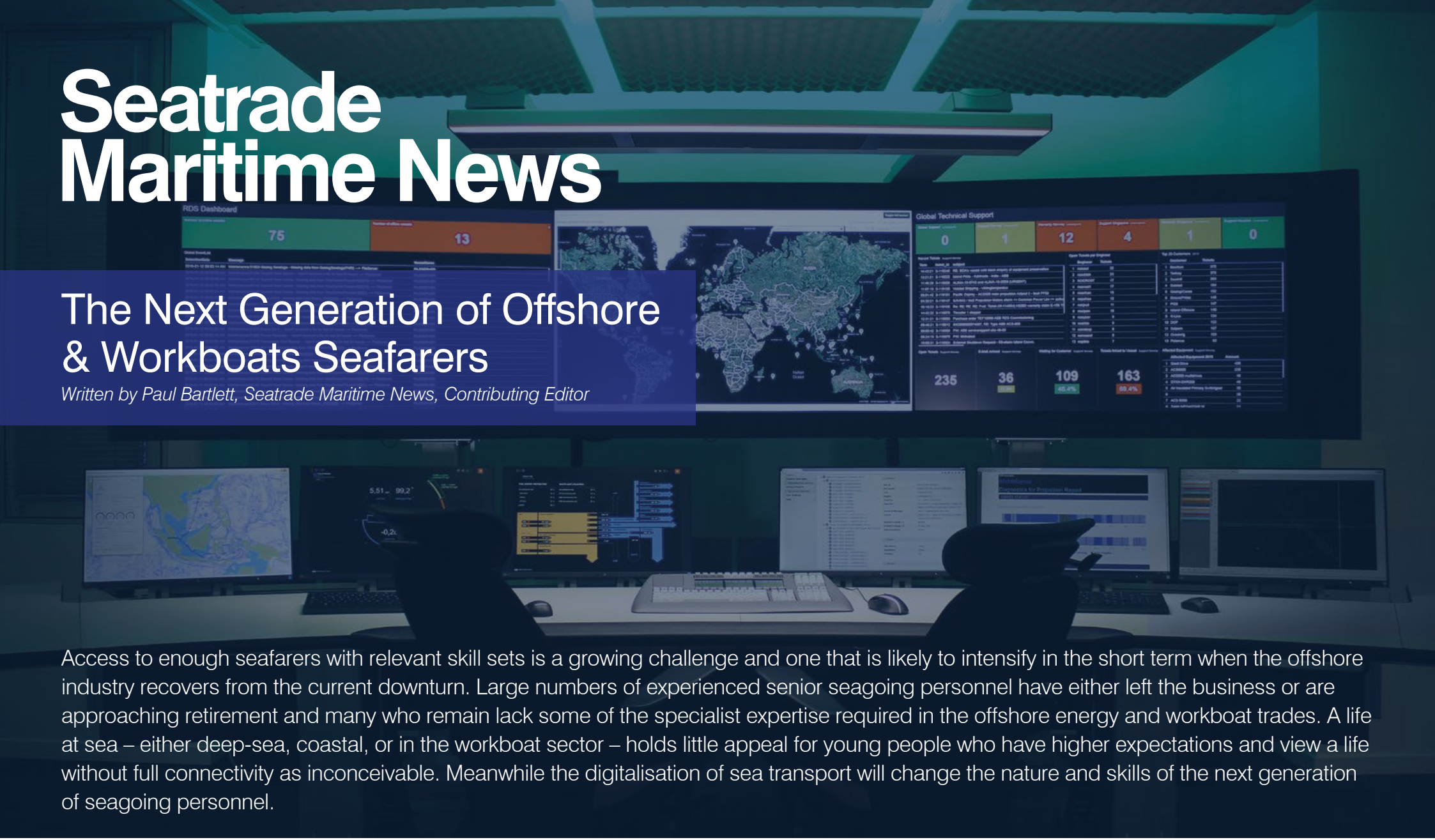
Seatrade Maritime News



The Next Generation of Offshore & Workboats Seafarers

Written by Paul Bartlett, Seatrade Maritime News, Contributing Editor

Access to enough seafarers with relevant skill sets is a growing challenge and one that is likely to intensify in the short term when the offshore industry recovers from the current downturn. Large numbers of experienced senior seagoing personnel have either left the business or are approaching retirement and many who remain lack some of the specialist expertise required in the offshore energy and workboat trades. A life at sea – either deep-sea, coastal, or in the workboat sector – holds little appeal for young people who have higher expectations and view a life without full connectivity as inconceivable. Meanwhile the digitalisation of sea transport will change the nature and skills of the next generation of seagoing personnel.

Executive summary

The world fleet is larger and more diverse than it has ever been. According to Clarkson statistics, the commercial shipping fleet of vessels of more than 100 gross tons consisted of 92,265 vessels of 1.84 billion dwt as of September 2016 (see Figure 1). Its pace of expansion over the last three decades has continued to accelerate and, in capacity terms, the fleet is now more than three times the size that it was in 1990.

This reflects long-term steady growth in world seaborne trade. However, it also illustrates the continuing specialisation of ships, with vessel types trading today which were not even thought about in 1990. This is partly a result of technological development, but partly also a result of the realisation that shipping many different types and sizes of cargo consignment on a general cargo ship is far less efficient from an operational point of view than transporting standardised cargo units on ships designed and built for that purpose.

For human resource managers, the steady increase in ship numbers and vessel specialisation has posed many challenges because it has occurred simultaneously with the continuing drive by ship operators to reduce the size of shipboard complements and cut the unit cost of shipboard personnel. This has underpinned the move by many ship owners and managers to employ both officers and crew from non-traditional shipping nations where labour costs are significantly lower. Some experts would argue that this has also resulted in a decline in both the talent and experience of traditional seafarers.

The steady drain of older, more experienced seagoing personnel has resulted in an increasingly urgent quest to replace them. A growing number of manning agencies have sprung up in locations such as Bangladesh, Myanmar and Ukraine. However, such agencies are not primarily concerned with the welfare of the seafarers on their books. As a result training standards have declined and seagoing staff move from one shipping company to another as required by the agency.

Well-trained and experienced seafaring workforce will be a top priority for offshore service providers

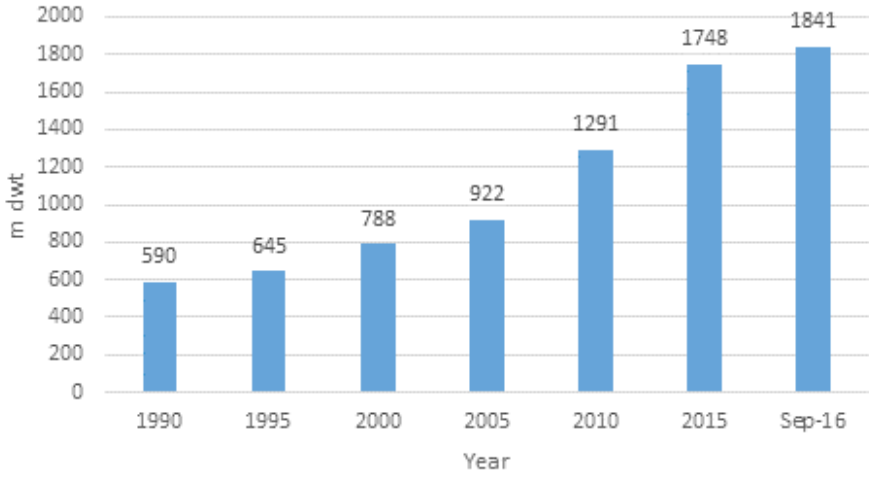
Although the shipping and offshore downturn means that maritime manning today is not under quite the same pressure as it was, some experts predict that the offshore energy industry will rebound sooner, rather than later. This is particularly important for offshore oil producing hot-spots such as the Arabian Gulf, the North Sea, the Gulf of Mexico and Brazil because offshore operators there must be prepared to make the most of a market recovery when today's reduced manpower resources come under serious supply-side pressure. Access to an effective, well-trained and experienced seafaring workforce will be a top priority for offshore service providers.

Oslo oil and gas analyst Rystad Energy has warned that the dramatic reduction in oil company capital spending since the onset of the downturn has led to thousands of job losses throughout the offshore industry. Seafarers are a part of this picture, with many hundreds of offshore support vessels and other service craft idle or laid up. But when the upturn comes, as it inevitably will, and capital spending constraints are loosened, experts warn that access to experienced offshore and sea staff could become a critical factor.

Most Arabian Gulf nations' budgets are under extreme pressure because of the oil price drop. In most countries, therefore, non-essential capital spending has been shaved, postponed or cut completely. For non-energy workboat operators, this has been a challenging development. But such projects – including land reclamation, new ports and terminals, new ship construction and repair facilities, artificial islands, and other civil engineering works – will soon become a key focus as energy revenues recover.

OSVs lie idle in many offshore locations

Fig 1. World Fleet Development Chart



The communications revolution

Recent developments in satellite communications technology are transforming both the day-to-day operation of many commercial ships and the lives of seafarers who run them. A number of progressive shipping companies are embracing the new technology, believing it to be not merely “nice-to-have” but an essential enabler in the next stage of global shipping development.

Digitalisation is bringing disruptive change to shipping although only a relatively small number of ship operators or managers are yet aware of the scale of the transformation that is now underway. It has only been made possible by huge strides in global connectivity which mean that ships at sea and their seagoing personnel, previously isolated for long periods of time, can now remain connected from virtually every stretch of water on earth, be it on the coast or in the middle of the ocean.

Last year, London-listed Inmarsat launched the broadband Fleet Xpress service with worldwide coverage using satellites which will enable unprecedented volumes of data to be transmitted as ships and offshore assets become connected, potentially 24/7. A range of other maritime communications providers are also offering new packaged services, some in cooperation with Inmarsat, and more ships are being connected every month.

This means that shipboard functions can be monitored remotely, potentially in real time, enabling a ship to become an integrated asset within the global supply chain. However, new connectivity also has huge implications for the lives of seafarers.

Traditionally, senior shipboard managers inform their offices ashore about their ship’s progress by a manually prepared “noon report”. This gives basic information on the progress of a voyage – speed, fuel consumption and position. Tens of thousands of ships still rely on this basic system of daily reporting which, many believe, is a seriously outdated way to operate capital assets costing many millions of dollars.

ABB Integrated Operations Centre

Inmarsat Satellite hosting broadband connectivity that is transforming maritime transport

Ship maintenance is becoming predictive

Ship operators who are embracing the developments in maritime communication see the benefits of connecting their assets. They can track voyages in far more detail. Sensors can monitor the performance of components and automatically warn of exceptions such as extra vibration or noise. Ship maintenance is becoming preventive and predictive predictive, rather than based on set time intervals laid down by classification societies.

Recent examples of ship operators investing in latest communications technology include Hong Kong-based third party ship manager Fleet Management which manages a diversified fleet of more than 400 vessels and has more than 14,000 crew. The company is steadily upgrading vessels with Inmarsat Fleet Xpress installations and expects the majority of its fleet to be connected by 2018.

Meanwhile leading container line Hapag-Lloyd is upgrading its shipboard communications systems to Fleet Xpress. The Hamburg-based container line, known for its progressive approach to IT and crew welfare, said it chose the Inmarsat system to ensure that ship-shore connectivity will support growing demand for bandwidth but also as a way of “future-proofing” its communications systems.

These forward-looking ship operators see the huge benefits for their seagoing personnel who, until now, have been forced to remain completely out of touch with friends and family for long periods of time at sea. But they realise that today’s maritime labour market consists of a generation of young people accustomed to permanent connectivity, social media and any number of apps to gain access to other information. To this new generation of seafarers, life in an unconnected world is inconceivable.

Rolls Royce Ship Intelligence – Tug Vessel

The communications revolution continued…

Crew related benefits available from latest connectivity

There are other crew-related benefits available from latest connectivity. Distance learning suddenly becomes a whole lot more dynamic and easier from a practical point of view. Meanwhile, remote diagnostics does not apply merely to shipboard components; remote advice can be sought about accidents on board or treatment for a sick crew member.

A relatively small number of seafarers so far, however, are benefiting from up-to-the-minute shipboard communications. Like so much else in shipping, change comes slowly and many owners and operators do not see the need to invest in new communications technology yet.

This is likely to prove a strategic mistake as crew recruitment and retention become a growing challenge. Seagoing personnel with experience of working on a connected ship – with access to email, telephone, news, sport and entertainment – will be increasingly reluctant to sign up for work on an unconnected ship.

The communications challenges facing the deep-sea sector are also reflected in the workboat arena. Although these vessels often operate in coastal waters and seagoing personnel are not as isolated as their deep-sea counterparts, access to internet, emails, social media and apps may be just as limited.

But rising bandwidth and more competitive pricing provides new opportunities for remote monitoring, real-time surveys and video applications. The next generation of satellites to be commissioned over the coming five years, will provide the capacity necessary for real-time seismic surveys, for example, to be technically and economically feasible. Meanwhile offshore construction vessels can undertake complex operations with the benefit of real-time communications and video links with shore-based managers.

Normand Vision

Dynamic positioning

A shortage of Dynamic Positioning Operators (DPO) is a growing concern, particularly for offshore support and workboat operators. This is likely to get worse when the market rebounds and offshore vessels are recommissioned. The supply of DPOs is likely to come under more pressure for several reasons.

One, the high number of laid-up vessels in the offshore energy sector has forced many DPOs to take other seagoing positions or leave the industry altogether. It is by no means certain that they will return when the market picks up , although a shortage of such officers would likely push up wages to entice them back. Two, charterers' expectations are rising steadily and more sophisticated DP2 vessels are often specified when previously DP1 units (with no system redundancy) were deemed adequate.
This trend has been particularly evident amongst national oil company charterers in the Arabian Gulf.

Three, the relatively buoyant offshore wind sector and other subsea service vessels have generated more demand for DPOs. And four, the process of certification as a DPO is not standard and involves either a lot of DP sea-time, or expensive courses undertaken in special simulation centres.

Traditionally, DP certification has been provided by the Nautical Institute which originally required a 210-day commitment, although this has now been reduced to 120 days. To keep certificates valid, DPOs must log a certain amount of sea-time over a five-year period. As an alternative to the Nautical Institute, the classification society DNV GL also offers DPO certification but its courses are based on more shore-based simulation and less sea-time.

Opinions differ on the pros and cons of sea-time versus training in a simulator. Some experts argue that like airline pilots, DPOs can undergo first-rate simulator training which provides them with a range of operational experience unlikely to be found during sea time. Recent developments in simulator technology enable many 'what-if' scenarios to be modelled so that trainees can tackle particular challenges in a safe environment, discuss the outcome and hear what the instructor may suggest as to the results. These situations would only be encountered in real-life and possibly hugely dangerous circumstances at sea.

www.seatrade-maritime.com

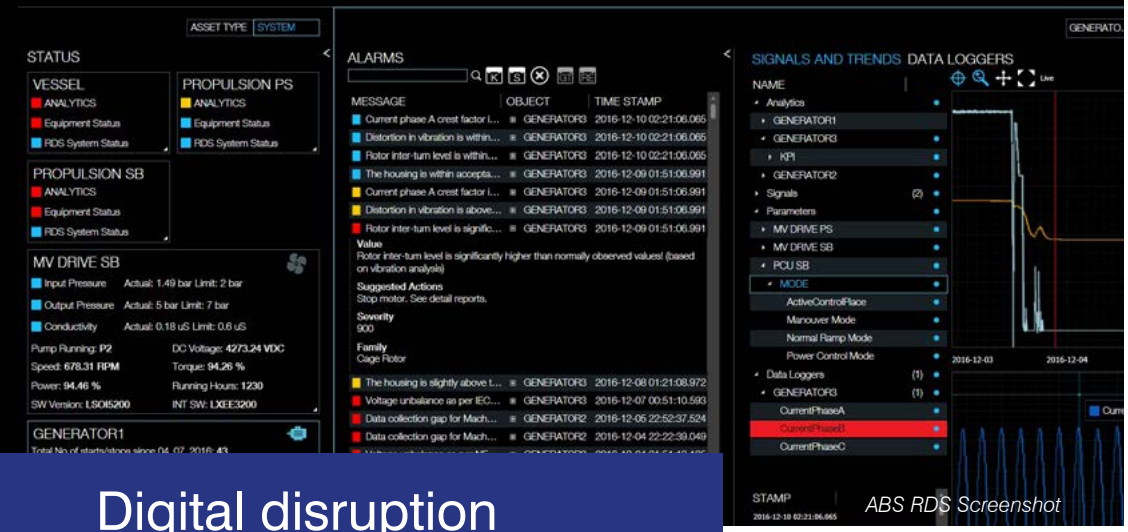
What is, however, evident, experts say, is that more DP training facilities are required, as are instructors and certifiers. The value of simulation, however, enhanced by dramatic technical advances recently, does mean in practical terms that more DPOs could be trained to become qualified more quickly than before. But their qualifications still need to be certified and that is a constraint at present, sources believe.

Simulator training facilities

Simulator training facilities are available in various locations and include both education institutes and a range of company-operated facilities which offer specific courses in dynamic positioning. They include:

- Arab Academy for Science, Technology and Maritime Transport, Alexandria, Egypt
- Australian College of Kuwait Maritime Simulation Centre, Kuwait
- Bourbon Maritime Centre, Philippines
- Bourbon Training Centre, Singapore
- City of Glasgow College, UK
- Farstad Shipping Offshore Simulation Centre, Perth, Australia
- Fosnavaag Ocean Academy, Fosnavaag, Norway
- Halul Offshore Service Company, Doha, Qatar
- Kongsberg DP training institute, Singapore
- Maritime Professional Training, Fort Lauderdale, Florida
- North East Scotland College, Aberdeen, UK
- Norwegian Training Centre, Manila, Philippines

Successful completion of relevant training courses at many of these facilities can result in certification from the Nautical Institute or DNVGL.



ABS RDS Screenshot

Digital disruption

New connectivity at sea is not only set to transform the lives of seafarers in terms of welfare and how they live on board ship, it is also fundamentally changing the ways in which ships operate. Real-time condition monitoring, predictive maintenance, voyage optimisation, remote diagnostics and e-navigation are all transforming commercial shipping's business models. Previously described as "the black hole of the global supply chain", shipping is now on the way to becoming the maritime link in a smart, integrated and super-efficient world transport system.

Autonomy and remote control are becoming increasingly important and leading design and engineering companies are investing heavily in R&D which could see autonomous ferries, offshore support vessels and coastal cargo ships in operation within the next five to ten years.

All of this has huge implications for the ships' crews of tomorrow. And it makes recruiting and retaining smart young people who have grown up in today's increasingly digital world all the more important.

Digitalisation is having an impact on all aspects of ship operation and management. Here, we look at three ways in which tomorrow's seagoing personnel and their managers will need distinctly different skill sets.

Firstly, at an operational level, ships' engines and the fuels used are likely to change dramatically. Some experts believe that it will be almost impossible for ships to continue to burn heavy fuel oils and marine gas oil if shipping is to comply with 2050 emission constraints laid down in the Paris Agreement. Already we see the growing deployment of electricity as a power source for ships, usually in hybrid set-ups.

However, battery technology is advancing so fast that various projects in Norway, for example, are using batteries and energy storage for parts of voyages or spells in port. Some believe that electricity could provide a supplementary fuel on board deep-sea commercial vessels within a foreseeable timeframe. Other fuels under development for ships include biofuel, liquid hydrogen and fuel cells.

Meanwhile the maintenance of ships is already undergoing a transformation. Original equipment manufacturers (OEMs) including companies like ABB, MAN Diesel & Turbo, Rolls-Royce and Wärtsilä are establishing shore-based monitoring and control centres to track the performance of their components on board ships. Maintenance will be carried out as and when necessary, based on real-time sensoring and predictive algorithms.

Tomorrow's marine engineers will be IT and electronic experts

Different types of machinery and a new approach to maintenance is likely to mean that tomorrow's marine engineers will be IT and electronic experts. And with more performance data available ashore in real time, shipboard engineers will probably become an extension of the fleet superintendent's office, with significantly less autonomy.

Meanwhile, on deck, masters and navigating officers will also work with more intervention from shore. Voyages will be optimised using ship characteristics, loaded condition, speed, draught and trim, all combined with big data in algorithms recommending a change in course or speed.

Ports and terminals, meanwhile, will also become an integrated part of the supply chain. Container facilities in Hamburg and Singapore, for example, are already telling the masters of container ships to speed up or slow down days before their arrival to ease possible logistics pinch-points at the terminals.

Rolls-Royce's vision of the road to ship autonomy suggests an even more dramatic transformation of the role of the navigating officer. In its "Electric Blue" container ship concept, for example, there is no conventional bridge from which navigating officers plot the voyage and control the ship's progress. The bridge is located aft under cargo containers with no view of the sea at all.

The bridge is one designed for remote operations, explained Oskar Levander, Rolls-Royce's VP of concepts and innovation recently. It is located on board the ship for now, rather than in a dedicated shore-based management centre as envisaged ultimately by the company in its autonomous ship concept. The bridge operates on a sensor-based system integrating infrared cameras with lidar, radar and a network of sensors.

Levander reveals that experienced ship captains visited the bridge when it was undergoing tests. They could not believe that it was possible to have "a better view" than they did from a conventional bridge on board their ships in real life. Ultimately, when the navigating bridge and the accommodation is removed on the autonomous vessel controlled from shore as Rolls-Royce envisages, more space will become available for cargo and reducing shipboard services such as heating, lighting, domestic water supplies and waste systems.

Whether or not shipping's regulatory framework will ever enable such a vessel to operate, greater autonomy is an inevitable and unstoppable development. A shortage of experienced and well-motivated seagoing personnel today could become a critical factor in the future as advances in ship autonomy require different skill sets and a whole new approach to ship operation and management.

Seatrade Offshore Marine & Workboats Middle East

25-27 September 2017
Abu Dhabi National Exhibition Centre
Abu Dhabi, UAE

Exhibit Now

The largest Workboat and Offshore Marine event outside of the USA

Make this your opportunity to get in front of the right people, all under one roof.

5,175+ visitors

220 companies

62 represented countries

BOOK NOW!

For more information about available stand options, please contact:
Chris Adams, Group Sales Manager
T: +44 1206 201557
E: chris.adams@ubm.com

Gold Sponsors

ABS

Middle East Marine

Silver Sponsors

allianz marine

SCHOTTEL

Go to www.linkedin.com and join Seatrade Maritime Events group for information and updates

Seatrade Maritime Events

@SeatradeME

www.seatradeoffshoremarine.com/exhibit

UBM