

# WE Tech says PM shaft generators catching on

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The time is now for permanent magnet (PM) shaft generators believes Jan Backman, Sales Director of Finland's WE Tech. After years of groundwork transitioning the technology from wind turbines to marine engine shafts, WE Tech and Yaskawa Environmental Energy / The Switch have demonstrated a powerful proof of concept that is fast catching on within key shipping segments. The industry, they believe, has woken up to a new dawn of clean, efficient power generation.

"You have a simple, compact and proven piece of technology that generates power cleanly and efficiently, allowing you to reduce fuel consumption, save money and meet stricter environmental regulations. It's not just good for the environment it's good for business," said Backman.

PM shaft generators – basically an electric motor built around the engine shaft, leveraging its rotational power to create electricity for onboard use – have moved from being a novelty to an increasingly specified component for a new generation of vessels. And WE Tech, alongside key supplier Yaskawa Environmental Energy / The Switch, have been central in that progression.

WE Tech was the first solutions provider to introduce PM shaft generators to the marine market, installing one of The Switch proven machines (already a preferred component within wind turbines around the world) into a newbuild car carrier in 2014. From that point, the two have worked together to satisfy demand within the gas carrier, chemical tanker, Ro-Ro and bulk carrier segments, amongst others, delivering over 50 generators as part of energy-efficient solutions for forward-thinking shipowners and operators.

"It was a battle to gain acceptance for the concept initially," admitted Backman, "as even though it wasn't necessarily 'new' technology, it was an innovative way to utilise it. However, the benefits are so compelling that, if your vessel has a need for a megawatt electrical supply during sailing, it simply makes perfect sense."

PM generators produce electrical energy from the mechanical or kinetic power of the shaft, so it's 'clean' – with the main engine normally consuming substantially less fuel than the diesel generator per kWh produced. That power production means a vessel can limit diesel generator use – or even replace a traditional generator with the PM machine – cutting fuel use, cost, emissions and, through less running time, generator maintenance requirements. Finally these light, compact and easy-to-install components can form part of a solution to enable peak shaving, providing the auxiliary power to cover 'peaks and troughs' and allowing main engines to operate within optimally efficient comfort zones. In addition, they can provide the primary power for entering and exiting harbours with

stringent NOx or CO2 emissions requirements. They are efficient at wide speed ranges, virtually maintenance free and exceptionally reliable with outstanding redundancy.

They have found favour within key, growth shipping segments, with WE Tech enjoying an orders “boom” for gas carriers. Recent agreements have included an eight (plus six) vessel contract with a leading Korean yard for LNG newbuilds. “These advanced ships have considerable power demands,” Backman noted, “with a need to reliquefy boil-off gas when not used as fuel. This is an excellent way to reduce the carbon footprint of vessels and, with electricity provided through a PM shaft generator, we can help make it as ‘green’ as possible, further reducing both GHG emissions and OPEX. A real win-win.”

Container vessels are another key target market for the Finnish business, with particular emphasis on reefer containers. “This is a segment where shipowners would definitely benefit from a shaft generator, as they obviously have considerable power needs to maintain correct temperatures for containers. The PM machines could help satisfy that demand, reducing the need for diesel generators and enhancing overall efficiency. We see real potential here.”

WE Tech is working closely with Yaskawa Environmental Energy / The Switch to make the most of this market opportunity. The two have enjoyed a successful partnership stretching back over the course of the last decade. Backman references an “excellent working relationship” with “daily communication” between the supplier and solutions provider as they travel “a path of continuous improvement.”

The recent opening of The Switch’s unique multi-megawatt testing facility in Lappeenranta, Finland has also helped consolidate the relationship. The drives can be thoroughly tested – with other system components if necessary – to ensure the utmost quality and verified performance prior to installation.

Backman believes all owners with significant vessel power demands should consider the potential PM shaft generators can offer as part of the ongoing process of “greening” the industry. He says both regulations and the threat caused by climate change – allied to greater public awareness – will serve to increase pressure on owners, creating clear demands to accelerate the adoption of technology and solutions capable of unlocking more sustainable operations. “Some may see that as a challenge, but I hope it will increasingly be viewed as an opportunity,” he concluded.