

Converting your liability into an asset

Concept designs and conversions are resulting in new opportunities for laid up or under-utilised OSVs outside the oil patch

US-based naval architectural and marine engineering firm NETSCo has been in discussions with an LNG supplier regarding the possibility of the conversion of an existing OSV to a small-scale LNG carrier.

The discussions started two years ago, according to NETSCo vice president Jan Flores. “They have been delivering LNG to the Caribbean by ISO container and they approached us about a vessel,” he says. Initially, he explains, the LNG supplier was interested in chartering

an OSV to move the ISO containers, but the number of containers made it impractical. “They needed a bulk vessel”, he says.

The meeting resulted in Mr Flores beginning to develop a concept design for converting an existing OSV into a small-scale LNG carrier.

At about the same time, NETSCo was approached by class society Lloyd’s Register regarding the possibility of working on joint development projects in the US.

“With the number of OSVs stacked in the US Gulf of Mexico, there is real market interest in this design”, says Lloyd’s Register Americas Marine & Offshore vice president Raphael Riva.

As of mid-April, there were some 390 OSVs and 76 offshore construction vessels stacked in the US Gulf of Mexico, according to VesselsValue. OSV utilisation rates are some of the lowest in the US Gulf of any region in the world.

Mr Flores says the concept design would utilise a fairly typical previous generation 260 or 280 class OSV platform in the 80 to 90 m range. “These are common but relatively small as compared with the new generation of ▶

A combination small-scale LNG carrier and bunker vessel concept from Shiplnox has received AiP from DNV GL



► vessels,” he says. The concept focuses on a small-scale LNG carrier that will be able to transport LNG in bulk and ISO containers, with a capacity of 1,500 m³ and another 1,000 m³ in ISO containers. The vessel would have IMO Type C bilobe LNG cargo tanks.

For the concept, Mr Flores says the team focused strictly on a small-scale LNG carrier and did not look at the economics of an LNG bunker vessel.

In particular, it is envisaged that a small-scale LNG carrier of this size would serve power generation markets in remote locations, such as the Caribbean or Indonesia.

“There are a number of small-scale LNG carriers that fall in the range of between 7,000 and 11,000 m³,” says Mr Flores. “Those vessels are actually too big for the needs of power plants in the Caribbean, which typically require about 1,500 m³ every two weeks. They don’t have the capacity to handle a large ship.”

One of the smallest LNG carriers in the world is the *Pioneer Knutsen*, which operates along the coast of Norway and is owned by Knutsen OAS Shipping. Built in 2004 by Scheepswerft Bijlsma in Holland, *Pioneer Knutsen* has an overall length of 69 m, beam of 11.8 m and cargo capacity of 1,100 m³.

Among the regulations the vessel would have to meet, says Mr Riva, are the IMO International Maritime Dangerous Goods (IMDG) Code

Three OSVs purchased by Jan De Nul are being converted to water injection dredgers



and the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code), which applies to gas carriers constructed on or after 1 July 1986.

The design is under consideration for Approval in Principle (AiP) by Lloyd’s Register. The next step would be to present the design to a US owner.

The AiP has not yet been issued, says Mr Riva. He says the concept has been designed for Jones Act trade and US Coast Guard approval, meaning

that it will “fulfil the requirements for just about any flag.”

Mr Riva and Mr Flores say they approached the project through the eyes of a shipowner. “As engineers, we love to design stuff,” says Mr Riva. “But we had to answer the questions, ‘Is it economically viable? Does it make financial sense for a return on investment? I think we have made that case in our joint development project.’”

Based on “very depressed OSV prices”, Mr Flores estimates the cost to

OSVs overhauled for work in North Sea

UK-based Rever Offshore’s saturation diving support vessels *Rever Sapphire* and *Rever Polaris* have completed repairs and upgrades at A&P Tyne shipyard in preparation for work in the UK North Sea. Rever Offshore’s fleet consists of four specialised OSVs, which provide dive support, light construction and subsea maintenance in the North Sea sector.

Rever Sapphire underwent drydocking, survey and repairs in a month-long programme of work. *Rever Sapphire*’s swing-up thruster was repaired and its cranes upgraded as part of the scope.

Rever Polaris followed *Rever Sapphire* into drydock for an eight-week programme as part of its special survey docking.

UK-based diesel engine service company Royston completed the overhaul of diesel engines on *Rever Polaris* at the shipyard, disassembling the Wartsila W9L26 No 1 and No 3 diesel generators to refurbish cylinder heads, renew cylinder liner seals and overhaul pistons and connecting rods.

Following completion of the work, load testing was completed by the Royston team alongside at A&P shipyard.

acquire the OSV and convert it would be US\$30M. “The proof is in the pudding. We have a supplier who says the number makes sense.”

Mr Riva points out, “Any small-scale LNG carrier built in China would be at least that same price and you would have to wait for a build slot and delivery.”

“You can also make the business case that if the shipowner retains ownership of the vessel and charters it to the supplier then the net cost is even lower and he puts an asset to work,” says NETSCo president Richard Mueller. “There are a number of ways you can structure this to make it financially attractive” such as amortising the cost of the conversion and ship purchase over the life of the contract.”

Mr Flores concludes: “This vessel could open up markets where a 10,000 m³ capacity small-scale LNG carrier isn’t viable. If you are a shipowner that has assets that aren’t generating any income, this makes real financial sense.”

Small carrier and bunker vessel

Norway-based ShipInox AS has received AiP from class society DNV GL for its small-scale LNG carrier/bunker vessel concept, based on an OSV design.

While conceived as a 92 m newbuild with a capacity of 6,000 m³ of LNG, ShipInox chief executive Rune Østbøe told *Offshore Support Journal* the firm’s design would be suitable for other size vessels and for existing OSVs as well. Mr Østbøe says ShipInox is optimising its engineering and cost factors for converting existing OSVs.

Unlike the NETSCo concept, ShipInox’s concept vessel will be equipped with a prismatic cargo containment tank, with capacities from 5,000 to 8,000 m³ and LNG dual-fuel engines.

Mr Østbøe says developing the design was challenging: “Not only DNV GL and the Norwegian Maritime Authority (NMA), but a diverse range of companies spanning Innovation



IF YOU ARE A SHIPOWNER THAT HAS ASSETS THAT AREN’T GENERATING ANY INCOME, THIS MAKES REAL FINANCIAL SENSE”

Norway, to the LNG-specialists at Torgy and Fearnleys have all enabled us to deliver on this design. We are now in a position where we can help to accelerate entries into small-scale LNG with this fast-to-market and low-cost LNG carrier.”

DNV GL’s most recent forecast predicts that by 2050 over 20% of total shipping energy will be provided by LNG. In the shorter term, with the

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IMO 0.5% global sulphur cap entering into force on 1 January 2020, the combination of technical maturity, efficiency, availability and emissions reduction means LNG is a viable option for many vessels, especially newbuilding projects.

DNV GL senior vice president maritime Trond Hodne, says: “This design could be a viable option for owners looking to move into different segments in a challenging market, especially as the gas segment continues to gain importance in shipping”.

Norwegian Maritime Authority senior surveyor Karolina Lundgren adds: “For future developments, it is a great advantage that the most problematic issues have been carefully considered both by Shiplnox and DNV GL and the need for alternative designs has already been identified.”

OSV to water-injection dredger

Delivered to Netherlands-based Jan De Nul Group, *Giovanni Venturi* is a newly converted water-injection dredger capable of a maximum operating depth of 27.5 m and with a water jet pump flow rate of 16,000 m³/hr.

“The conversion of the first offshore supply vessel to a water-injection dredger has been a complex and challenging project for both shipyard and owner,” says Jan De Nul Group technical division director Frederik Deroo. The conversion was performed by Singapore’s PaxOcean Shipyard.

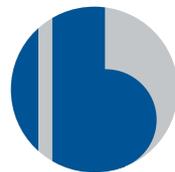
Giovanni Venturi is the former *Surf Perwira*, originally built as *Bourbon Liberty 117* at Dayang Shipbuilding in Yangzhou China in 2010. It was part of a series of anchor-handling tug supply (AHTS) vessels built for France’s Bourbon Offshore, based on a GPA 254L design from Seattle-based Guido Perla Associates Inc. Each AHTS vessel had an overall length of 59.8 m, beam of 15 m, depth of 5.5 m and draught of 4.3 m. Built with dynamic positioning class 2 capability to ABS class, each AHTS had diesel-electric propulsion with two azimuthing stern thrusters, one fixed stern thruster and two bow thrusters for manoeuvrability and station keeping.

Another innovation of the design was relocating the engineroom to the main deck, creating more space below deck for cargo capacity.

In its new role, *Giovanni Venturi* will perform water-injection dredging (WID), a hydrodynamic technique in which the dredging sediments are not removed from the channel or seabed. Instead, water is injected by the vessel from a horizontal bar onto the river bed, creating

a layer of fluidised sediments that are carried away by the waterway’s natural currents and forces. WID eliminates the need to excavate and transport dredged material by hoppers or barges.

Two sister vessels to *Giovanni Venturi*, *Henry Darcy* (built as *Bourbon Liberty 111* in 2008) and *Henri Pitot* (built as *Bourbon Liberty 110* in 2008) are also being converted by PaxOcean Shipyard for delivery to Jan De Nul in 2019. [OSJ](#)



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