ODIN`S EYE®

ELECTRIC PROPULSION

ULTRARAPID - SAFE - FLEXIBLE - AFFORDABLE

EXCELLENCE IN ELECTRIC

norwegian
electric systems

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ODIN`S EYE® INTRODUCTION

Marine electrical systems, which power all the needs of the vessel, are primarily designed for safety. The enhanced redundancy required by the class societies does not make for a very fuel efficient vessel. Various improved fuel efficiency solutions already exist in the marine market but they have not been widely taken up by ship owners. These solutions are too expensive and the technology used is too old. By introducing ODIN'S EYE® to the market, Norwegian Electric Systems would like to offer a modern state-of-the-art DC grid based solution, which is also far more cost effective. By basing ODIN'S EYE® on existing proven technology, gained from the proven success of the Quadro Drive®, with its high reliability, Norwegian Electric can offer a new and truly ground-breaking solution.

COST

The ODIN'S EYE® is based on the Quadro Drive®, which means not having to invest in developing new and costly components. The entire system uses standard components, which are easy to source and replace. There are also other major savings in that the vessel no longer needs a main switchboard. Since the solution is a ring net made up of protected DC –buses, then generator sizes can be reduced because, in the event of a failure, only one generator will be lost from the system. The same thinking can also be applied to the sizing of thrusters on some vessels. ODIN'S EYE® should cost about the same as a conventional Diesel Electric solution, which is remarkable because you are gaining the variable speed generator set capability and increasing your vessel's safety for the same money.

REDUNDANCY

The basic redundancy concept for offshore vessels has for many years been a two-split; port and starboard propulsion systems. The power available after a "worst case" failure should be enough to keep the vessel on station keeping, which leads the installed power being designed with twice the needed power for station keeping. When Norwegian Electric Systems successfully introduced its Ring-Net solution it changed the way designers viewed redundancy. Already installed on numerous vessels, the Ring–Net did away with the need for excessively oversizing generators and thrusters. Each generator and thruster had its own switchboard so a single failure could only result in losing only one generator or thruster instead of half the number installed. ODIN'S EYE® takes this successful and highly redundant solution to a whole new level.

EXCISTING TECHNOLOGY

The ODIN'S EYE® is based on existing technology, the Quadro Drive®, which has within it already, a fixed frequency grid. Using years of experience gained from both the Quadro-Drive and the Ring-Net solution, Norwegian Electric Systems had all the components needed to build a new solution for a new era in Maritime operations.

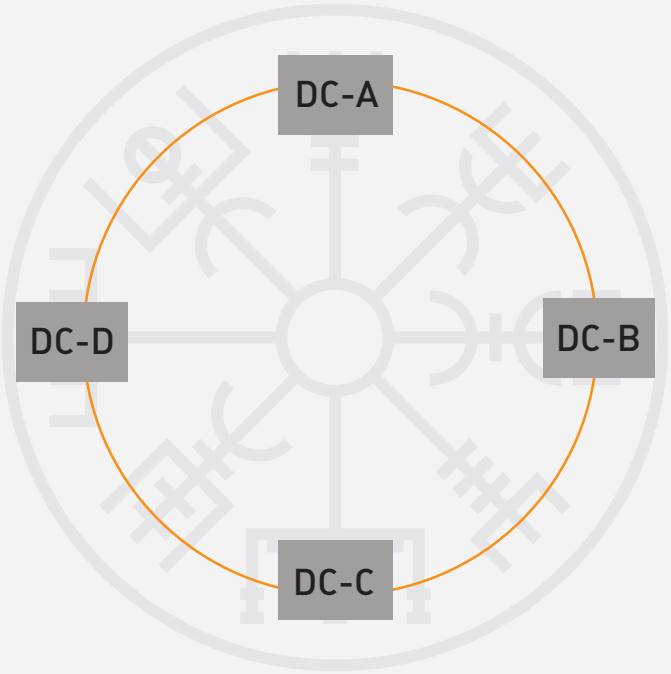
DC-DISTRIBUTION

A DC-distribution system allows variable speed generators, which increases fuel efficiency and allows for higher exhaust temperatures. High exhaust temperatures are vital for the exhaust catalyser to operate correctly. Reduced running speeds, for the diesel engines, allows for increased service intervals and reduced on-board noise whilst operating on low power output. Standard generators with high power factors can be used, which avoids unnecessary oversizing of the generators and, consequently, extra costs. Also, the need for synchronizing generators against other generators is removed due to the DC distribution.

FLEXIBILITY

The ODIN'S EYE® allows for individual protected DC-buses to operate with either open or closed bus-ties. This means you can operate with autonomous individual electrical "islands" working independently from each other or you can choose to close the bus-ties and make a complete Ring-Net solution. The ring net solution has ultra-fast acting connections which will disconnect any island suffering a short circuit. With full selectivity throughout the system, electricity can flow in any direction between the islands. The islands can also be configured to work in two's and three's, in fact the islands can be connected together in any combination you need. Flexibility does not get any better than that.

Illustration of Ring-Net topology



The symbol is an ancient norse symbol for protection called "Vegvisir".
This means direction sign/guidepost and is, in modern popular culture, often called "Runic Compass" or "Pathfinder".

BATTERY (OPTIONAL)

Batteries are interfaced against the DC-distribution via a DC/DC-converter to ensure all battery strings are running the same current, removing any uncertainty of equal loading of all the battery strings. This gives the ship owner the benefit of increased lifetime for the batteries. Batteries can be used as an alternative source for energy for redundancy in DP2. Another option is a smaller battery which is only intended for peak-shaving, yielding an increased system efficiency from not fluctuating the diesel load.

INSTALLATION AT YARD

From having one main switchboard and a number of drives, both are now combined in to one switchboard. This requires less space in the vessel and thereby less cost.

SHORE CONNECTION

A shore-connection can be challenging in terms of the correct capacity, voltage and frequency available from on-shore . A converter stage in combination with a transformer can adapt to any voltage and frequency. By combining the shore power with batteries, the peak available power can be increased, yielding full operational functionality to the vessel, even when the shore capacity is less than the vessel's requirements. This allows cheaper energy is to be used and running hours for the diesel engines can be avoided when in harbour.

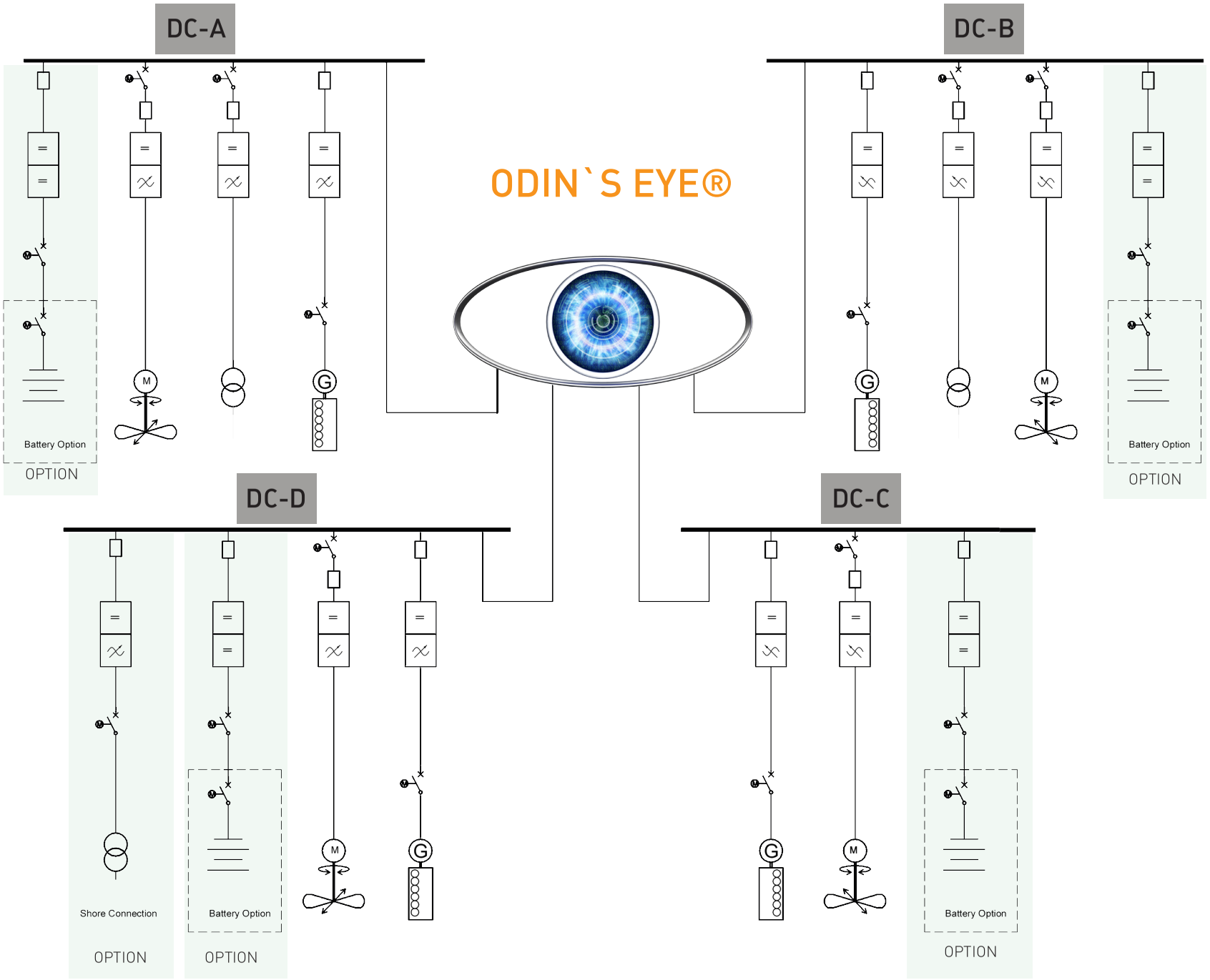
ENVIRONMENTAL IMPACT

NOx emission requirements and penalties have been already introduced into the marine industry. In 2018, the new European Union strategy is to first monitor, report and verify the amount of CO2 from the existing fleet operating in European waters, limitations and fines will then be imposed on inefficient vessels. The USA is also implementing such changes already and it is certain other parts of the World will follow suit. Tougher regulations usually require more expensive solutions. ODIN'S EYE® is different, in a good way!

IN SUMMARY

A flexible, fuel efficient and highly redundant electric power solution you can afford.

READ ONLINE



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