The Confidential Hazardous Incident Reporting Programme – CHIRP – is an independent system for all those involved in the maritime industry to report incidents of concern. CHIRP’s Maritime Advisory Board has joined forces with Safety at Sea to provide regular insights into topical safety issues.

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Poor ship design affects seafarers

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The maritime industry sorely needs ship designers to take full responsibility and accountability for designing ships and equipment that will mitigate seafarers’ exposure to potential risk.

Shipowners should demand this as standard when awarding contracts for newbuildings but sadly this is not always the case. It is often clear that naval architects and those approving the design of ships have not been on board a vessel for a long time and may not be familiar with current operations or the everyday exposure to danger of seafarers, who face injury or worse.

Unfortunately, all too often they design to the minimum regulatory standard and naval architects from competing shipyards are tasked to produce the cheapest outcome rather than a best practice solution to managing risk.

For example, where is the innovator who will remove the number of pinch points in lifeboat falls and therefore reduce the risk of catastrophic failure in the wire?

The design and layout of mooring stations also needs a new approach. This subject clearly receives little attention: all the evidence you need is to stand on the deck and hear the ropes cracking as a result of poorly positioned fairleads and tumblers. Furthermore, why are flashing lights and klaxon warning sounds considered by naval architects to be the optimum safeguard in the safe operation of power-operated watertight doors?

There is also either a will to ignore or a lack of understanding about safety regulations. It is common for SOLAS Chapter V regulation 23, pilot transfer arrangements, and the International Maritime Pilots Association’s Guidance for naval architects and shipyards on the provision of pilot boarding arrangements to be ignored.

Unfortunately, regulations being ignored is not uncommon: we are still to see the satisfactory implementation of Lord Mersey’s recommendation for improved watertight subdivision on passenger ships as a result of the report into the sinking of Titanic on 30 July 1912.

While the Maritime Labour Convention 2006 (MLC 2006) advocates consideration of the design and construction of ships and accommodation of seafarers, in 2017 equipment suppliers have made little meaningful contribution to the standardisation of design and operation of critical equipment.

The navigation bridge or the engine control room will always reveal a plethora of different and haphazard positioning of operating buttons, levers, and alarm lights, which often require specialist training to understand. The need for uniformity and standardisation of equipment has been disregarded by equipment suppliers and seems to have been sacrificed for products that look aesthetically pleasing and are competitively priced for the shipowner/buyer. In addition, operating manuals seldom meet the minimum expectation for training.

A more proactive approach

The maritime industry needs to take a more proactive approach to the process used in design, which should not merely involve one highly qualified person working with...
computer aided design (CAD) drawing tools. There is a need to draw on first-hand experience of active seafarers, then start with a clean page and weave experience into all aspects of the design.

Even this may not be enough, and consideration should be given to cognitive psychology, in particular the human brain's mental processes involving memory, perception, and problem-solving. This means further consideration of how people come to understand the world around them through interpretation of stimuli and, in particular for seafarers, how they perceive their physical environment and how that influences their work. This can be as simple as helping to reduce the number of slips, trips, and falls.

The human eye plays a key role. How does the brain select the information it receives and alert the seafarer to potential dangers? For example, we know that decks made of continuous steel plate, when painted green and with floodlight illumination, trick the eye and create difficulty in depth perception. Lifeboats painted orange are a good idea as it is the colour most likely to be seen in the distance against the likely range of sea colours. Unfortunately, this fact does not seem to have been known to the organisations that allowed certain cruise ship operators to choose lifeboat colours that blend in nicely with the colours of a ship's superstructure.

Furthermore, why do manufacturers of leisure craft that are designed to go to sea continue to supply white hulled and decked craft – often adding blue stripes and a blue spray hood? Have they taken into full consideration the ability of bridge watchkeepers to see these craft in Beaufort 5 weather conditions? Obviously not! A light blue fishing vessel leaving harbour in daylight is about as visible as a ship steaming at night with no navigation lights, yet a simple high-visibility orange band above the wheelhouse might be enough to save the lives on board.

All too often we see maritime incident reports into serious injuries and fatalities that claim the causal factor was the human element, and there the investigation stops. In an investigation into aviation incidents, when the causal factor is the human element, this is when their investigation really starts. The maritime approach to remedial action, all too often, is to advise better use of risk assessment tools, improved procedures, and perhaps improved safety equipment. Rarely does the investigator ask the key question: why?

Here flag state and port state control authorities can and must do more. If they do this more often, they may discover the root cause is a limitation created by naval architects in their design of equipment and work spaces on ships. Why should they not be made responsible and accountable for their all too often lamentable work? Their aim, like ours, must be to ensure every seafarer returns safely to family and loved ones after each and every trip.

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