

# Floating power plants: new solution to old problem



The following article on the potential of floating power vessels fuelled by LNG has been submitted by **Patrik Janssens**, vp - Global Gas Solutions at ABS.

**B**ringing electricity to remote locations has always been a challenge for countries with large island territories because laying subsea cables to connect these islands to the mainland grid can be cost prohibitive. As a result, islands need to be self-sufficient for generating electricity and mobile power generating units, such as a floating power vessel, offer a feasible solution.

Power vessels, also known as vessel-mounted power plants, are power plants installed on marine or offshore vessels such as barges, ships, offshore installations, or mobile offshore units. They can generate power by use of single or multiple gas turbines, reciprocating diesel or gas engines or boilers. Power vessels with capacity ranging from 100 to 750 MW and beyond can offer a fast and economic solution to providing power to onshore, near-shore or offshore facilities.

In addition to making electricity available in remote locations, power vessels can supply places that have temporarily lost power, such as during severe weather events.

The advantages of power vessels can be extended beyond flexibility and cost effectiveness by using Liquefied Natural Gas (LNG) as the fuel. With gas as a source fuel, these power plants are more environmentally friendly and have a reduced carbon footprint compared to power generators using other fossil fuels as well as reduced emissions of sulfur and nitrogen oxides.

In addition to these environmental advantages, the continued development of shale gas in the US has positively impacted worldwide natural gas availability and reduced prices. These factors have combined



to increase demand for LNG-fuelled floating power plants.

Fuel for floating power plants has until recently been limited to conventional petroleum products or on a shore connection for supply of natural gas. However, recent advances in floating storage and regasification technology have made LNG floating power plants safer and more operationally viable. By eliminating dependence on shore-side gas infrastructure for fuel supply, these technologies have made the floating gas power plant more accessible to regions that lack local supply of natural gas.

To support the increased global demand for power vessels and provide the industry with reliable guidance that enables innovative technologies to flourish, ABS has published the Guide for Power Service for Marine and Offshore Applications.

This comprehensive document covers requirements including design, construction and survey for class review and classification approval of power vessels and is applicable to new construction projects as well as conversion of existing vessels.

Power vessels include power barges, power ships, offshore power units and

converted vessels for ocean or river service. The major technical challenges in power vessel development are hull and system design under various environmental and operational conditions, and further integrating these factors with the on-deck power plant.

The new ABS guide addresses the scope and conditions of classification, including hull construction and equipment, machinery, piping and electrical systems, safety systems, power generation, distribution systems and equipment and survey requirements.

ABS recently granted Approval in Principle (AIP) to Hudong-Zhonghua Shipbuilding (Group) Co Ltd, for its LNG Power Vessel. The vessel is designed in accordance with the applicable requirements of ABS Rules & Guides and IMO Regulations and the vessel concept offers efficient LNG power generation and storage.

This LNG-fuelled power supply vessel integrates an LNG receiver, storage, regasification, electric power generation and transmission with an LNG storage tank volume of 32,000cu mtr and 100MW of power generation capacity.

ABS has a long track record of industry leadership in gas storage, handling and transportation, offering guidance on LNG floating structures and systems, gas fuel systems and equipment, gas carriers, and regulatory and statutory requirements. Its experience with gas-related assets goes back to Methane Pioneer, the world's first LNG carrier and has been the classification organisation of choice for some of the most advanced gas carriers, and LNG-fuelled vessels in service. ●