

ARTICLE

ABB innovation saves costs and reduces pollution at a shipyard in Bahrain



01 ASRY shipyard in Bahrain

ABB have installed three PCS100 SFCs (Static Frequency Converters) at a shipyard in Bahrain to help the facility become more environmentally friendly and reduce maintenance costs. ABB's grid connection technology enables commercial ships calling at ports to turn off their diesel engines and tap into cleaner onshore energy sources and save fuel. Having successfully delivered the world's first shore-to-ship power connection to the port of Gothenburg, Sweden in 2000, ABB has the experience required to make the complete connection, onboard and onshore. Unique features, such as a high efficiency rate of 95 percent whilst having precise control of frequency and voltage, create a clean power supply to isolate an unstable grid from a critical load.

In the shipping industry, harbors have been identified as a prime area in which emissions can be significantly reduced. With this in mind, port authorities, ship-owners, industry suppliers and regulators are now focusing on the decade old technology known as shore-to-ship power, for which universal electrical standards are on the verge of being ratified by IEEE, ISO and the IEC.

ASRY was among the first shipyards in the world to receive ISO certifications for Quality, Management, Environment and Health & Safety Systems in addition to the ISPS code for Port Security. By adopting ABB's PCS100 SFC, a large ship can cut fuel consumption by up to 20 metric tons and reduce CO2 emissions by 60 metric tons during a 10-hour stay in port.

ASRY, a leading Middle Eastern ship building and repair company, had been using rotary frequency converters for two years. These rotary converters were not very environmentally friendly due to nitrogen dioxide gas emissions and low efficiency. Therefore, to adopt a clean energy system, ABB's grid connection technology was implemented. Internationally, many ships are designed to operate on a 60 Hz power supply, however in the Middle East, the standard power supply is only 50 Hz. Therefore, an SFC (Static Frequency Converter) is used to feed the power supply to ships at ASRY in order to make them compatible with the 50 Hz requirement. Also, to adhere to ASRY's requirements, the three 1250 kVA SFCs were de-rated to 882 kVA to suit the high ambient temperature of Bahrain.

Promising outcome

Since installing the PCS100 SFCs, there is no longer any rotating equipment in the system and therefore no need for mechanical maintenance. As a result, efficiency is drastically improved and the operating and maintenance cost of the equipment over time is reduced. Due to less maintenance issues the solution provides high reliability and greater availability of the equipment.

For a rotary system, efficiency is generally around 75 percent and in addition, pollution, reliability and availability of the equipment is an issue. But the efficiency of the PCS100 SFCs is much higher – up to 95 percent. ABB is the market leader for SFC technology and thanks to acknowledged technological leadership secured the order from ASRY.

Previous experience

Saad Shetiwi, Head of Yard Operations at ASRY, says, “With ABB’s pioneering technology coupled with local support capabilities, we will reap the benefits.”

Gaurang Desai, acting Sales Manager, Discrete Automation and Motion (DM), Bahrain, says, “We were thrilled when ASRY positioned us ahead of competition and gave us due credit for being a technology leader. The new converters will be installed by September 2012. The customer benefits include no noise pollution, lower operating and maintenance costs, reduced nitrogen dioxide pollution and improved efficiency at the shipyard.”

The electrical scope was sub-contracted to ACE Al Moayyed. A technical presentation on the benefits of PCS100 SFCs compared to the rotary convertor was made by Alan Cooper, Engineering manager, DM at ABB in New Zealand.

A shore solution

ABB has developed scalable and flexible installation solutions that meet the needs of ship-owners and ports. As part of ABB’s shore-to-ship power solution, the company has engineered both shore-side and ship-side connections, and is one of the few companies worldwide that has developed a reference list in this technology.

ABB continues to work closely with customers worldwide to ensure its portside offerings are meeting the needs of the market.

To find out more about ABB’s power protection solutions:

<https://new.abb.com/power-converters-inverters/grid-interconnections/industrial/pcs100-sfc>

Web: www.abb.com/ups

Email: powerconditioning@abb.com



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