Will hydrogen fuel power the shift to a greater use of renewables?

Yaskawa Environmental Energy / The Switch believes the global maritime industry is now on the threshold of a committed move towards renewable energy, with hydrogen as the potential acid test in the shift away from fossil fuels.

“Renewables and alternative fuels are attracting increasing interest, driven by greater environmental awareness within society, tighter regulations and an industry-wide need to optimize energy use and manage costs,” comments Asbjørn Halsebakke, Product Manager of Marine Drives, The Switch Norway. “We’re fielding more and more enquiries about how our innovative drive train and energy efficient technology can be utilized to embrace new fuels. And, in those conversations, hydrogen is a recurring theme.”

Rapid development

Halsebakke’s colleague Ville Parpala, Director, Product Marketing of Marine Solutions, agrees. He says that hydrogen, in combination with battery and hybrid systems, will help shipping chart a route to a more environmentally sound and cost-efficient future.

“Hydrogen is a carbon-neutral fuel,” he states. “When it is produced using electricity from renewable sources, such as solar or hydro power, it is effectively emissions-free. In its liquid form it can be used to charge batteries for electrical propulsion via fuel cells. I think its uptake in maritime will take a lot of people by surprise, with developments moving ahead quickly – in both Europe and Asia, particularly China.

“There are obvious challenges, in terms of production, bunkering and other infrastructure, but demand will work as a powerful driver to help industry overcome these issues.”

Tailoring solutions

Both executives are, however, quick to stress that any move towards hydrogen won’t be at the expense of battery and hybrid solution developments, but rather in tandem with them. Fossil fuels will remain part of the mix for the foreseeable future, they say, but their ‘slice of the pie’ will shrink over time. Batteries, on the other hand, will grab more.

“All electric solutions for short sea shipping and hybrid solutions for offshore and deep sea help owners and operators meet environmental and cost targets, and as such will become increasingly commonplace,” Halsebakke notes.

“There are barriers to hydrogen uptake that you don’t see with marine batteries, which have taken huge leaps forward in recent years, but hydrogen is a much more

viable option for long-haul shipping. In that regard, it can be a key enabler in decarbonizing the industry – a stated IMO target by the year 2100."

The need for flexibility

Despite both executives' belief that hydrogen's role in shipping will evolve, neither is prepared to view it as a 'one size fits all' solution.

"It'd be foolish to see it as the only way forward," Parpala notes. "The world is unpredictable, and shipping companies can't afford to put all their eggs in one basket. Owners and operators need to be flexible to prosper, and that's especially true when it comes to fuels."

Thankfully there is a solution that makes life a little more predictable for shipowners, even if the fuel mix is not. The first delivery of our revolutionary DC-Hub was in 2008. This, Halsebakke states, is a key piece of the puzzle for shipowners looking to embrace a range of fuel sources, now and in the future.

Future-proof technology

"Vessels built today have to be viable for the next 25 to 30 years," he says. "However, nobody can say with any certainty what type of fuel we will utilize over that same time period. This is where the DC-Hub comes in.

"Not only is it simple, eliminating the need for a main AC switchboard, and cost effective, enabling generators to run at optimal efficiency while batteries cater for load changes, it is also flexible. It allows for any power source – be that hydrogen fuel cells, wind generators, or solar panels – to be easily connected to a vessel's DC grid. In that way, owners can create the best fuel mix to satisfy their operational, economic and environmental needs, adding new sources as they become viable to ensure optimal performance and efficiency.

"In an uncertain world, the DC-Hub provides certainty, effectively future-proofing seagoing vessels."

Providing peace of mind

Parpala adds that the Switch's Electronic Bus Link (EBL) breaker provides further peace of mind, delivering unique redundancy.

"The EBL is fitted between a vessel's DC-Hubs and operates to isolate any faults in just microseconds," he explains. "It effectively splits the grids, regardless of the size and nature of the fault, ensuring ultimate availability of power – and safe, efficient ongoing operations.

"What's more, if additional grids are required for future operations, they can be integrated simply with the addition of a new EBL. This gives owners the flexibility and reliability to cope with the changing demands of this dynamic industry."

Yaskawa Environmental Energy is committed to the development of a portfolio of technology that enables shipowners and operators to both consume less energy and produce efficient energy in a sustainable manner.

The company has delivered more than 1,000 marine power drives to the industry over the past decade and is currently expanding its in-house R&D capabilities to

allow for drive train testing of up to 15 MW. The DC-Hub is now in operation in a range of vessels throughout the world. The EBL successfully completed a Factory Acceptance Test (FAT) in Trondheim, Oslo, last year and is now installed on the North Sea Giant, one of the largest and most advanced subsea construction vessels ever built.

Poseidon DC-Hub

For more information:

Insert contact details

About Yaskawa Environmental Energy

Yaskawa Environmental Energy / The Switch focuses on electrifying the world with ultimate efficiency. Our innovative products, capabilities and solutions create energy sustainably, contain energy effectively and consume energy responsibly. Today, we have 15 GW of megawatt-class environmental energy technology delivered for leading energy pioneers throughout the world. We're on a mission to enable more profitable power generation, energy storage and use, while lowering the cost of electricity and operations. For more information, visit: www.theswitch.com

About Yaskawa

Yaskawa Electric Corporation is a world-leading provider of core technologies focused on motion control, robotics automation, and systems engineering. Since it was founded in 1915, Yaskawa Electric has provided motor applications, advancement of industrial automation, the creation of mechatronics and cutting-edge

robotics. Yaskawa today employs over 15,300 persons globally in its core divisions. The company reported net sales of EUR 3.5 billion in 2017. For more information, visit: www.yaskawa.co.jp