

ENERGY SOURCES FOR AUV DOCKING CHARGING STATIONS

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To ensure long-term autonomous operation of autonomous underwater vehicles (AUVs) without the need to return to port or be lifted to a carrier vessel, the use of charging docking stations is proposed. These docking stations will charge the AUV's onboard batteries, which can then store and transmit information received from the AUV. Charging docking stations for this purpose must have power sources capable of supplying energy indefinitely or with periodic, but rather rare refueling. Power supply options for charging docking stations via cable lines, nuclear power sources, hydrogen fuel cells, and renewable energy sources such as wind, wave, solar, current energy, thermal energy from water layers with different temperatures, and salinity gradient energy are considered. The energy reserves at a charging docking station using a hydrogen fuel cell stack depend on the capacity of the reactant storage system. Parameters of the system with Russian-produced fuel cell stacks and high-pressure gas cylinders are estimated. The energy and power of the charging station required for charging the MT-2010 and MT-2013 devices developed at the Institute of Marine Technology Problems FEB RAS have been determined.

Keywords: charging dock station, AUV, energy sources, renewable energy sources, nuclear, hydrogen fuel cells.

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