes, most shipping companies trading to South Africa or along the coast do not employ its officers and ratings, and, with some laudable exceptions, neither do they train local cadets.

It is ironic that most coastal petroleum product cargoes or coastal container shipments are moved in foreign-flagged vessels, with the occasional exception of a South African-registered ship operating on the coastal tanker route.

Similarly, some vessels on charter to quasi-government organisations are foreign-flagged or do not have full complements of South African crews.

As it is imperative to widen the maritime base from which to work, the complex process to introduce a cabotage regime will take time and needs very careful planning and management.

Phase one of cabotage implementation should involve the enticement of shipping companies to domicile in South Africa by offering attractive tax and other incentives. A similar programme in Canada drew several significant maritime players to that country's shores, and with the establishment of shipping headquarters in Canadian ports, came a range of other maritime expertise, including financiers, insurers and brokers. Similarly, on the back of their growing shipping registers, Cyprus, Gibraltar and Malta have developed as maritime centres of note, while the lodestars of all recent developments in the shipping world

It is ironic that most coastal petroleum product cargoes or coastal container shipments are moved in foreign-flagged vessels

—Singapore and Dubai—have become vibrant, self-sustaining maritime hubs.

South Africa, with its independent judicial system, its superior banking system, insurance and generally sound commercial sector, its location on a vital east-west trade route, and with a time zone similar to those in Europe – and central between Asia and the Americas—is well-endowed to become a regional and even continental maritime hub. The already busy container and bulk trades enhance this view.

Simultaneous with moves to attract additional shipping enterprises to these shores, it is imperative to prepare prospective seafarers, artisans and shore-based personnel for the range of careers that a revitalised and expanded shipping industry can offer.

However, significant headwinds to maritime training have arisen. The situation at some maritime institutions, especially where few lecturers with Class 1 qualifications are among the staff, and other disturbing trends has led to the decline in quality training. Indeed, the country has been allowed to drift towards the dangerous position of being excluded from the international "White List" in terms of seafarers' training and qualifications. Such an event will render South African qualifications void and will deprive hundreds of their livelihoods.

To remedy this situation, an urgent review of local maritime education and training is essential. Such a review should extend beyond the various curricula to the training and appointment of teaching staff—a seriously neglected component of maritime education—and the governance of maritime training or educational institutions. Most of these form part of existing schools, colleges or universities whose governing structures are often unfamiliar with—and therefore out of kilter with—the requirements of international shipping.

Some lack vision to expand the courses and/or facilities commensurate with trends in global and local shipping and in general maritime practice; others lack financial expertise to manage funds – largely shipping industry grants—that need separate, maritime-focused, far-sighted and creative governance and sound investment strategies.

Above all, educational and training institutions need to recognise that, for young South Africans, new sea-going career opportunities possibilities are opening up. Over the next few

years, the country will experience a remarkable growth in cruise ship calls. A contributing factor is the scare that the corona virus has caused in the international travel industry; hence it could lead to cruise operators shunning Asian ports for a while, switching instead to African and southern African destinations.

The 2019-2020 season saw two cruise ships based in local waters and dozens of others calling at South African ports. The 2020-2021 season promises even more calls with the prospect of additional ships based here. This augurs well for those wishing to find employment in the cruise sector, not only as navigating and engineering officers, but also in a wide variety of other occupations such as plumbers, electricians, beauticians, stewards, bar tenders, galley staff and others.

In addition, local job seekers in the cruise industry—specially those with sought-after qualifications, high levels of initiative and work ethic—can apply to the international operators for employment. Those with similar qualities could also excel in the burgeoning superyacht industry based mainly in the Mediterranean and Caribbean Seas.

Training for these sectors could become worthwhile and necessary.

Until a useful and diverse locally-flagged fleet and pool of officers and ratings have been established – and it will take time to achieve these objectives—a diminished and selective form of cabotage could be applied initially, widening gradually as the South African maritime sector grows to meet the exciting challenges ahead.

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It will be impossible to move all cargoes in South African-owned or flagged ships. However, certain trades (or percentages of cargo volumes shipped) could be targeted to form the basis of nurturing South African maritime experience and increasing the number of qualified seafarers.

Apart from regulations that export cargoes should be carried CIF (cost of insurance and freight) so that the South African shipper determines which vessel carries the cargo, and FOB

Ashore, some sectors too have urgent training needs for specialised skills and careers

(free on board) for imported crude oil, crewing requirements for ships carrying portions of clearly defined cargoes such as iron ore, coal and bulk manganese exports, crude oil exports, and coastal cargoes should include that some South African officers are aboard—e.g. cadets, a training officer and some other local officers. Gradually, the requirements should be expanded.

Given the current levels of interest in prospecting for oil and gas off the southern African coast, the offshore sector may hold promise of expansion of shipping, and with it, the possible growth of sea-going employment. The rider, of course, is that apart from a large gasfield off Mozambique, no confirmed offshore energy fields have been announced, although positive news could come at any time.

As the country grapples with the energy crisis, the development of offshore wind farms remains a long-term

option, requiring specialised craft to install and maintain wind turbines constructed in the sea. This and the rest of the offshore sector that may develop have significant potential for employment for which proper training programmes—including courses for certificates of competency for coastal navigation—need to be in place.

Ashore, some sectors too have urgent training needs for specialised skills and careers. These include the various trades associated with shipbuilding, an industry that, given the need for specialised vessels along the entire African coast, is bound to expand.

If the West African oil industry begins to boom, and if local ports exert more energy to promote themselves as catalysts for other industries, and if capital investment is made in new port facilities such as a large drydock, ship repair will expand as well.

The replacement and maintenance of ageing port infrastructure such as shiploaders, conveyor systems and cranes should also elicit the need for precision welders, heavy-current electricians, shipwrights, fitters and others—and for which training will be needed. The so-called “softer-skills”—punctuality, work ethic, teamwork, integrity and others—remain essential components of any training programme.

Crucial to any successful advance in local shipping is a more relaxed, and a more attractive legislative framework within which the maritime industry can operate.

In addition, the ports need to shift their focus to their catalytic role that will also create significantly greater port usage and revenue for themselves.

If those keel-plates to the shipping industry can be laid firmly, and if proper, well-planned and coordinated maritime training can occur, the wider shipping industry—especially shipowning—can achieve similar success to that experienced in its heyday. ⚙

Brian Ingpen, Maritime expert



HISTORY MADE AS SA AGULHAS 'MANNED' BY ALL-FEMALE CREW



► **An all-female crew made history when they set off on a voyage to Antarctica in December 2019.**

It was the first time that an all-women crew was deliberately recruited to 'man' the SA Agulhas - the country's only dedicated cadet training vessel.

The crew of 22 women – consisting of two training officers and 20 young female cadets – were set to return from their voyage to Antarctica at the end of March 2020.

The deliberate selection of women crew members was done in support of the advancement of gender equality in the maritime sector, in line with the International Maritime Organisation (IMO)'s Women in Maritime Programme. According to the IMO, women still represent only 2% of the world's 1.2 million seafarers.

The South African International Maritime Institute (SAIMI) was instrumental in the success of the trip by recruiting and providing the female crew members. The National Cadet Programme (NCP) is managed by SAIMI and has a strong focus on Women in the maritime sector, with female cadets making up 26% of the current cohort of cadets.

The all-female crew onboard the Agulhas were accompanied by scientists from the Indian National Centre for Antarctic Ocean Research (ICAOR) who conducted research during the trip. The cadets received extensive and practical training on board the Agulhas, which is owned and operated by the South African Maritime Safety Authority (SAMSA).

Training officer, Cher Klein, was excited for the task at hand and had the following to say before she left on the historical voyage to Antarctica: "Firstly, even though I have been to many places during my sea career, this will be my first voyage to Antarctica.

Secondly, this trip will comprise of only female cadets and it is an honour to take command of their training. I will be entrusted not only in training them in nautical studies and seamanship skills, but I will also be passing on my years of knowledge and experience that I gained through my seagoing career," said Klein.



The South African Maritime Training Authority (SAMTRA) and Marine Crew Services (MCS) are SAIMI's official training partners for the National Cadet Programme.

Funding for the National Cadet Programme is provided by the Department of Higher Education and Training (DHET) through the National Skills Fund (NSF). SAIMI, is hosted at Nelson Mandela University and provides support to all national education institutions. SAIMI serves South Africa and the African continent by promoting skills development, education, training, research and innovation that supports the growth of the blue economy.



The importance of internationalising the maritime curriculum

Moving towards relevance, responsiveness and resilience through the Internationalisation of the Curriculum, for more varied introduction into the Maritime Industry

Internationalisation of the curriculum is one of the six drivers of the Durban University of Technology's Strategic Plan (2015 to 2020). For DUT, internationalisation of the curriculum involves the "incorporation of international dimensions into the activities and functioning of the university so as to build global citizens; and embedding comprehensive internationalisation across the university so as to benefit the university and all its staff and students".

To ensure that graduates are "relevant, responsive and resilient", universities in many parts of the world have been involved in internationalising the curriculum for decades. Today, curriculum design goes far beyond disciplinary content and compliance with international standards; but also incorporates the employability and success of graduates, and supporting pedagogical approaches.

The importance of internationalising the maritime curriculum cannot be over-emphasised, as graduates will be exposed to a globalised work environment, whether they are pursuing a career at sea or ashore. Nautical Studies graduates will work onboard vessels manned with multi-national, -lingual and -cultural crews; and interact with port personnel across the globe. Locally, Shipping and Logistics graduates will work for international shipping companies, liaise with clients around the world, interact with foreign crews, or be exposed to projects in neighbouring countries.

Internationalisation of the curriculum can take many forms and comprise varied activities to best suit the discipline. Since 2012, the Department of Maritime Studies at DUT has been involved in a number of activities to internationalise the curriculum. These include the attendance of international conferences, mobility of students and staff, embedding internationalisation in the curriculum and international collaboration.

Attendance of International Conferences: During the past five years, staff members have attended and participated in several international conferences on maritime education and training. In addition the DUT hosted the 23rd International Maritime Lecturers Association Conference in 2015. Through participation at these conferences, staff are exposed to best practices in maritime education and training which may thereafter, be incorporated into the teaching, learning and

assessment practices at the department. Such practice enables responsiveness and relevance in our programmes.

Mobility of Staff and Students in 2016: The department's shore-based lecturer had the opportunity to attend a three week workshop in Shanghai. Twenty participants from across the world were exposed to changing global trends in technology, operation, management, administration, policy, and economy relating to the maritime industry. The programme also included cultural exchanges. These trends will be incorporated into the Diploma in Shipping and Logistics.

The department actively supports the development of students as global learners. Seven students participated in a two week Winter School in Fuzhou, Fujian Province. These students were amongst the top achievers in Mandarin, a non-credit bearing module offered by the Confucius Institute at DUT. The programme included the enhancement of Mandarin and visits to natural, historic and cultural sites in Fuzhou.

The top achieving student across the five levels of study attended a four week International Summer School, hosted by the Shanghai Maritime University. During this period, students were engaged in Chinese culture, particularly maritime history and ethos.

All expenses in China were sponsored by the Confucius Institute and Shanghai Maritime University, while the Department of Maritime Studies and the Executive Dean of the Faculty of Applied Sciences sponsored international flights. The department intends supporting these programmes in the future.

Embedding internationalisation in the curriculum: Since not all students will have the opportunity to travel abroad while studying at the university, internationalisation is embedded in core and elective modules. Global case studies and comparison of national and international practice is included in Core Modules, whilst, in accordance with international best practice, all DUT undergraduate programmes include General Education Modules. These modules include elements of internationalisation and students are required to choose a total of six modules from electives across the University curriculum.

To further bolster internationalisation, Maritime Studies will include Mandarin, French and Portuguese as part of the department's general education elective in 2018. These modules will include basic language skills, history, culture and

related topics of the countries where the language is spoken. It is envisaged that the three foreign languages will be further developed by the General Education Unit at intermediate and advanced levels.

International Collaboration: There has been two-way movement of staff between DUT and the Shanghai Maritime University since the signing of the MOU between the two institutions in December 2015. The MOU has also resulted in the inclusion of DUT students in the International Summer School in Shanghai.

A second international collaborative project that the department is involved in is the Virtual Reality Pedagogy Project. The Warsash Maritime Academy (Southampton Solent University) is the lead university in the project. Other participants include Dalian Maritime University, Shanghai Maritime University, Jimei University and Memorial University – Newfoundland. The aim of the project is to develop a good practice approach to synthetic teaching and learning using Virtual Reality (VR) based technology that will support education in the commercial maritime domain and deliver cost-effective immersive training solutions to enhance student engagement.

In January 2016, DUT's Department of Maritime Studies became the first department in South Africa to offer maritime related undergraduate programmes. These programmes are aligned to the new Higher Education Qualification sub-

Framework, accredited by the Council on Higher Education, registered by the South African Qualifications Authority and funded by the Department of Higher Education and Training.

Despite the rigorous quality assurance process related to new programme accreditation, criticism from certain sectors of the maritime industry on the three year Diploma in Nautical Studies, still remains. Arguments appear to be based on a model employed more than thirty years ago. A model that worked when South Africa had ships on its register. However, that environment has changed significantly and DUT graduates now depend on international shipowners for cadet training berths and future employment.

Globally, maritime education and training has evolved beyond the disciplinary content of DUT's former ND: Maritime Studies. Today's seafarers are required to have technical, people and conceptual skills. To equip students with such skills, it is essential for educational programmes to incorporate student-centered teaching, learning and assessment practices; graduate attributes; general education and internationalisation into the curriculum.

As an emerging maritime education department, it is imperative that we focus on quality graduates. Graduates who are relevant, responsive and resilient and are equipped to excel in the dynamic, global maritime arena. ✿

DUT





Why managing ocean acidification is crucial for South Africa

The southern tip of Africa is washed by two oceans: the Indian and Atlantic oceans. This should allow South Africa to benefit economically from various activities through developing the ocean economy. Fisheries, tourism and maritime activities are some of the sectors that can underpin the economy.

There is enormous potential for countries with an ocean economy. There are a growing number of states in the Indian Ocean that are pursuing its potential benefits. Mauritius and the Seychelles are among the most prominent.

Mauritius' initial focus is on the exploration of the seabed for hydrocarbons and minerals, as well as fishing, seafood processing, aquaculture and marine renewable energies. The Seychelles is exploring the blue economy as a model for sustainable development.

For both these small island states, this new economy is showing promise. But it is at the very beginning of implementation. There is also the risk that not managing it carefully and sustainably could result in failure to improve the well-being of society and further degrade natural resources.

The South African government, through the Oceans Laboratory of Operation Phakisa, is trying to fast-track the implementation of solutions to critical development issues. This initiative focuses on unlocking the economic potential of South Africa's oceans. Its focus areas include the strengthening of the marine transport and manufacturing sectors, aquaculture and marine tourism. But one of the major challenges to its success is ocean acidification. This is the reduction of pH levels in the ocean over an extended period of time. It is a growing environmental concern linked to climate change. Ocean acidification is caused by the uptake of carbon dioxide from the atmosphere.

Oceans under threat

Ocean acidification is a global process with local impact. The potential effect has been studied across the world. More acidic seawater has a dramatic effect on species that deposit calcium as part of their life-cycle. Some of these include oysters, clams, sea urchins, shallow-water corals, deep-sea corals and calcareous plankton.

The entire food system may be at risk with shelled organisms at risk. More than a billion people worldwide rely on food from the ocean as their primary source of protein. Many jobs and economies around the world also depend on fish and shellfish.

Other problems resulting from ocean acidification include loss of biodiversity and major losses in fisheries and mariculture production (the farming of marine life for food). These threaten food security, coastal defences, tourism and recreational activities. The impact is more prominent in developing countries due to their greater dependence on living marine resources from fisheries and mariculture.

Based on scientific data and projections of change, ocean acidification is a serious threat to South Africa's plans to develop the ocean economy. This should be acknowledged and strategies should be designed to deal with it.

There is a need for urgent action at all levels of government as well as at an international level. The international community can encourage national and local governments to intensify efforts further to mitigate carbon dioxide emissions. This will reduce the impact of both climate change and ocean acidification.

Helpful policies

There are also several governance strategies that can be used to deal with ocean acidification. It's important to promote and strengthen policies and legislation for coastal and ocean



management to prevent further degradation of ecosystems. There are governance mechanisms that allow for adaptive management of effects from ocean acidification in South Africa. But the recognition of the seriousness of ocean acidification remains limited.

One way to improve adaptation options and prevent further degradation is to restore and protect coastal and marine ecosystems, according to an article in the conversation.

The economic impact of ocean acidification on tourism may include loss of profits and employment. It can also lead to loss of tourist infrastructure due to decreased storm protection from reefs. This needs to be considered in planning activities that form part of the ocean economy.

Equally, South Africa's ocean economy is emphasising the growth and development of the mariculture industry. Ocean acidification is certain to have an impact on small-scale fisheries and mariculture.

Knowledge, expertise and capacity are also not globally distributed and it's vital to promote and build local scientific capacity. Research and technology that requires international collaboration is also important.

A warning system is also crucial. It could forecast and warn communities of potential problems. For example, the Global Ocean Acidification Observing Network is a collaborative international approach to document the status and progress of ocean acidification in open-ocean, coastal and estuarine environments.

There must be a concerted effort to explain ocean acidification and the threat it poses to the public. Special attention should be given to people with influence, national administrations and NGOs. In many developed countries, the importance of ocean acidification is increasingly being recognised and its mitigation promoted. The same is not yet true for developing nations. 🌐

Louis Celliers

Principal Scientist, Council for Scientific and Industrial Research



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Piracy policing in the Gulf of Guinea needs makeover

The Bonita had been anchored off Benin for several days, waiting for a berth in the port of Cotonou in 2019, the crew had a traumatic awakening. Armed men boarded the vessel and kidnapped nine crew members. Only two days later, four seafarers were kidnapped from the Elka Aristotle, which was anchored off Lomé in neighbouring Togo.

The Bonita had been anchored off Benin for several days, waiting for a berth in the port of Cotonou. On November 2, 2019 the crew had a traumatic awakening. Armed men boarded the vessel and kidnapped nine crew members. Only two days later, four seafarers were kidnapped from the Elka Aristotle, which was anchored off Lomé in neighbouring Togo.

Unfortunately, these were not the only attacks off the coast of West Africa in which seafarers were kidnapped. Nevertheless, the patterns are changing, with gradual signs of improvement. In addition, attacker success rates in the region have declined from 80% over ten years ago to just under 50% in 2018.

Another change has been the fact that attacks have become more visible. This is at least partly due to increased cooperation among countries in West and Central Africa. They adopted the Yaoundé Code of Conduct in 2013, aimed at fighting illicit activities at sea. Implementation has been slow, yet navies and maritime agencies in the region have become much more active in collecting relevant information.

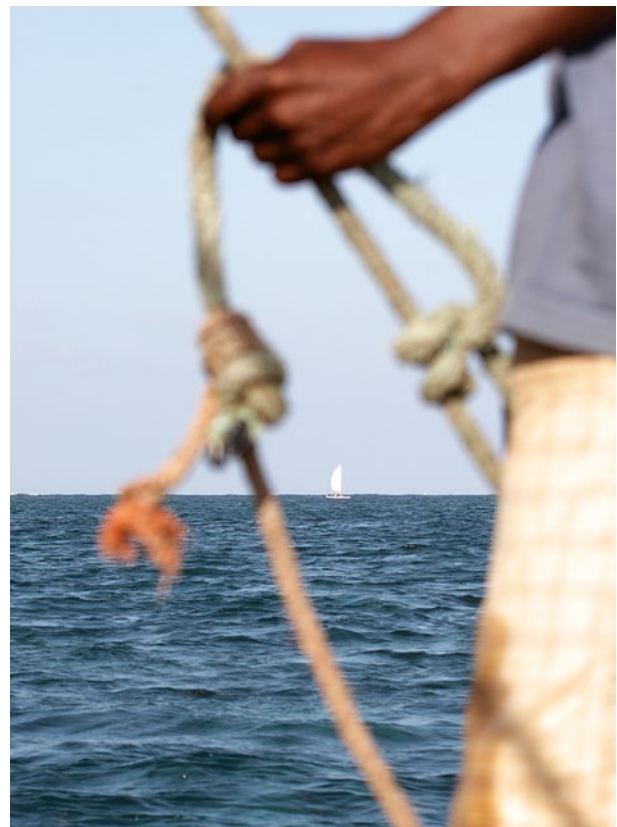
Based on my research into maritime security in the region, I have become increasingly convinced that sustainable improvements are impossible when the focus is solely on piracy. In many cases, kidnappings of seafarers are an extension of land-based problems – such as fuel smuggling and illegal migration – and have to be tackled as such.

In my view, demands by the shipping industry for international navies to become more involved in counter-piracy operations won't lead to lasting solutions. These can only be successful if they are designed based on regional requirements and take on board regional initiatives aimed at tackling a multiplicity of social problems, rather than just one.

Links to crime on land

High-profile attacks—such as the recent kidnappings—are generally carried out by criminal groups based in Nigeria's Niger Delta region.

Kidnappings on land have been a long-standing problem for security forces there. Collecting ransoms has become a lucrative business model which requires foot soldiers, access to camps for holding hostages, and negotiators with the necessary skills. All these things can be found in the Niger



Delta, where the lines between armed insurgents and organised criminals are often fluid.

For countries like Benin, Togo and Cameroon where Nigeria-based criminals have taken hostages from merchant ships this year, the situation is a concern. Ports in these countries are crucial for economic growth and development in terms of customs revenues. For example, more than 40% of Benin's government revenues are collected in Cotonou's port. Ensuring adequate security for maritime trade is therefore a strategic concern in Benin. Hence the government's quick announcement of improved security measures for ships anchoring off Cotonou.



Most kidnappings still take place off the Nigerian coastline. The established pattern is one of hostages being taken and then released several weeks later for a ransom payment. This is according to analysis done by the Danish security intelligence company Risk Intelligence.

The fact that there are more cases off the Nigerian coastline points to my contention that this criminal behaviour is closely linked to land-based criminal activities – such as fuel smuggling – which is widespread in the area.

When such incidents are analysed through a narrow piracy lens, efforts of navies and law enforcement agencies – which are already suffering from a lack of resources – are likely to be misguided. The narrow view might mistakenly focus, for example, on the capacity to respond at sea.

The problem of wrong analyses is made worse by international actors, for example the US and European governments, the European Union or international organisations. They often put a strong emphasis on combating piracy and provide financial or technical assistance to partners in West and Central Africa. But they rarely focus on illegal fishing, fuel smuggling or illegal migration. All these activities have been linked to attacks against merchant ships or fishing vessels.

Broader understanding needed

Fighting piracy in the Gulf of Guinea requires a broad understanding of maritime security. Acknowledging links between, for example, piracy and illegal fishing is vital for

regional governments and external partners. On the most basic level, illegal fishing destroys fishers' livelihoods, forcing some into piracy simply to earn an income.

A good example is the EU's contradictory stance. On the one hand, it provides €29 million to support West Africa's Integrated Maritime Security project. On the other hand, EU countries contribute to the depletion of fish stocks across West Africa.

Countries around the Gulf of Guinea also have to increase their efforts. Laws regulating maritime operations are often deliberately opaque, disguising a lack of enforcement capacity and enabling corruption. Increasing transparency would highlight shortcomings and problems caused by insecurity at sea – somewhat embarrassing for any government, but necessary to address these issues.

Recent efforts in Nigeria, including a large conference in October that led to the Abuja Declaration, are a step in the right direction.

The declaration highlighted shortcomings of countries around the Gulf of Guinea related to ocean governance and law enforcement at sea. Concrete actions have to follow.

More transparency could also help to improve relationships between the maritime industry and security agencies in the region. Lack of trust and limited cooperation have often hindered thorough investigations, feeding a simple narrative of piracy without a broader look at other maritime security challenges. ❁

Dirk Siebels, PhD (Maritime Security), University of Greenwich

The tipping points: Digital acceleration and climate change

Evolving technologies have always played a critical role in how government, industry and the public interact to form functioning societies

However, the Technology Outlook 2030 is being released at a time when the threat of climate change is far-reaching. This will have a profound effect on every aspect of our world, including shipping."

Sames notes that as an essential part of the global economy, shipping has a unique role to play in helping manage these challenges. "In addition to reducing its own contributions to greenhouse gases, the maritime industry is in a strong position to leverage its expertise to help access resources from the ocean space."

A cross-industry challenge

Sames is convinced that meeting climate change challenges will require multinational, cross-industry cooperation. "For example, in order to embrace new carbon-neutral fuels and electrification, the maritime industry must work with relevant authorities and energy companies to ensure fuel availability and access to the appropriate infrastructure where renewable energy such as wind, hydro or solar is available," according to Pierre Sames, Senior Vice President, DNV GL Group Technology and Research Director.

"A more holistic approach to the existing energy value chain, enabled by new sensor and communication technologies, would allow regulators to track net-carbon gains and losses over

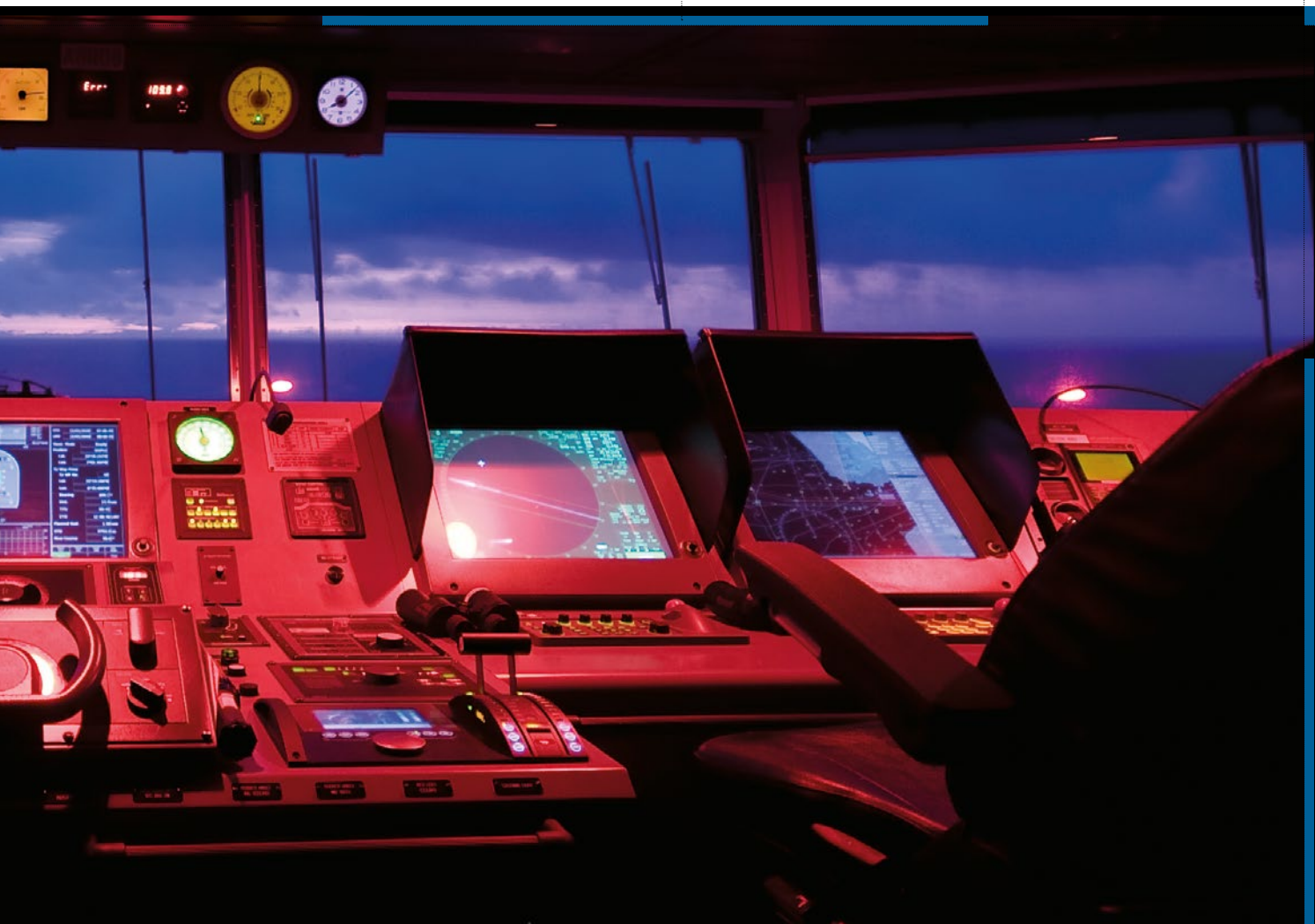
multiple industries." The Technology Outlook 2030 focuses on the acceleration of technology development and how digitalization will transform the industry on a global scale. "From automation to artificial intelligence, robotics to advanced algorithms, these new technologies will be woven into our lives and business models as never before."

A double-edged sword

While these technologies may help address some of the world's most pressing challenges, the report also acknowledges that new technologies can create new risks. "Just as the introduction of the internal combustion engine revolutionized society in the early 20th century, it also created environmental challenges. New technologies are a double-edged sword," he says. "While they can enhance our well-being, uncontrolled and poorly governed technologies can also cause intentional and unintentional harm."

Many of these new technologies have already shaped how the shipping industry functions. As more owners embrace automated systems, analytics for performance management based on sensor data, low-carbon solutions and high-speed Internet to improve environmental and business performance, they become more vulnerable to software malfunctions, cyber attacks and data breaches.

"These anticipated changes will shape DNV GL's service offering, especially related to the assurance of digital assets such



Digitalization holds great promise for the transport sector where it helps track cargo and vehicles, coordinate means of transport, optimize capacity utilization and speed up deliveries

as sensors, communication networks, algorithms, digital twins, digital ledgers, tokens and, most importantly, control systems for safety-critical functions," says Sames. "By leveraging emerging technologies to provide new and enhanced assurance services and addressing the related new and emerging risks, DNV GL aims to support customers seeking to understand and leverage new technologies to create value and manage their risks."

The new market reality

For the maritime industry, growing public and regulatory pressure to decarbonize will encourage more owners to

embrace renewable fuels. At the same time, the digitalization of the industry will create both opportunity and risk. Some industry players may explore performance-based contracts or digital business models based on additive manufacturing, while others will seek value in sensor-based fleet services, condition-based monitoring and autonomous shipping. "To advance into the future, the industry should also consider working seamlessly with ports, cargo owners and other industries to optimize logistics and apply its ocean space expertise to access the resources required to support the world's growing population."

Collective action to common challenges

The Technology Outlook 2030 provides a structured and comprehensive view on the trends and technologies that will change our world in the next ten years. "While we may not be able to predict precisely how and when these changes will take place, the impacts of both the digital acceleration and climate change are not selective. No industry or individual will be unaffected," says Sames. "Our ability to capitalize on opportunities and manage risk in our changing world will require big ideas and collective action." 🌐

*DNV GL Expertm Pierre C Sames,
Group Technology & Research Director*



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Rebranded Namdock's strength is local: 'moored' in ship repair and engineering expertise on the West coast of Africa

For the past 50 years, offshore West Africa has been a target for oil exploration, with Angola and Nigeria being major oil producers. However, Namibia has a remarkable asset in the natural harbour of Walvis Bay.

In 2006, the Namibian government, in collaboration with private enterprise, decided to capitalise fully on this asset by founding a ship repair facility. This company rapidly became the repair partner of choice for the West African coastline.

Namdock, or EBH Namibia as it was formerly known, was founded in 2006 as a joint venture with the Namibian government, represented by the Namibian Ports Authority (NAMPORT). Latterly, a shareholding was taken by a South African company. In 2018, the South African company relinquished all shareholding in the former EBH Namibia, when the foreign shareholding was transferred to the EBH Consortium, a group comprised of prominent Namibian business leaders. As a result, the organisation became truly Namibian, with its shareholding held entirely by NAMPORT, and the EBH Consortium.

To reflect this new reality, it was decided to rebrand the company as Namdock, a name that truly reflects its wholly Namibian composition. With effect from 31 August 2019, EBH Namibia therefore changed its name to the 'Namibia Drydock and Ship Repair Company Pty Ltd' ('Namdock').

Despite a drop in the global oil price and its negative knock-on effect on the offshore repair industry for some four years between 2015 and 2019, with the recent resurgence of the global oil price, Namdock and its three floating docks are now

busier than ever. However, there is more to Namdock's success than a mere economic recovery. The four lean years compelled the company to scrutinise its business practices very closely, and on occasions to embark on challenging efficiency and restructuring exercises.

"Though that period was operationally and strategically very tough, it has also served us well. Namdock is now a more efficient, finely honed leaner organisation—with sharper and more refined skills and capabilities—placing us in a strategically very strong position to service the offshore support and the global shipping industry," explains Namdock Acting CEO Heritha Nankole Muyoba.

As a nation, Namibia is fiercely proud of its independence, and is also strongly focused on driving economic self-sufficiency and industrialisation. "We have therefore adopted the slogan 'Our Strength Is Local' which not only encapsulates our operational ethos of excellence, service and efficiency; but also our inherently strong relationship with our people and pride in our country," Nankole Muyoba elaborates.

As such, Namdock enjoys the full support of its majority shareholder, the Namibian Ports Authority and, by extension, that of the Namibian government. By reciprocation, Namdock fully supports Namibia's Vision 2030 and the country's sustained industrialisation drive.



“Namdock fully supports Namibia’s Vision 2030 and the country’s sustained industrialisation drive”

Quintin Simon, Namdock Marketing Manager

The next major advantage that Namdock possesses is that it is situated in Namibia. This country stands out on the African continent as having a very stable political dispensation, first-rate and efficiently functioning infrastructure and a customs and logistics authority which is user-friendly, corruption-free and swift in operation.

It is reported that while there are many ship repair yards along the West Coast of Africa, in the main, should a major component be needed, importing such an item and having it delivered to the dockside at one of these yards could take a month or two.

By contrast, Namdock, with the support of the country’s enlightened customs and logistics system, is able to have similar components on the dockside within 3 to 4 days.

“A further strength we have is our highly advanced project management skills. To give an example, when a client needed the damaged bow section of an oil tanker replaced, we sourced the original drawings from the shipyard of origin; and before the tanker arrived, we had pre-fabricated a complete replacement bow. The tanker duly docked at Walvis Bay, and the new bow section was rapidly fitted. The tanker returned to service with a minimum delay thereafter.

We have also recently completed the repair of a naval floating dock from neighbouring Angola, and also the reactivation of a semi-submersible drilling unit,” Nankole Muyoba adds.

“Another competitive advantage that we enjoy is the support of a highly skilled and experienced workforce. Many of our employees have decades of experience and a vast reservoir of technical expertise,” says Namdock Marketing Manager Quintin Simon.

The company is also constantly upgrading and improving the skills of its people through training, including sending staff members overseas for trade exchange programmes and in-depth technical training, for example on welding.

“No matter what type of maritime—or land based engineering project we have to undertake, we have internationally—certified and skilled staff, which can complete projects both on time and within budget to the required global standards,” Simon asserts.

Namdock is also able to offer its clients the synergistic support of other internationally-renowned OEMs (original equipment manufacturers) offering complementary services alongside Namdock. “For example, Kongsberg, Diesel Power International and MAN Energy all have an operational presence right here in Walvis Bay, and we work with them closely,” explains Simon.

“And while our strength might be local, we are also an internationally competitive company, and we do repair projects not only for clients from neighbouring countries but for many global shipping companies,” he continues.

Today, with three fully operating and well-maintained floating dry docks, Namdock has the capability to repair and maintain vessels up to a size that would include approximately 70% of the global shipping fleet. In addition, Namdock has reduced its average turnaround time for ship repairs from 16 days to an extremely impressive 12 day average.

“We are always seeking to increase our efficiencies and effectiveness, either by improving on the technologies we use, or by upgrading our infrastructure and developing our facilities. We are constantly searching for ways to provide our clients with improved service delivery. Importantly, with our infrastructure, such as our three floating dry docks, and our supporting workshops, Namdock places great emphasis on regular, proactive maintenance so we are fully prepared for projects as and when they arrive,” he explains.

To this point, Namdock is currently in the process of diversifying both in the maritime field and in the land-based heavy engineering arena. In terms of its marine services, the company has entered into the field of maintaining and repairing submersibles and remotely operated vehicles. “We are once again also very actively tendering for oil-rig repair business,” both Simon and Nankole Muyoba assert.

In terms of land-based heavy engineering, Namdock, as Namibia’s largest engineering company, has the facilities, design, project management and fabrication skills to tackle projects of any magnitude.

“Marine engineering has to adhere to exceptionally high levels of competency, and we would be pleased to share this skill level with, for example, the coastal mining industry in Namibia and our neighbouring countries,” continues Nankole Muyoba. She adds that where Namdock does not have the necessary skills, it is able to call on specialist engineering companies which have the required expertise.

“To sum up, at Namdock, we are globally competitive while also proudly Namibian,” states Nankole Muyoba. “Our company is a prized national asset, and is now wholly-owned by all-Namibian entities. With this in mind, Namdock is sailing ‘full steam ahead’, and navigating a proactive voyage forward which will benefit not only our valued clients, our company and our staff, but also the people of Walvis Bay, and Namibia as a whole,” she concludes.

About Namdock

Namdock, an established ship repair company strategically located on the west coast of Africa in Walvis Bay, Namibia, provides a holistic service solution in all aspects of marine engineering and ship repair to the local and international shipping and offshore industry; as well as land-based engineering and fabrication services to a variety of industries including mining. The company operates three privately-owned floating docks—including a Panamax-sized dock—in Walvis Bay.



Namibia is showing wear and tear after 30 years under SWAPO rule

Namibia turns 30 this year. Its former liberation movement, the South West Africa People's Organisation SWAPO, has been in power all these years and the country has been relatively stable, with a wide range of civil liberties.

Recent years have been rocky economically. Fiscal prudence was neglected and despite continued warnings the government lived above its means. By 2016 a full-blown recession kicked in. Populist narratives backfired.

Promises were no substitute for realities. President Hage Geingob's Harambee Prosperity Plan, announced during his first year as president, remained wishful thinking.

Almost a million people (40% of the 2.3 million inhabitants) have been estimated to live in shacks. Geingob declared this a national humanitarian crisis and promised to deal with it. No visible improvements have happened since. Over half of the

population has no access to proper sanitation and an outbreak of hepatitis E in 2018 continues to take its toll, according to an article in the conversation. In his 2019 state of the nation address he repeated his mantra for an inclusive, united, and prosperous Namibian House. Despite all evidence to the contrary, he confidently claimed a social compact where 'No One Should Feel Left Out' and where citizens live in harmony as 'One Namibia, One Nation'. But after his first term in office the country is further away from this than ever since independence. ✪

Henning Melber, Extraordinary Professor, Department of Political Sciences, University of Pretoria



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Efficient ports, railways are the economic lifeline of Africa

Efficient ports and railway linkages are the economic lifeline of Africa. While currently most railway lines in Africa link mines to sea ports for export of commodities, inter- and intra-African traffic will become more important

While currently most railway lines in Africa link mines to sea ports for export of commodities, inter- and intra-African traffic will become more important. This is the view of Darrin Green, Civil Infrastructure End Market Lead at AECOM. "As transport and logistics drive our economy, the rail and port sector is very important to us."

International experience has proven that the level of development of any city or country relates directly to the extent and efficiency of its railway infrastructure and services. "It should be emphasised that good infrastructure needs to be supported by good operations and maintenance," Green adds. Similarly, port infrastructure or access thereto is essential for the economic growth and prosperity of any country.

The economic multiplier of efficient logistics chains, including ports and rail, is self-evident.

While there is a plethora of opportunities in rail and port development on the continent, the major challenges are a lack of funding, planning, and prioritisation by governments. As projects may be developed over more than a decade, changes in government, combined with a lack of consistent government policy, often hinder implementation. "We need to cooperate to convince African leadership to pave the way for private-sector investment by means of comprehensive government support, clear consistent policies, and co-funding," Green argues.

Engineering News-Record (ENR) has ranked AECOM as the world's number one rail engineering company, while its ports and maritime sector is ranked third globally. It has more than 6 000 railway engineers globally, and provides railway planning and design services on all continents. It prides itself on being a one-stop shop, providing integrated services, including architecture, master planning, feasibility studies, conceptual and detailed design, and construction management.

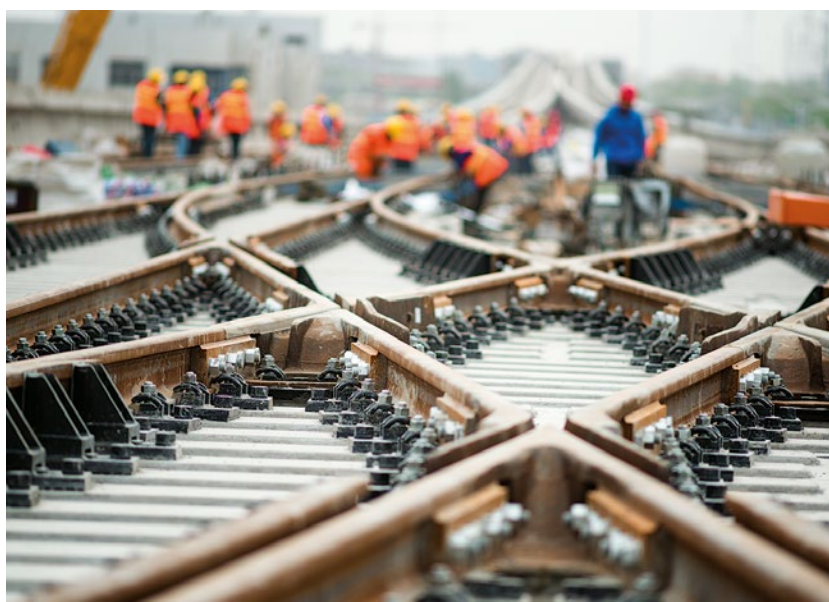
It has assisted railway companies with railway upgrade and maintenance projects. It supports all services, from light rail transit and monorail to rapid and

high-speed rail, and is even the main technical partner for the Hyperloop. This is a proposed mode of passenger and/or freight transportation, first used to describe an open-source vacuum tube train design released by a joint team from Tesla and SpaceX.

Current rail-related projects for AECOM in Africa include the Park Station upgrade in Johannesburg for Prasa, the Transnet Tippler 3 implementation in Saldanha Bay, route determination for the planned Gautrain extensions, the Tambo Springs inter-modal container terminal in Southern Ekurhuleni in Gauteng, and the Gibela private siding and yard electrification project.

In terms of ports, AECOM is involved with one of the biggest projects of its kind in Africa at present, namely the Tema Port expansion project in Ghana for Meridian Port Services (MPS). Green reports that this flagship project is progressing very well, being both on schedule and within budget. The port successfully achieved operational 'go live' of the first two berths on 30 June, while the first commercial vessel docked successfully on 3 July. Phase 2 of the project is currently under construction, with the third berth with all works due to be completed by December 2020. 🌐

Staff Reporter



Size, renewable energy and digitalization: How containerships win tomorrow

The containership segment faces an entirely new set of technological challenges: Transport more goods while using less energy –and ultimately, decarbonize. Two DNV GL experts explain how this could be achieved.

Experts Rasmus Stute and Jan-Olaf Probst of DNV GL share their insights into what lies ahead for the maritime industry globally. Will we sink or swim?

Jan-Olaf Probst (JOP) has a long track record as expert for the containership segment at DNV GL–Maritime. Besides his various management positions as Head of Approval Centre in East Asia and Head of Competence Centre Hull he held the position as Ship Type Manager Containerships for almost ten years. After gaining further experience as Executive Vice President of the Newbuilding Division he is now responsible for the strategic development of all ship types at DNV GL and for the entire containership segment.

With more than 15 years of international management experience in the maritime industry, Rasmus Stute (RS) leads the newly established Global Containership Excellence Network at DNV GL–Maritime. In his current role as Director, he is responsible for product development and service delivery along the entire ship's life cycle serving shipyards, shipowners and ship managers around the globe. Rasmus is presently a member of BIMCO's marine safety and environment committee.

What are the main trends and challenges in the containership market?

JOP: We are facing three main challenges in the upcoming years. One is the market development itself, as rates are under continuous pressure, another is the need to adjust to stricter environmental regulations and the third challenge – which also generates many opportunities – is the adoption of new technologies and implementation of the digital transformation. The drivers of this transformation are on the one hand the growth of the transport volume and on the other hand the new IMO GHG strategy, which will result in a sweeping fleet renewal. Technology and digitalization will help us address the environmental challenges and adjust to the changing market.

How will the containership market develop over the coming years?

JOP: Due to population growth and growth in trade, the demand for containerized transport will grow by another 80% by 2050. Transport efficiency must improve significantly to adapt to this development and achieve the industry's environmental goals. As a result, the size of containerships will grow in four segments, resulting in vessels up to 4,000 TEU, around 10,000 TEU and 15,000



TEU, and finally, the very large segment with ships carrying up to around 24,000 TEU. With all this in mind, we believe that the containership segment deserves special attention.

What role do containership operators play in this development today?

JOP: The main liner operators have a strong influence. Today, the top ten liner companies cover 80% of the market, which makes continuous professionalization even more important. In addition to that, the market is shifting eastwards, especially with regard to ownership and ship financing.

What are the best ways to improve transport efficiency?

RS: Major advances in transport efficiency and significant GHG reductions can only be achieved by implementing extensive technical and operational measures. Decarbonization options for ships include measures within logistics and digitalization (which can reduce carbon emissions by 20% or more), hydrodynamics (up to 10%), machinery (5–20%) and most importantly, the choice of fuels and energy sources (0–100%). The only option to eliminate GHG emissions entirely is to switch to renewable fuels and energy sources.

What is the influence of ship size in this context?

RS: Large containerships have a significant advantage: They work with the same engine sizes as older and smaller vessels while being able to carry three to four times the volume of cargo. This minimizes transport work and maximizes efficiency. Furthermore, a well-loaded 20,000+-TEU vessel has the lowest fuel consumption per TEU. Its smaller CO2 footprint contributes to the IMO's ambitious GHG reduction target.

Which alternative fuels will be easiest to adopt in the next ten years?

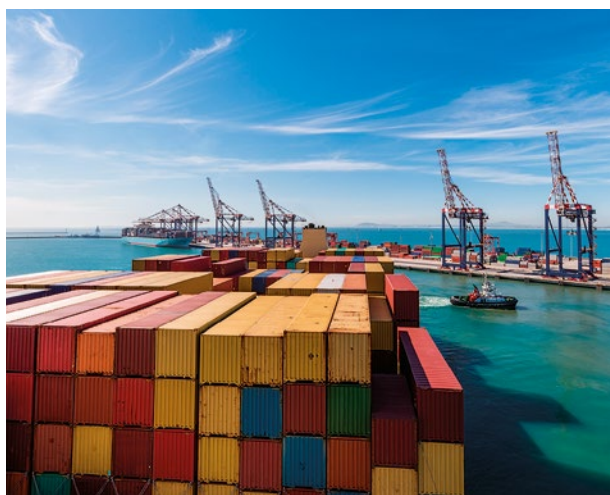
JOP: LNG can be seen as technically mature; rules and regulations are available and its bunker grid is rapidly increasing. As we approach 2030, LNG will help cut emissions to fulfil the 2030 IMO target, but it is not the final solution for 2050. It serves as a transitional fuel until we are ready to abandon fossil fuels entirely. To achieve the final goal the maritime industries and the IMO need to push Power to fuel (PtF), in particular Power to gas (PtG).

How can safety be improved further?

RS: We are collaborating with other companies to investigate fires on containerships and are working on reducing container losses. We are trying to identify the best fire detection sensor technology, such as temperature and visual sensors. Right now, we don't have access to container inspection. But the main issue in terms of fire safety is the misdeclaration of cargo, which is unfortunately done frequently to save transport costs. When flammable or even explosive cargo is hidden inside containers, it causes a major hazard to the ship, its crew, its cargo and the environment.

What are the trends and technologies to reduce emissions from containerships beyond 2030 already being discussed?

JOP: Innovative containership designs and optimization measures at the system level are constantly being explored to minimize fuel oil consumption and increase capacity. Taking advantage of economies of scale has always played a role in reducing the emissions per container mile (TEU/mile), but in this respect we have reached the limit. So going bigger is not the



As we approach 2030, LNG will help cut emissions to fulfil the 2030 IMO target, but it is not the final solution for 2050

solution for 2030 or even 2050. Learning from other ship types and industries is essential to achieve major change.

How can DNV GL help guide the industry through this transition and support its adjustment to market growth and development?

RS: We established a Containership Excellence Network that is centred around our new Containership Excellence Center (CEC) in Hamburg to support this transition and help our customers make the right decisions for their future fleets.

This global network rests on three main pillars: expertise, speed and added value. We are building operational centres to provide 24/7 service to our customers, making sure that we can be the best partner to them and facilitate the introduction of innovative solutions in the future.

How does the Containership Excellence Center (CEC) assure maximum expertise and the best customer journey?

RS: The CE Center provides an end-to-end classification service, which means it delivers an enhanced experience by minimizing operational disruption. Our experts cover the entire containership life cycle, from the pre-contract phase to the recycling process, all on one floor to support our customers and in the most efficient way possible.

How has DNV GL managed to achieve this?

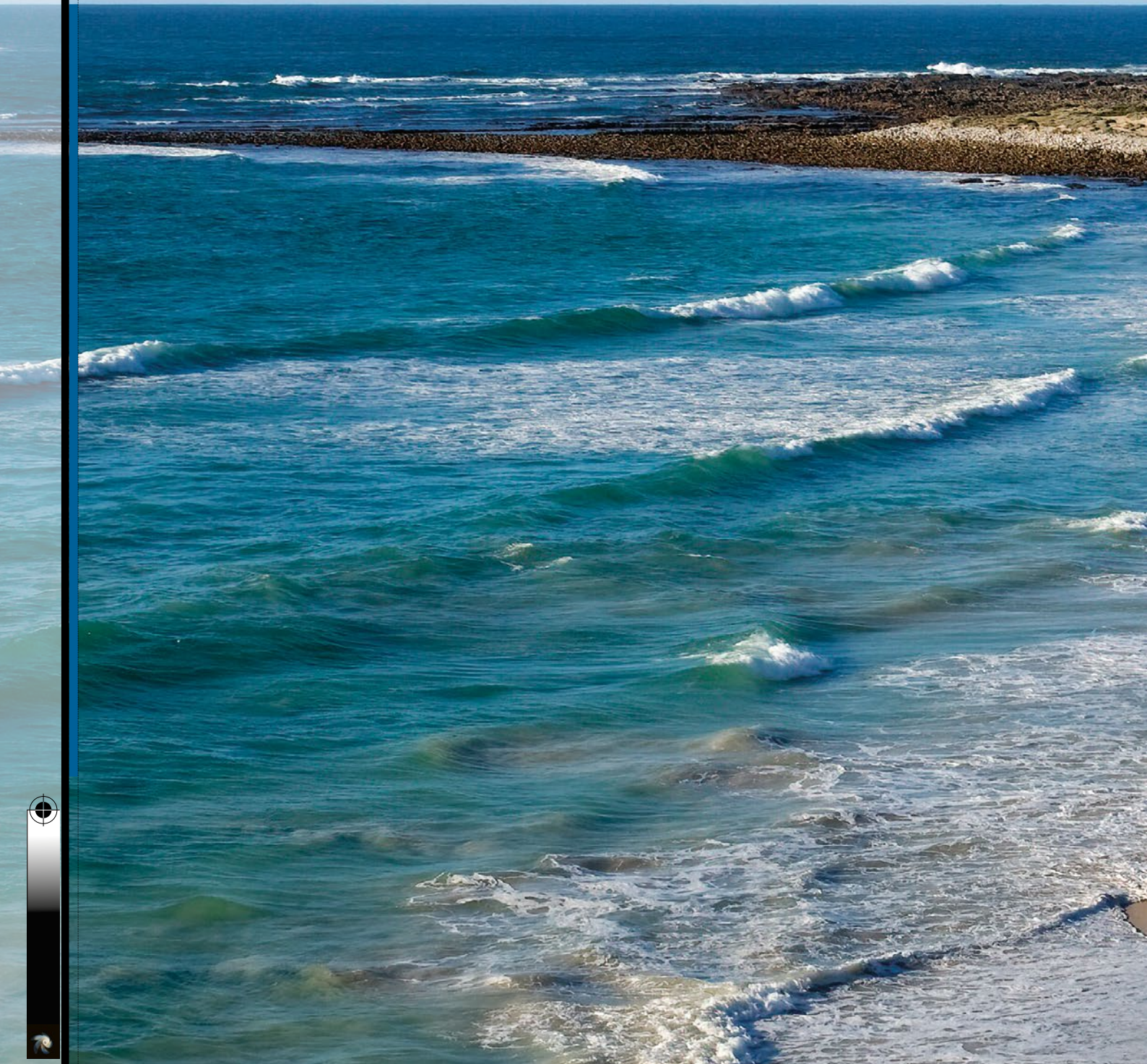
JOP: Research from the very beginning made the difference for DNV GL in the containership segment. Using advanced technology and relying on the support of DNV GL, shipyards were able to build 23,000-TEU ships. We began this journey with the first containerships built in the seventies and are continuing it to this day. The many years of experience we have accumulated have helped us always be first in the development of the next generation of containerships, such as post-Panamax or the twin-island design, which was a large step to take.

What is the role of ports in future transport processes?

RS: First of all, governments and ports are becoming stricter in terms of environmental regulations. Another factor regarding transport efficiency lies in the infrastructure of ports, which is closely connected with vessel sizes and layout. Hinterland connections and logistics are the limiting factor at the back end. Nevertheless, the technology exists to modernize this end of the challenge, as well. ⚙️

Staff reporter

Deeper insights into the Agulhas Current can shed light on climate



South Africa has one of the fastest and strongest flowing currents in the world running along its east coast: the Agulhas Current. It influences local as well as global rainfall and climate. Katherine Hutchinson explains why it's important to monitor a current that plays a significant role in the global ocean conveyor belt.



What is the impact of the Agulhas Current on the local climate and why does it matter in the global context? The Agulhas Current transports warm tropical Indian Ocean water southwards along the South African coast. It modulates the rainfall along the east coast and interior regions of South Africa by providing the latent heat of evaporation needed for onshore wind systems to pick up moisture and carry it inland.

The current itself also sets the backdrop for local ecosystems which contribute to South African fisheries. Friction between the current and the continental shelf edge drives upwelling of nutrient rich bottom water. This in turn promotes high levels of phytoplankton – the grass of the ocean which sustains the aquatic food web.

The Agulhas Current also plays a critical role in global ocean circulation which is why it's considered important for climatic conditions across the world.

This is due to a process known as the Agulhas Leakage. The current flows along the east coast of South Africa and then turns back on itself flowing into the Indian Ocean. But during this process (known as a retroflection), large pockets of warm, salty, Indian Ocean water are pinched off from the current. They form ring-like structures called Agulhas Rings or eddies which are massive spinning vortices. These eddies slowly head north-westwards, crossing the South Atlantic Ocean and eventually feed into the Gulf Stream which flows along the east coast of North America.

The Gulf Stream helps modulate the climate conditions of North America and Western Europe.

How do we know this?

Oceanographers understand currents by measuring the changes in the ocean. But the challenge up until recently had been that the data collected on the Agulhas System only explained the current's behaviour at a certain point in time.

As a result, many oceanographers have turned to computer models that simulate how ocean currents respond to other factors—like winds—which are measured by satellites. These models are not perfect, but can be very useful in providing insight into connections between different factors affecting the ocean.

The complex nature of the Agulhas Current has made it very difficult to simulate using ocean models. Until 2010 oceanographers were only able to observe the Agulhas Current with snapshots they got by deploying instruments during research cruises.

But scientific developments, combined with international collaboration, have allowed South Africa to place two long term monitoring lines across areas of the ocean where it's believed critical exchanges of heat and salt are taking place. Heat and salt are essential parameters as they determine the buoyancy of a water mass, its tendency to sink or float. Buoyancy differences and wind forcing are the two mechanisms that drive ocean circulation.

To measure the oceans response to climatic changes (alterations in heat and salt fluxes and shifts in wind patterns), continuous monitoring is needed. These monitoring lines are made up of instruments placed throughout the water column. They measure current speed, direction and temperature at extremely high temporal resolutions.

The first array ran from 2010 to 2013 (the Agulhas Current Time-series) Experiment). This consisted of moorings placed across the Agulhas Current just off the coast of Port Elizabeth. In 2015 oceanographers replaced it with the Agulhas System Climate Array. These moorings are currently measuring the evolution of the Agulhas Current with time, providing scientists with vital information on the current's behaviour.

Where are the gaps?

The ASCA array sheds a great deal of light on the behaviour of the Agulhas Current and the local implications for South Africa. But it doesn't provide information on the amount of warm Agulhas water being leaked into the South Atlantic. This leakage is a critical link in the global ocean conveyor belt and so understanding how it is changing over time is essential in preparing for the consequences of climate change.

Oceanographers previously believed that the Agulhas Current had been strengthening over time due to an increase in the Southern Hemisphere winds. But the array showed that it has been broadening and not strengthening.

Another project was initiated in 2013 to measure the exchange of water from the Indian Ocean into the South Atlantic, the South Atlantic MOC Basin-wide Array (SAMBA). South Africa, in collaboration with France and Brazil, placed a series of instruments to capture the "corridor" of Agulhas Rings that cross the Atlantic. The aim is to monitor long term changes in inter-ocean exchange at the east and west borders of the South Atlantic.

Brazil, the United States and Argentina have deployed similar moorings on the western portion of the basin contributing to the end goal – to create a basin-wide array to bridge the entire South Atlantic.

What do we know so far?

South Africa is located at a major crossroad of ocean-basin exchange between the Indian and Atlantic Oceans. Several modelling studies have tried to simulate how these exchanges will alter with climate change under varying scenarios. But they have often produced conflicting and inconclusive findings.

Oceanographers previously believed that the Agulhas Current had been strengthening over time due to an increase in the Southern Hemisphere winds. But the array showed that it has been broadening and not strengthening. The effects of this broadening are currently being investigated, but one outcome is that a wider current allows for a greater exchange of water between the inshore and offshore areas meaning that pollutants will more easily be shifted out to sea.

It's crucial that in-situ monitoring of the Agulhas Current system continues. This kind of data will allow scientists to detect changes in the current over time. It will also help oceanographers improve their models and help them understand how variations in the current affect local and global ocean circulation and climate. ❁

Katherine Hutchinson

PhD Candidate, South African Environmental Observations Network, and Department of Oceanography UCT, University of Cape Town

South African ports recognised for security excellence

South Africa's eight commercial ports were recognised for maintaining compliance with the International Ship and Port Facility Security (ISPS) Code during the Department of Transport's sixth Annual Maritime Transport Security Indaba on Monday, 18 November in Simon's Town

For a third consecutive time the Port of Richards Bay scored highest for upholding this global maritime regulation for the safety and security of ships, ports, cargo and crew. The Port of Port Elizabeth placed second and Durban took third place.

The ISPS Code was implemented in 2004 by the International Maritime Organisation (IMO). It is a comprehensive set of measurements for international security prescribing responsibilities to the government authority, port authority, shipping companies and seafarers. It ensures that preventative measures can be taken in the event that a threat is determined.

ISPS requires that the port authority provides assurance that all the facilities are protected from any kind of threats which might arise from both land and water. The assessment and review of the port security plan becomes an essential and integral part of developing, updating and implementing the plan.

TNPA's Executive Manager for Port Security, Ernest Sigasa, said: "We are extremely proud that all South African ports continue to meet the prescribed security standards to be awarded the internationally recognised ISPS Code certificate. This informs visiting ships that our ports' security is of the required standard, ensuring they conduct business in a safe and secure environment." 🌐



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Mother City to host fresh Ocean Race for 12th time

The Ocean Race will return to Cape Town for the 12th time, during the 2021-22 edition, as the most challenging offshore race in the sport comes to South Africa, with the world's yachting elite descending on the Cape of Storms



Cape Town has been an iconic stop in the race since the very first edition in 1973 and has hosted the fleet in all but two editions of the race. No other city has hosted the fleet more, and this will be the eighth consecutive stopover for Cape Town, which marks the gateway to the Southern Ocean legs of the race.

"This is a very welcome announcement to make," said Johan Salen, the Managing Director of The Ocean Race. "Our fans, our teams and sailors and all of our stakeholders always rate the Cape Town stopover as among their favourites."

"Cape Town has such a strong history in The Ocean Race and as the jumping off point for the Southern Ocean it is an ideal spot to prepare and take stock before heading into the challenging legs in the south that are at the heart of the race."

The City of Cape Town also enthusiastically welcomed the return of The Ocean Race to the Mother City.

"The Ocean Race is one of the most prestigious events in the world and we are very pleased to have it back in Cape Town," says Cape Town Executive Mayor Dan Plato.

"Being one of the stops of this race, not only is the natural beauty of Cape Town on display but our City also provides the opportunity to highlight a parallel aspect: a highly-successful boat building industry creating thousands of jobs with a significant economic injection into the city – making Cape Town a suitable pit stop. We look forward to welcoming the participants here as they regroup before the upcoming legs."

As before, the fleet will be hosted in the V&A Waterfront area of the city, under the shadow of the iconic Table Mountain.

"The V&A Waterfront is proud to host the 2021/22 edition of the Ocean Race, the eighth consecutive time since the modern era starting in 1997/98 but twelfth time since inaugural event in 1973," said David Green, CEO of the V&A Waterfront. "The hosting of events like The Ocean Race ties in with part of our





vision on Ocean Strategy of promoting ocean based activities and industry and it has been a catalyst for the evolution of our thinking around the potential of what the oceans economy can look like for the Western Cape, and South Africa. The race is also a draw card in connecting locals with the water and places Cape Town once again on the international spotlight in hosting the Race here."

Cape Town is now one of two African stops for the race, joining Cabo Verde, which was announced as a host city earlier this year.

The Ocean Race is scheduled to start from its home port in Alicante, Spain in Q4 of 2021 and finish in Genoa, Italy in June of 2022. The full Race Route will be confirmed in the coming weeks. Cape Town joins Itajaí, Brazil, Aarhus, Denmark and The Hague in The Netherlands as confirmed host cities, along with Cabo Verde, which will be the first West African stop in the history of the Race.

Spotlight on environment

The Ocean Race has been centre stage in Davos in early 2020, where world leaders have gathered for their annual meeting at the World Economic Forum to discuss forging a path towards a sustainable future.

At an event in Switzerland, hosted by YPO – a global leadership community of chief executives driven by the belief that the world needs better leaders – The Ocean Race Chairman Richard Brisius spoke passionately about protecting our oceans and the power of sport to make a positive impact on society.

He was joined by sailors Rokas Milevicius and Boris Herrmann – both with their sights set firmly on the next edition of the Race in 2021 – to discuss the Race's industry-leading sustainability programme and how the scientific data collected in some of the most remote spots on the planet can drive forward global understanding of the issues faced by our oceans.

Milevicius previously raced onboard Team Brunel in 2014-15 and is now leading a campaign to get back on the start line for 2021, with support from YPO. He has already purchased one of the VO65 one-design boats.

"The Ocean Race is the greatest sailing event in the world, by far, and it carries a great mission with sustainability and making a positive impact on the world. Going further, the values of YPO are a great alignment, and it couldn't be a better fit. When this opportunity came up, we took a chance by getting one of the VO65 boats – there are only eight on the planet."

Milevicius continued: "I was the first Lithuanian to compete in The Ocean Race in 2014-15, and the experience I gained engaged me to do more. The Ocean Race platform showcases sustainability, and it helped me to join the dots that through the sport of sailing you can spread the message of a topic that's really relevant at the moment."

As part of a panel discussion on ocean health, Brisius described his personal journey from sailor to custodian of the event – and how the Race is 'racing for purpose' as we enter the Decade of Ocean Science, adding "...we have to run it as

a business, of course, for longevity, but we don't do it for the revenue. We do it for the planet."

He continued: "For the first time ever, the Race isn't owned by a corporation—it's owned by people who love sport, us. Through a partnership with 11th Hour Racing, we decided to use this unique opportunity to develop our 'Racing For Purpose' initiative – we are racing for the planet, for healthier oceans. Our sustainability programme is based around awareness, science and education. As we race around the world, our sailors collect data from places where no-one else goes. That data is really interesting for scientists globally."

In 2019, Boris helped Swedish climate change icon Greta Thunberg by sailing her across the Atlantic Ocean to the United States on board his IMOCA 60 race boat – and on the same day the teenager spoke in Davos, challenging world leaders to do more to address the growing crisis facing our planet, he shared his vision for the 2021-22 edition of the Race. Other notable speakers at the YPO event included renowned filmmaker and co-founder of Comic Relief, Richard Curtis; Ian Bremmer, President of Eurasia Group; and Claire O'Neill, President of COP26.

Zane Gills passing

Meanwhile, the whole Ocean Race family was saddened to hear of the tragic passing of The Ocean Race sailor, Zane Gills. Zane, who was originally from Australia but had been based in Lymington, UK, made his debut in the Race in 2011-12 edition as a bowman onboard Team Telefónica.

Xabi Fernández, who raced alongside Zane in 2011-12, and skippered MAPFRE in the following two editions, remembers Zane as a driven and talented sailor, with a fun side that made him a first pick for any crew.

"What to say about Zane? We did together the Volvo Ocean Race 2011-12 on board the VO70 Telefónica. He was a man of few words on board, discreet but extremely effective doing his job. He was young, strong and above all a great guy," he says.

"I still remember when we were rounding Cape Horn and he suddenly jumped on deck with just a sock covering his privates," he laughs. "I think he surprised all of us and of course he made us laugh a lot!"

He adds: "Undoubtedly, this is a great loss. He will be deeply missed by all." Richard Mason, himself a four-time Race veteran who now works with the Race organisation, expressed his sorrow at the news.

"I sailed with, and against Zane, and the news of his passing has rocked all of us in The Ocean Race family," said Mason. "Zane was one of the good guys – he was one of those quiet, solid, funny but super professional blokes who would never let you down. He was Mr Reliable. There's no other way to describe him, he just loved it."

"He always dreamt of doing the race – he loved the sea, and he loved the race. He was a bowman, always on the front line and he never lost his nerve. He was just a fantastic guy." ❄

Freddy Jones Jnr

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- 370 Application Score (AS)
- English Or first additional Home Language - NSC 4
- Mathematics - NSC 5
- Physical Sciences - NSC 4
- A 60% pass at N3 level for Engineering
- Mathematics and Engineering Science plus grade 12 Languages from a TVET College.
- Life Orientation is not included in the Applicant Score (AS).
- Applicants must meet direct entry requirements (AS + subject and % required).
- Testing as an alternative admissions route is no longer available.

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OSC Marine: Solutions that are Engineered, Efficient & Environmental

It has long been known that fouling on a ship hull's greatly increases hull friction and therefore increases the power needed to maintain speed and manoeuvrability

Technology has advanced to the point where ship hulls could be cleaned with the ship still in the water using a variety of hand and mechanical tools. Cleaning the hull with the ship in the water versus drydocking saves significant time and expense.

For a brief time towards the end of the 20th century, the introduction of the highly toxic Tributyltin (TBT) into hull paints, offered the illusion that ship hull cleaning was an unnecessary thing of the past. The idea was that all the hard work required to keep a ship hull clean could be avoided, substituting chemicals, for manpower. It was soon discovered that TBT caused extensive, severe and unsustainable damage to the marine environment.

The antifouling technology which replaced TBT-laden hull paint was relatively ineffective. All ship hulls develop a biofilm or slime layer at the very least, regardless of the bottom paint used, and this, combined with rough hull coatings, carries with it a fuel penalty of as much as 20% or more. Underwater ship hull cleaning if completed efficiently and on a suitable hull coating is the answer to reducing fuel costs, cutting Green House Gases (GHG) emissions and preventing the spread of non-indigenous species.

Significant pressure is being applied to the shipping industry towards a more efficient and environmentally safer approach to hull coating and fouling control.

Clean underwater surfaces keep vessels operating efficiently, providing a reduced carbon footprint which directly reduces the environmental impact of transportation in our global fight against climate change. Many ports have banned conventional cleaning methods, which contaminate local waters by spreading paint debris and alien invasive species.

The E300 Hull cleaning system uses diver-controlled brush carts to clean all types of vessels while they are in a port. The brush cart is equipped with a unique cleaning and collection technology which cleans the hull efficiently without damaging its antifouling paint and stops alien invasive species from spreading in the water. The cleaning device has the ability to act as a recovery cleaner, locking on to the hull so that the wastewater is pumped back to the support vessel or quay and from there sent through a filtration processing system. No contaminated waste is released to the local environment.

OSC Marine's vision is to provide technology that ensures our environment is protected and optimises the performance of visiting and resident vessels. We will endeavour to set new standards for in-water cleaning and environmental services.



History of the Proudly South African–E300 Hull Cleaning System

The E300 Hull Cleaning System was developed through trials and modifications by its original designer over a 20-year period. The E300 Brush-Cart and Hull cleaning methods have proven to be an effective Hull cleaning system with an efficient and reliable deployment system.

During 2017 and 2018, extensive design and testing was completed by the OSC Marine Group technical and engineering team. With the requirements of Bio-Security and the protection of our world harbours, further enhancements including the recovery and filtration systems have allowed the E300 Hull Cleaning system to maintain its effectiveness yet recover and process the material from vessels in a compliant manner.

In-water cleaning of the immersed hulls of vessels can be employed to:

- Remove slime and biofouling
- Remove biofouling growth after periods of vessel lay-up or low activity
- Maintain foul release or scrub-able coatings
- Contain and remove potentially invasive marine species
- Arrival of a heavily fouled vessel at a port of first entry, requiring urgent management of gross general fouling
- Arrival of a vessel with patchy fouling (for example, of niche areas), including patchy fouling of identified unwanted species
- Routine cleaning to maintain minimal fouling on the hull. ✱

OSC Marine operates in Cape Town, Durban, Saldanha, Richards Bay, Mossel Bay and Port Elizabeth. We provide compliant services to most Class societies for all vessel and Rig husbandry. Contact us at info@oscmarine.com.



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