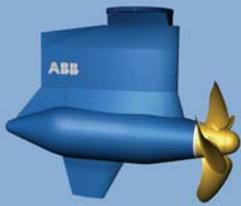


The Next Generation Azipod®

An extensive development project within ABB Marine was established in 2007 with the objective of developing a next generation, further enhanced Azipod® propulsion unit family.

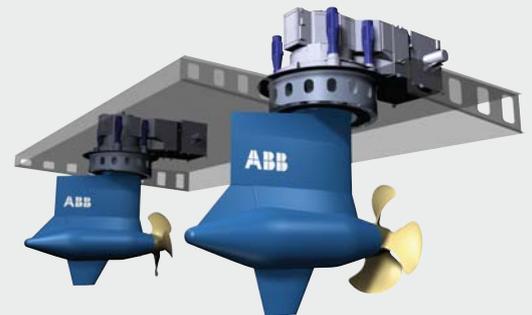


Much development has been done and improvements made to the Azipod® since the first deliveries. The present Azipod®, however, is still very much a first generation product, developed through design evolution rather than revolution. In order to provide an optimized solution for each customer, the operating models of system deliveries have been project based, where maintaining uniform operation and design patterns has been challenging.

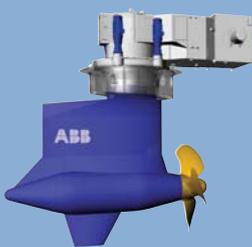
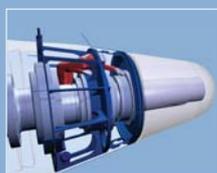
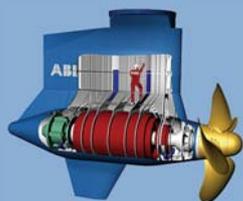
It is expected that podded propulsion – due to its remarkable and proven advantages e.g. in terms of energy efficiency – will expand to new ship types which means new and different requirements to the Azipod® unit and to the complete propulsion system. In order to meet the future challenges, a project was established to develop a Next Generation Azipod® Propulsion System. The project was established in 2007 and it will be completed within the next couple of years. Although several new features will be implemented in the new product, selected technical solutions are based on the accumulative experience of ABB Marine and well proven technology of the present Azipod® product.

Reduced Life Cycle Costs through Improved Operational Efficiency, Availability and Maintainability

One of the advantages of the new concept is that it is designed to improve operational efficiency which should reduce the total life cycle costs of the system. With new, innovative features, the reliability and availability of the Azipod® system is expected to be improved; e.g. by providing a possibility to extend dry docking intervals. The condition and status of critical parts can be monitored by extended condition-monitoring features that significantly improve the predictability of ship operations. In sum, the Next Generation Azipod® system is designed to reduce life cycle costs and increase the ships earning potential.



The Next Generation Azipod®



Next Generation Innovative Solutions

The improved technical solutions of the Next Generation Azipod® product take ABB's long experience of the present Azipod® product one step further. The Next Generation Azipod® unit is designed to offer improvements in terms of reliability, maintenance, efficiency, safety, environment, manufacturing and lead time through:

New Modified Azipod® Hull Design - allows maintenance of most of the vital components without dry docking the ship. Propeller seals can be maintained from inside the Azipod® unit. The hull is designed to reduce steering torque and improve hydrodynamic efficiency. Design flexibility enables the possible integration of Azipod® units into different ship types and/or hull forms.

Electric Steering - is implemented in the Next Generation Azipod®. The Azipod® unit is steered by electric motors, which are controlled by variable speed drives that offer several advantages. For example, total efficiency is higher and installation and maintenance are easier due to lack of hydraulics. The low noise level provides more convenience for the crew and passengers.

New Assembly Block - designed with focus on reliability and maintenance, and with attention to ease of integration into ships' hulls. The Assembly Block is designed to reduce the maintenance hours and to provide a possibility to extend the required dry docking interval.

Intelligent and Operation-adaptive Propulsion Control Interface - provides better communication with and understanding of the overall system status for the operator. Thus, risk of human error is minimized and mechanical stress and wear can be reduced through early indication and remedy, which increases overall operational safety and system reliability and availability.