

## Siemens presents the new variable BZM evo series for underwater applications

- **Increased power density and user-friendliness through easy handling**
- **Plug and play installation and rapid replacement of individual modules**
- **Increase in redundancy and degradation rates for fuel cell plants**

Building on the success of the previous BZM34 and BZM120 fuel cell modules, Siemens aims to optimize the power density and user-friendliness of fuel cell plants on board of air-independent underwater vehicles with its new BZM evo fuel cell module. A single BZM evo has a nominal power of 40 kW. Future plants will be able to provide a maximum power of 320 – 480 kW, depending on the selected type of installation and number of fuel cell modules, without exceeding the footprint of an existing BZM34 or BZM120 plant.

In these fuel cell plants, the BZM evo modules are connected individually via DC/DC converters to the onboard power supply. With this type of connection, which allows controlling the operation of single modules and secondly increasing the degradation rate of the entire fuel cell plant, the supply of electrical energy to the onboard power grid is more flexible than with previous systems. In addition, the optional integration of backup modules increases redundancy within the plant and therefore improves system availability too.

The evolutionary innovative concept of the BZM evo series can be integrated into various applications. In addition to the conventional operation inside AIP submarines, the compact module design also supports the integration of individual BZM evo modules into unmanned underwater vehicles (UUVs).

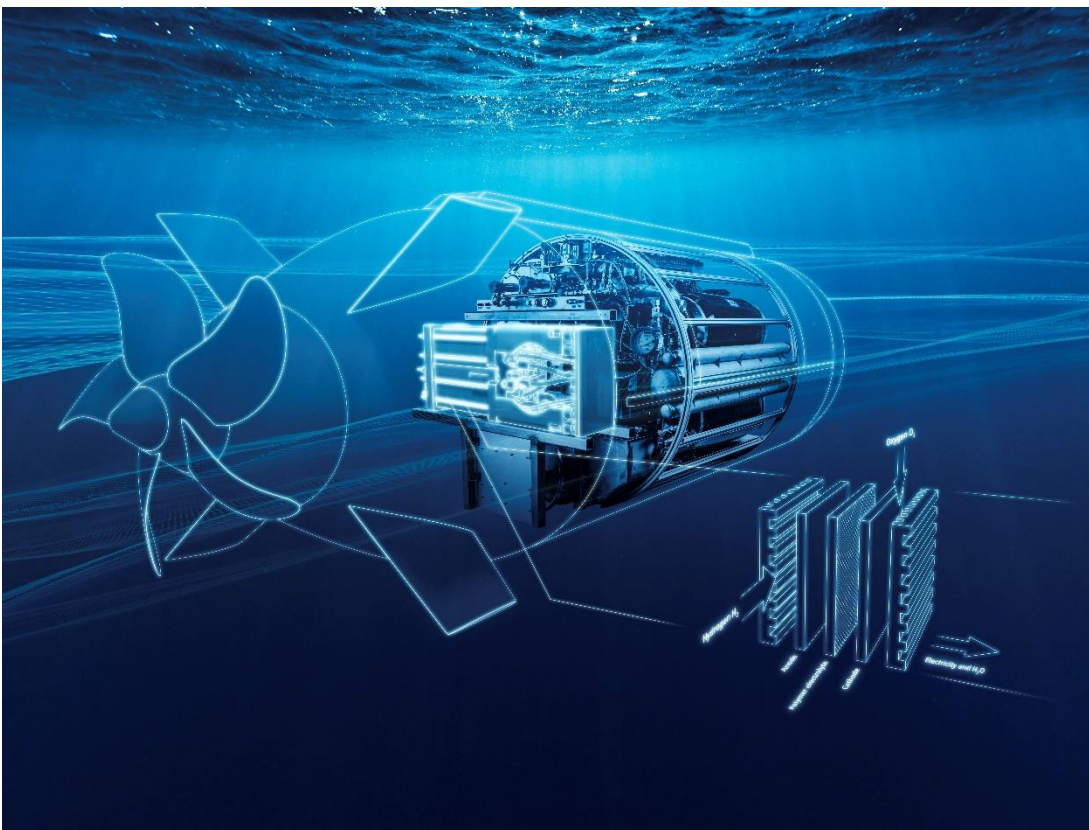
With this application, in which power ranges from 10 to 60 kW are expected, Siemens can now provide a complete energy system comprising battery, fuel cell

module, media storage and control system. Initial system tests using a BZM34 from series production were completed successfully on land last year in the USA.

The BZM evo is a further optimized system from the SINAVY Fuel Cells series, which was originally designed in close cooperation with the German Navy and HDW over 20 years ago. Continuous feedback from the crews of operating AIP submarines which use the BZM34 and BZM120 has been extremely helpful for the optimization of the plant.

With a considerable weight reduction, the new module series is easier to handle and quicker to transport within a submarine. The optimized module replacement process now takes just a few hours and ensures uncomplicated and fast mounting, while the plug and play installation supports easy module commissioning.

The new BZM evo series is available both for new systems and for refitting older AIP plants and should be available on the market from 2023, or a year earlier for UUV integration.



With the compact BZM evo, Siemens can integrate fuel cell modules also into unmanned underwater vehicles.

This press release and a press picture is available at <https://sie.ag/2P5mSkx>

For further information on Marine Solutions, please see <https://new.siemens.com/global/en/markets/marine.html>

### Contact for journalists

Stefan Rauscher

Phone: +49 911 895-7952; E-mail: [stefan.rauscher@siemens.com](mailto:stefan.rauscher@siemens.com)

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