

innovations

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How design and engineering is supporting passenger vessels out of a COVID hibernation



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Independent analysis, innovative design and engineering, and the ability to adapt as the pandemic evolves are all central to accelerating the recovery for passenger vessels, explained Houlder Ltd's technical director, Mike Simpson in this Innovations piece.

The outbreak of COVID-19 towards the start of 2020 saw the majority of ferry services grind to a halt. Some managed to continue life-line services by adapting operations with limited passengers and new regimes, while others reassessed their assets and operations.

As the world starts to emerge from its state of hibernation, passenger vessel owners and operators need a jump-start to minimise further economic impact in the months, and years, to come.

In the UK, a glimmer of hope was provided by the UK Government with £35 mill in support of critical ferry services, particularly across the Channel. Other organisations have provided operational guidance for COVID-related safety measures, with the aim of building confidence in ferry services, as travel restrictions ease. But this will have to sit alongside innovation and tangible solutions from experts to get passengers back on board.

With appropriate safety measures in place and rising consumer confidence, recovery will come. However, all the guidance being provided is broad, and non-specific, and each vessel will have different requirements, which need to be taken into consideration when making the necessary adaptations. A tailored and personal approach is what's needed, supporting operators and managers in making informed, cost-effective decisions to accelerate recovery.

Guidelines are useful, but applying them to individual vessels is the challenge. Lots of guidance has been provided in many forms to provide insight and advice to the industry. In early May, the UK Government provided operational guidance to the ferry industry and in mid-May, Interferry published more specific guidance on the physical arrangements at terminals, on board processes and capacity guidelines.



Houlder Ltd's technical director, Mike Simpson

This information provides inspiration for ferry operators, terminals, authorities and any other entity concerned with the mitigation of health risks to passenger ferry services.

However, while the guidance informs and advises, it cannot provide a vessel-specific solution. All guidance is not scientifically vetted, therefore owners and operators will need to assess the impact of applicable health and safety guidance when determining appropriate mitigation strategies.

The implementation of these guidelines is what matters but not all ferry operators have a technical team able to review and assess vessels on a case by case basis. From changes in ventilation to avoid re-circulation, to redesigning the interior to adhere to social distancing on board, an independent analyst can provide the knowledge needed to ensure the vessel is being adapted in the most efficient and effective way.

Classification societies have introduced COVID-secure workplace assessments to reassure passengers that correct arrangements are in place. But these rely on passenger vessel operators analysing the vessel themselves and achieving the necessary adaptations.

By working with an expert engineer at this initial stage, operators gain the confidence to walk the tightrope between maximising capacity through vessel re-design, while meeting the safety requirements and delivering confidence to passengers and employees.

Engineering innovation

Each vessel has its own characteristics, layout and operational profile. It requires innovation and experience to assess individual needs and make recommendations as to how it can be adapted and modified according to its operations.

For some vessels, reviewing the car deck stowage area will be essential. It may require alterations to enable safe access to vehicles, or a change in loading to allow for a maximum capacity but without compromising safety. Understanding the entire vessel operations and looking at it objectively, in its entirety, will enable owners and operators to maximise profits when operations resume. The guidance provided is broad and basic, but it will take simple, innovative engineering to make safe and effective changes that can also be re-adapted once operations return to normal, whether that is in weeks, months or years to come.

The length of the voyage is an important factor to consider, from overnight routes to short trips. Some organisations, on short routes, can arrange dispensation for passengers to stay in their cars, while others will need to consider alternative options.

There are hundreds of possible measures to implement, but the main focus needs to be on understanding vessel operations and using innovative solutions to ensure safety. From allocated stations for hand sanitisers, which avoid grouping and redesigning walkways, to

reviewing ventilation systems and enabling retail revenues to continue – design and engineering is the first stage of the process of getting ferry passengers back on the water.

Simple changes in design can offer practical and efficient solutions to ensure a vessel is meeting the requirements needed to keep people safe while also maximising capacity. Once this analysis, which can all be done remotely, has been completed, class societies will be able to undertake an assessment, providing both owners and passengers with the confidence needed to resume business in today's new world.

Long term analysis

A documented Safety Management System (SMS) is required by shipping companies to assess all identified risks to the safety of ships and personnel. This document establishes necessary safeguards and procedures. As part of this, detailed plans and procedures to manage risks associated with COVID-19 on vessel operations needs to be prepared and provided to support the vessel's safety certification. However, this is something that needs to be updated on an ongoing basis, particularly as circumstances fluctuate, and regulations and guidance changes in a post COVID-19 world.

Fortunately, the industry is adaptable and has always been committed to improving best practice, which is now central to moving forward. Regulation will take time, but action is required today and collaborating with independent engineering experts can fast track the road to recovery.

Going forward, re-assessment of the number of passengers carried and refining arrangements on board will be needed to maximise capacity in the long term. Surviving these turbulent times relies upon owners and operators being adaptable and open to change. Indeed, as the pandemic evolves, maximising the number of people on board in a COVID-secure way demands ongoing review, analysis and vessel adaptation. Success demands accepting this is an ever-changing goal post.

Houlder - an independent design and engineering company

In 1987, the technical department of Houlder set up its own employee-owned design and engineering company.

Fast forward to 2006, Houlder acquired bespoke ship designer, Hart Fenton & Co Ltd, from the Sea Containers Group.

This acquisition formed the foundations for the independent design and engineering company Houlder is today, offering experience in naval architecture and marine engineering.

The team has 30 years of experience working with ferry operators on a global basis. This has involved newbuildings and retrofits, including designing, supporting and refitting ro-ro, ropax, fast catamaran and riverbus vessels.

Houlder has a track record of supporting vessel projects at each stage of their lifecycle from concept design, through to detailed design and construction.

In recent years, this portfolio has featured many high profile ferries with innovative and environmentally-sound design solutions, such as the Wightlink G-Class hybrid electric ferry and the Caledonian MacBrayne LNG ferries currently being built.

New ropax design

An example of Houlder's capabilities came last month with the announcement that the company had won a contract from the Isle of Man Steam Packet Co (IoMSPC) to act as technical advisor in the design and building of its latest battery hybrid ferry.

The new purpose-built ropax will meet the challenging requirements of increased vessel capacity and comfort, as well as sailing in the harsh Irish Sea conditions.

She will be constructed at Hyundai Mipo Dockyard (HMD) and is due for delivery in Spring 2023.

Houlder said that the the project presented two key design challenges, including providing a dependable lifeline throughout the winter being able to tolerate the harsh conditions of the Irish Sea on Douglas (IoM) and Heysham route. In addition, the new vessel will provide increased passenger capacity, especially important during the two weeks of the Isle of Man motorcycle event, the annual TT.



An impression of the new IoMSP ropax