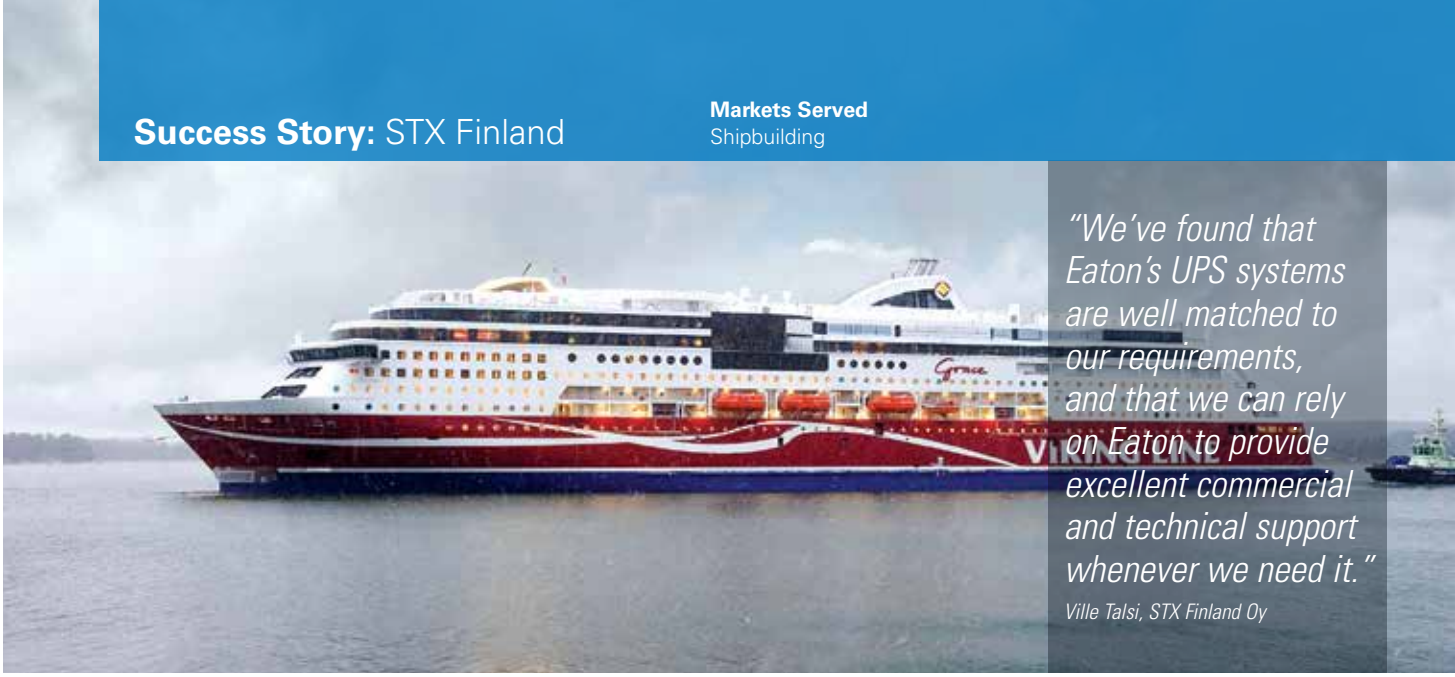
Success Story: STX Finland

Markets Served
Shipbuilding



"We've found that Eaton's UPS systems are well matched to our requirements, and that we can rely on Eaton to provide excellent commercial and technical support whenever we need it."

Ville Talsi, STX Finland Oy

Secure Power for the World's Greenest Ferry

Location:
Finland

Segment:
Marine & Offshore

Problem:
Ensure safe, reliable and efficient power management for the revolutionary environmentally friendly passenger cruise ferry MS Viking Grace

Solution:
Eaton 9390, 9355 and 9155 Marine UPSs with ratings from 8 to 120 kVA

Results:
UPS systems with a total capacity of 200 kVA provide secure power for critical loads throughout the vessel, from emergency lighting and the HVAC system to navigation systems, key shipboard and automation services

Contact Information

Teppo Henttonen
3ph Solutions Manager Power Quality
TeppoHenttonen@Eaton.com

Marika Sinikari
Marcom Program Manager
MarikaSinikari@eaton.com

Background

Built for the Finnish Viking Line the revolutionary MS Viking Grace was the first of a new generation of passenger ferries that have been designed from the outset to minimise environmental impact. It successfully entered service in January 2013 on the Turku (FIN) – Åland (FIN) – Stockholm (SWE) route in the Baltic Sea.

Because it is fuelled by liquefied natural gas (LNG), the vessel's revolutionary propulsion system is far more environmentally friendly than conventional propulsion systems that use fuel oil, heavy fuel oil or marine diesel. The vessel also has a hydrodynamically optimised hull that further enhances its operating efficiency while reducing fuel consumption and environmental impact.

Innovation in the MS Viking Grace is not, however, limited to the design of the hull and the propulsion systems – the most modern technology has been adopted in all areas including, for example, the provision of a high-speed internal wireless network to keep passengers entertained and informed

Challenges

With innovative technologies and more complex electronics moving on board ships, there was also a need for disturbance-free power systems that supply both uninterruptible and clean power. Thus, the use of the latest technology needed to extend to the installation of Uninterruptible Power Supplies (UPSs) that ensure the most important of the on-board systems continue to operate even if power from the main generators is temporarily unavailable.

UPSs for use on board vessels need to meet specific demands of marine applications, such as environmental conditions like vibration, shock, rapid changes in orientation and large ambient temperature swings. It is also vital that the devices comply with the electromagnetic compatibility (EMC) requirements for maritime navigation and communications systems allowing them to be installed on the bridge without the need for additional precautions to guard against interference to sensitive bridge equipment. Other important considerations are easy and reliable means of installation to the deck head and the unit size, which is key as space is invariably at a premium.

After a careful analysis of available UPS systems, products from the Eaton marine range were selected for this prestigious project. Among the key factors that influenced this decision were Eaton's ability to offer a full range of marine UPS systems, the strong reputation of these units for reliable operation even in difficult conditions, and the previous excellent experience that the vessel's shipbuilders had of working with Eaton.

EATON
Powering Business Worldwide

Solution

The total capacity of the UPS systems aboard the new vessel was more than 200 kVA. All of the UPSs chosen for this project are versions which have been optimised for marine applications and which have already gained a strong reputation for performance and reliability aboard sea-going vessels in every part of the world.

To support critical loads throughout the vessel, including emergency lighting and key shipboard services, an Eaton 9390M UPS rated at 120 kVA was selected, while for other essential groups of loads, Eaton's smaller 9355M and 9155M UPS systems were chosen. Three 20 kVA units are used to support the vessel's data and networking installation, key automation systems, and the on-board heating, ventilation and air conditioning (HVAC) installation, while a further 40 kVA unit supplies the navigation systems. Additionally, two 8 kVA devices are supporting the propulsion systems.

All UPSs feature space-saving compact construction and are designed for easy installation with mounting rails that can be welded or bolted to the deck or bulkhead. They have integral shock absorbers to protect them against the effects of vibration and require front access only for maintenance.

The UPS systems selected for use aboard the MS Viking Grace are double-conversion types that provide the highest possible level of protection for connected loads by isolating the output power from all input anomalies. The UPSs also incorporate active power factor correction (PFC), which provides an input power factor of 0.99 at less than 4.5% total harmonic distortion. This eliminates the risk of interference with the operation of sensitive equipment connected to the supply network, and also enhances compatibility with shipboard supplies derived from generators.

High operating efficiency is another major benefit of the UPS systems, as is their use of Eaton's Advanced Battery Management (ABM®) technology. This is based on a three-stage intelligent charging process that optimises recharge time, eliminates overcharging and continuously monitors battery condition. This helps to minimise battery corrosion as well as extending the life of the batteries by up to 50%, with a corresponding reduction in cost of ownership for the UPS.

Results

As the Eaton UPS systems chosen for the MS Viking Grace were designed from the outset for marine applications, they were suitable for use without modifications or special engineering, which helped to keep down the cost of the UPS installation. The units were delivered on time and, after installation by the shipyard, were commissioned by engineers from Eaton. As was anticipated, installation and commissioning proved straightforward, and all of the units have fully met expectations during the vessel's extensive commissioning trials.

"We have been using electrical equipment from Eaton for many years," said Ville Talsi, responsible for the electrical distribution system for the MS Viking Grace at STX Finland Oy, the shipyard responsible for building the MS Viking Grace. "We've found that the company's UPS systems are well matched to our requirements, and that we can rely on Eaton to provide excellent commercial and technical support whenever we need it. We were confident in specifying Eaton products for the high-profile MS Viking Grace project and I'm happy to confirm that our confidence was well placed due to Eaton's superb range of marine UPS products, excellent service and support."

Eaton 9390M UPS

Eaton 9155M UPS

Eaton 9355M UPS

Eaton Industries Manufacturing GmbH
Electrical Sector EMEA
Route de la Longeraie 7
1110 Morges, Switzerland
Eaton.eu

Printed in EU.
Publication No. SuccessStoryVikingGrace13
June 2013

Powering Business Worldwide