



Turn up the volume!

by Fitzwilliam Scott

On the understanding that ‘green’ methanol will run vessels almost emission-free one day, commercial shipping is increasingly looking favourably on a fuel type which – in its current form – is widely used in other industries. As such, technical inquiries poured in after SRC Group secured Approval in Principle (AiP) for a concept that “reinvented methanol fuel storage” on board ships. Delivering the answers has seen technical talk quickly converting into project discussions.

Methanol, currently derived principally from natural gas, is available, relatively easy to handle, and predictable. Lower-carbon today and potentially zero-carbon tomorrow, methanol, therefore, offers a practical alternative to heavy fuel oil (HFO) and a pathway towards ticking off the International Maritime Organization and EU’s decarbonisation targets.

As of September 2023, methanol had been specified for 216 newbuilds, according to figures from DNV. Clarksons recently estimated that 1,200 ships could be running on methanol by as early as 2030. That is, indeed, much methanol that needs to be stored somewhere.

How to free capacity – safely

Methanol’s other “outstanding” characteristic is its space inefficiency: tonne-for-tonne takes 2.4 times more to generate the equivalent energy as HFO.

Conventionally, tanks storing low flash-point fuels on board ship feature cofferdams

of at least 600 millimetres (mm) across to separate internal and external walls. Included as a safety precaution, the gap nevertheless restricts capacity.

Imaginative design can help find unused spaces for extra storage aboard a newbuilding, but opportunities are more limited on existing vessels. Where retrofitting a dual-fuel engine to run on methanol is feasible, the fuel storage issue may restrict a ship to short voyages or demand more frequent bunkering – both of which undermine the return on investment.

Understandably, huge interest greeted Lloyd’s Register (LR) AiP for SRC Group’s ‘Methanol Superstorage’ in October 2023. According to the designer from Estonia, the retrofitted tank storage solution increases volume by as much as 85% and can be installed with minimal impact on the general arrangement.

New use of “old” tech

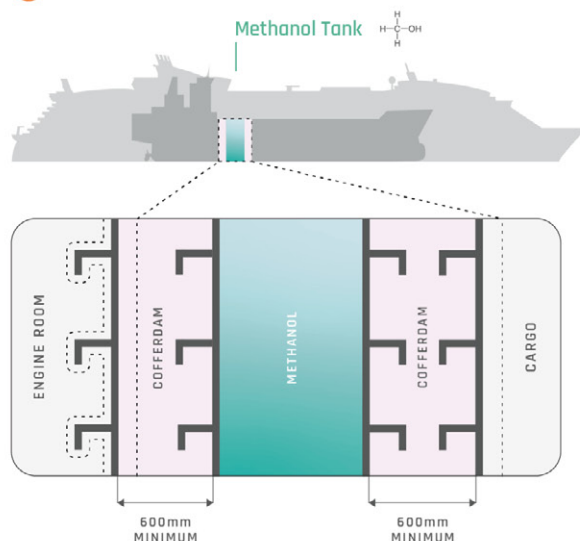
The Methanol Superstorage dispenses with the cofferdam altogether and instead

installs tank walls formed by the sandwich panel system (SPS) technology. This solution sees a continuous polymer core injected between two steel surfaces.

Approved for permanent repairs by all major members of the International Association of Classification Societies, SPS has been used in maritime and off-shore applications for over two decades, including for corrosion repairs in ship structures. The secured class approvals have involved laboratory testing of the polymer core material for chemical resistance, among others, for methanol. SRC, as an engineering, procurement, construction and installation service provider, has experience with complex refits across 5,000+ projects worldwide, including an extensive understanding of the patent-protected SPS technology process.

For the Methanol Superstorage fuel tank, a 25-mm-thick steel-polymer-steel barrier provides protection against fire or leakage that is equivalent to a conventional tank, according to SRC. The injected

A Traditional Storage



B SRC Methanol Superstorage

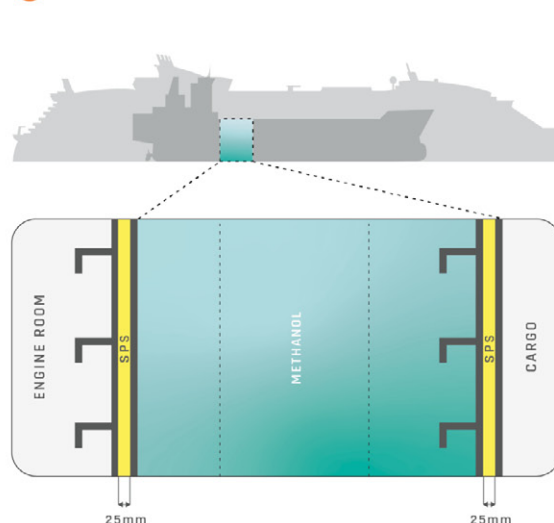


Photo: SRC Group

polymer also creates oxygen-free conditions behind the steel plates to prevent corrosion. The sandwich panel system can be used in place of cofferdams on all tank boundaries (incl. those facing shell plating).

"We always knew how significant Methanol Superstorage would be because existing ships need to play a full role in energy transition if GHG emission targets are going to be met and storage capacity is a key challenge," says Hannes Lilp, SRC Group's CEO. He further, "We are already in detailed discussions with a well-known ferry line, while we've been approached by cargo ship operators, off-shore support vessel owners, tug companies, shipyards in Europe and Asia, and by the marine engine suppliers. One area that has surprised us has been the high level of interest from the super yacht sector." Less surprising has been the flow of inquiries from cruise ship owners, many of whom have already studied the feasibility of retrofitting ships for using methanol as a marine fuel.

"These are new and confidential discussions, but what I can say is that live projects are under review to accommodate consideration of Methanol Superstorage, while one project that looked dead is being revived," comments Lilp. The in-flow of technical questions from all corners of the maritime industry has been "almost overwhelming," he adds.

No showstoppers

Securing AiP provides a technology developer with a statement from class

confirming there are no significant obstacles to future certification or classification. As explained by LR, it allows an innovator to "gain early confidence that your technology has the potential to satisfy regulatory requirements." It also means that "stakeholders will have confidence in their investment."

Discussions covering approvals from other classification societies are ongoing, shares Lilp, although he acknowledges that the journey length from AiP to full class approval is substantive. In an area where fuel storage regulations are evolving, additional scrutiny can be expected. "Due to the regulatory status of low flash point fuels, all methanol fuelled ships need to go through a Risk Based Certification process that includes full risk assessment for the whole methanol fuel system from bunkering station to the engines," comments Alex Vainokivi, Innovation Manager, SRC Group. "AiP is part of the risk assessment. Any final approval for a methanol fuelled ship comes from the Flag State Administration," he adds.

Nevertheless, key SPS technology characteristics are not in dispute. "For example, under fire testing, and when the core thickness for SPS structure is more than 25 mm, it has satisfied the fire safety

objectives and the functional requirements of SOLAS A-60 regulations without the need to install thermal insulation," underscored Vainokivi. He continues, "We will establish whether inerting and venting are needed on a case-by-case basis – and the same for fire and leakage detection – but the requirements relating to cofferdams can be dispensed with. From that perspective, the solution provides equivalent 'triple barrier protection' to prescriptive requirements for cofferdams adjacent to all space categories – including accommodation."

Happy to answer

Lilp says the most frequently asked question SRC has been fielding concerns whether Methanol Superstorage is as appropriate for newbuildings as it is for retrofits. "The answer is an emphatic yes: fuel storage tanks can be constructed using the SPS sandwich panel system in lieu of cofferdams on both new build and refit projects," he explains.

"Actually, we seek to open more direct channels of communication for questions from major shipbuilders and designers worldwide because of requests from our commercial ship-owning clients. As before, we are only too happy to answer," Lilp sums up. □

We are well-positioned with knowledge and capability to support climate targets in the maritime industry, with 90% of SRC's business volume directly arising from the Green Transition. Our company provides solutions for ballast and wastewater treatment systems, shore connections and retrofits, installing exhaust gas scrubber systems, integration of alternative fuels, and anything that helps convert your ships to meet a greener and more efficient future. Set course for src.ee to discover more.