SEMAPHORE

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Human Factors Learning Key to Preventing Maritime Accidents

Ship operators, safety professionals and accident investigators will gain better understanding of the underlying root cause of human-factor related issues in maritime incidents if using the Safety Human Incident & Error Learning Database (SHIELD).

Such is the urging of the University of Strathclyde's Maritime Human Factors Centre (MHFC) head Dr Rafet Emek Kurt, who led the SHIELD development for the maritime sector.

"Human factors have long been recognised as a critical element in shipping safety, yet whenever there is an accident, in reaction to the lessons learnt we continue to overload the seafarer with more safety procedures, more checklists, more training," says Dr Kurt.

"This is largely ineffective in reducing human factor incidents and increases the cognitive load on the seafarer. We need to address the root cause of an accident to have any meaningful impact."

Dr Kurt says the SHIELD platform provides invaluable feedback to ship managers, policy makers, accident investigators, and ship and system builders to better quantify the human components in safety risk models, resulting in positive changes in ship design, operations and rules.

"So far, in the absence of high-quality data, the maritime sector has failed to include human factor considerations in critical decision making. As a result, envisaged safety improvements from the sector have been ineffective, with accidents continuing to occur at a steady rate after."

He emphasises that through industry-wide collaboration and use of SHIELD, stakeholders can better understand underlying human factor contributors. The data can also serve to develop new accident and risk models as well as tailor research to address any shortcomings.

Using an iceberg analogy, where the visible part represents human factors and the submerged part represents underlying conditions, Kurt says it is what's beneath the waterline that is important.

"At the tip of the iceberg, it may be relatively easy to see what happened, when it happened and who did what. But the reasons why it happened are not uncovered. SHIELD allows us to take a deeper dive."

The SHIELD taxonomy is said to assess input data against a range of extenuating factors affecting human performance, such as workload,

MHFC

The Maritime Human Factors Centre (MHFC) at the University of Strathclyde is described as a leading research hub dedicated to advancing maritime safety through "cutting-edge human factors research, consultancy and specialised training".

Working in collaboration with global research organisations, governments and industry partners, the MHFC is striving to enhance safety and efficiency in maritime operations. The centre offers flexible postgraduate and PhD programmes, both full-time and via distance learning, to train the next generation of human factors specialists.

Equipped with state-of-the-art facilities, including full mission bridge simulators, a virtual reality lab and advanced human monitoring tools, the MHFC is said to provide "unparalleled resources for measuring and improving human performance in shipping operations".

situation awareness, stress and fatigue, human system interfaces and teamwork. But it goes further by providing insight into how organisational and leadership structures, strategies, cultures and socioeconomics play a part, continues Dr Kurt.

“It’s an effective safety learning platform but we need more companies to upload their data to allow the maritime industry to better capture and learn from the underlying human factor-issues in incidents. By aggregating anonymised data from participants, SHIELD researchers can identify emerging trends and patterns across the industry. It also helps ship operators by helping them address and identify the major accident contributors not typically picked up in an accident investigation report.

“SHIELD represents a paradigm shift in how the shipping industry approaches safety. By empowering shipowners to deeply analyse their accident data, we can move beyond the traditional ‘human error’ narrative and uncover the true drivers of incidents. This knowledge is invaluable in creating a safer, more efficient and more sustainable maritime sector.”

Developed by a consortium of partners across the aviation and maritime spheres as part of the European Union’s SAFEMODE project, SHIELD was launched in 2022 and is reportedly being used by major cruise lines, a United Kingdom-based ferry operator, safety agencies in Europe and Asia, and a number of accident investigation boards.

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