

KSOE to Develop Safer Vanadium-ion Battery System for Electric Ships



KSOE is focusing on new technologies for use at Hyundai in the building of next generation ships (file photo)

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As part of the South Korean effort to focus on next-generation, high-value ships, Korea Shipbuilding & Offshore Engineering announced plans to develop electric ships using a safer vanadium-ion battery. The parent of shipbuilder Hyundai Heavy Industries is taking a lead in strategic developments and researching future technologies, In partnership with Standard Energy, a manufacturer of the new battery technology, they plan to develop an energy storage system (ESS) solution for next-generation commercial ships driven by electric power.

Currently, lithium-ion batteries are generally used in ESS-equipped vessels, such as electric and hybrid ships. The companies noted that while a lithium-ion battery has the ability to achieve a compact size even in a large capacity, it contains highly volatile electrolytes that inherently raise the risks. Cases of fires and explosions have been well documented with numerous concerns raised by regulators in many industries over the dangers of lithium-ion batteries.

Standard Energy developed the first vanadium-ion battery (VIB) which contains an electrolyte made from a mixture of water and ground vanadium. According to the company, their battery is fundamentally free from the risk of explosion or fire.

Among the other benefits, they cite of the new battery is that it also features minimal heat production even in the event of overcharge or shocks. Further, its output power is nearly twice that of a lithium-ion battery while the lifespan is more than four times as high. It is almost free from aging-induced degradation over repeated charge and discharge cycles, showing high stability and excellent durability.

Under an agreement between the battery developer and shipbuilding company, they plan to develop and commercialize a highly stable VIB-based ESS solution for ships. KSOE will take the lead in designing a megawatt-class ESS solution optimized for ships, while Standard Energy will manufacture and supply VIBs.

“The ESS for ships that we are currently working on will be suitable for electric and hybrid vessels as well as general merchant ships as it will be free of the risk of explosion or fire,” said an official of KSOE. “Also, we will accelerate efforts to develop next-generation ships, such as power transfer vessels, which are expected to increase in demand along with the rapidly growing global offshore wind power market.”

KSOE aims to gain a strong foothold in the rapidly growing market for electric ships by developing a marine ESS using the new battery technology. Their goal is to demonstrate the system on a smaller ship at sea as they move toward getting the solution certified by the first half of 2023.