Explosion protected lighting

on liquefied gas-fuelled supply ships

by Per Helgeland and Andreas Kaufmann

Figure 1: Helideck with explosion protected floodlights and perimeter lights of Tranberg

The main objective of the rules for electrical installations on ships is to ensure that all electrical products on board are designed, built and installed so that they provide a safe and reliable installation with respect to operator safety, and a minimum risk of explosion and fire hazards.

New logo of explosion protected equipment approved for offshore installations

Authorized bodies have developed classification rules and standards for Liquified Natural Gas (LNG) and Liquified Petroleum Gas (LPG) carriers, floating LNG production, mobile offshore units, Floating Production Storage and Off-loading (FPSO) units, natural gas pipelines, and related systems. Experts have performed and gathered considerable experience within risk assessment and safety management of most parts of the gas supply chain.

LNG-fuelled supply ships

The second of two supply ships fuelled by LNG has been delivered to Statoil. The ships will be used mainly in Statoil's operations in the Tampen area of the North Sea.

Using LNG will provide a considerable reduction in emissions of nitrogen oxides and carbon dioxide. The two vessels will approximately emit 400 tonnes less nitrogen oxides per year than comparable ships running on diesel engines. These savings corresponds to the volume released by some 40,000 cars. Together the ships will consume about 7,000 tonnes of LNG per year.

Both vessels were built by Kleven Verft at Ulsteinvik in western Norway. Møkster Shipping owns and will run Stril Pioner (Figure 2) while Viking Energy (Figure 3) is owned and run by the Eidesvik Shipping company.

To meet the safety requirements, some of the external lighting has to be designed as explosion protected and approved by a notified body. A schematic drawing (Figure 4) demonstrates the classification of zones of hazardous areas onboard the ships.

Where does explosion protected lighting have to be used aboard ship? They are required in areas where high concentrations of explosive vapors may occur. On these ships the areas are typically in the fuel area, around the ventilation system from the engine room and around exhaust pipes.

As a world wide supplier of navigation lanterns, floodlights, deck lights, obstruction lights and complete helideck lighting systems – Tranberg supplies safe and reliable explosion protected lighting equipment for all applications throughout the entire ship. ➔

Figure 2: Stril Pioner

Figure 3: Viking Energy

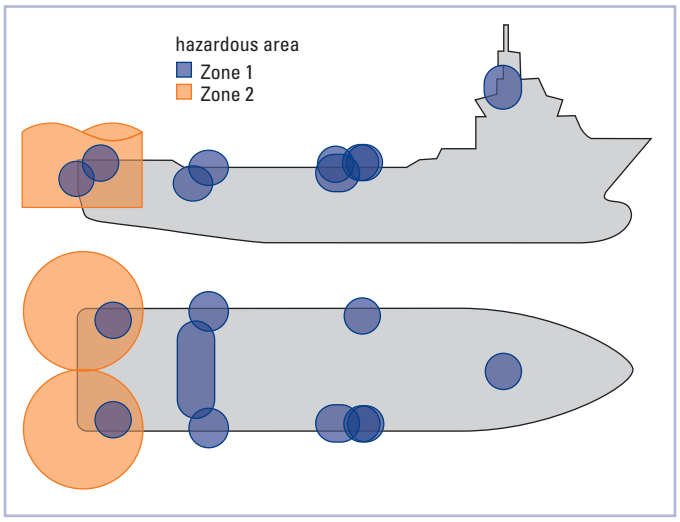

Figure 4: Zone classification on board of the vessels

Figure 5: Navigation lantern type TEF 2870 Zone 2

Figure 6: Luminaire type TEF 2425 Zone1

The Tranberg-product range of explosion protected luminaries

› Navigation lanterns

The majority of the navigation lights on the ships ›Stril Pioner‹ and ›Viking Energy‹ are installed outside the hazardous area. The environment around the exhaust pipes are classified as hazardous areas. The navigation lanterns installed in this area will have to meet the requirements of the ATEX Directive 94/9/EC. The installed series of navigation lights Tranberg TEF 2870 are qualified and approved to be used in Zone 2.

Tranberg's navigation lanterns are all designed for use in rough environments. It is the policy of Tranberg to provide products and services that meet the highest standards of quality in the industry. Achievement of this objective requires that all products perform reliably and efficiently, and in a manner that assures continuing market competitiveness. The design of Tranberg navigation lanterns are based on many years of experience and extensive research in the field of professional marine lighting. Carefully selected materials are used to ensure maximum performance, a maintenance free and a long trouble free life time. Proven through years of use in rough environments, navigation lanterns from Tranberg are the obvious choice by many vessel designers, ship owners, and yards throughout the world.

› Deck lights

A number of the deck lights on these vessels have to be installed in the fuel area. Many offshore supply vessels are designed to handle and provide methanol fuel to oilrigs and similar offshore installations. All locations within 20 meters from the fuel area are classified for Zone 1. As a result all deck lights and floodlights in these locations have to fulfil the requirements of equipment category 2 (Zone 1) (Figures 6 and 7). On the ›Stril Pioner‹ and ›Viking Energy‹ there are Zone 1 areas on both sides of the stern. The environment around the ventilation ducts and on top of the cargo rail are also classified as hazardous areas, but in Zone 2. The cargo rail is also an emergency area and has to be equipped with emergency light fittings for Zone 2 (Figure 8).

Figure 7: Helideck illumination floodlight type TEF 9964 Zone 1

Figure 8: Luminaire type TEF 2440 Zone 2

› Helideck light fittings

Perimeter lights, floodlights and illuminated windsocks are designed to give visual indication for the helicopter pilots during their approach to the helideck platforms.

The helideck windsocks and light systems from Tranberg are designed to meet the toughest conditions in the helicopter landing areas. The floodlights provide adequate illumination of the whole area without glare to pilots or helicopter personnel in the area.

Helideck equipment manufactured by Tranberg is delivered to offshore installations, oil tankers, buildings and supply ships all over the world.

The Xenon helideck flood lights – green LED perimeter lights and the illuminated windsock systems are used for illumination of the touchdown and lift-off area of helidecks, as per CAP 437 requirements. All helideck lights for use in hazardous areas are approved and conform with the requirements of the ATEX Directive 94/9/EC, and therefore are applicable in hazardous areas.