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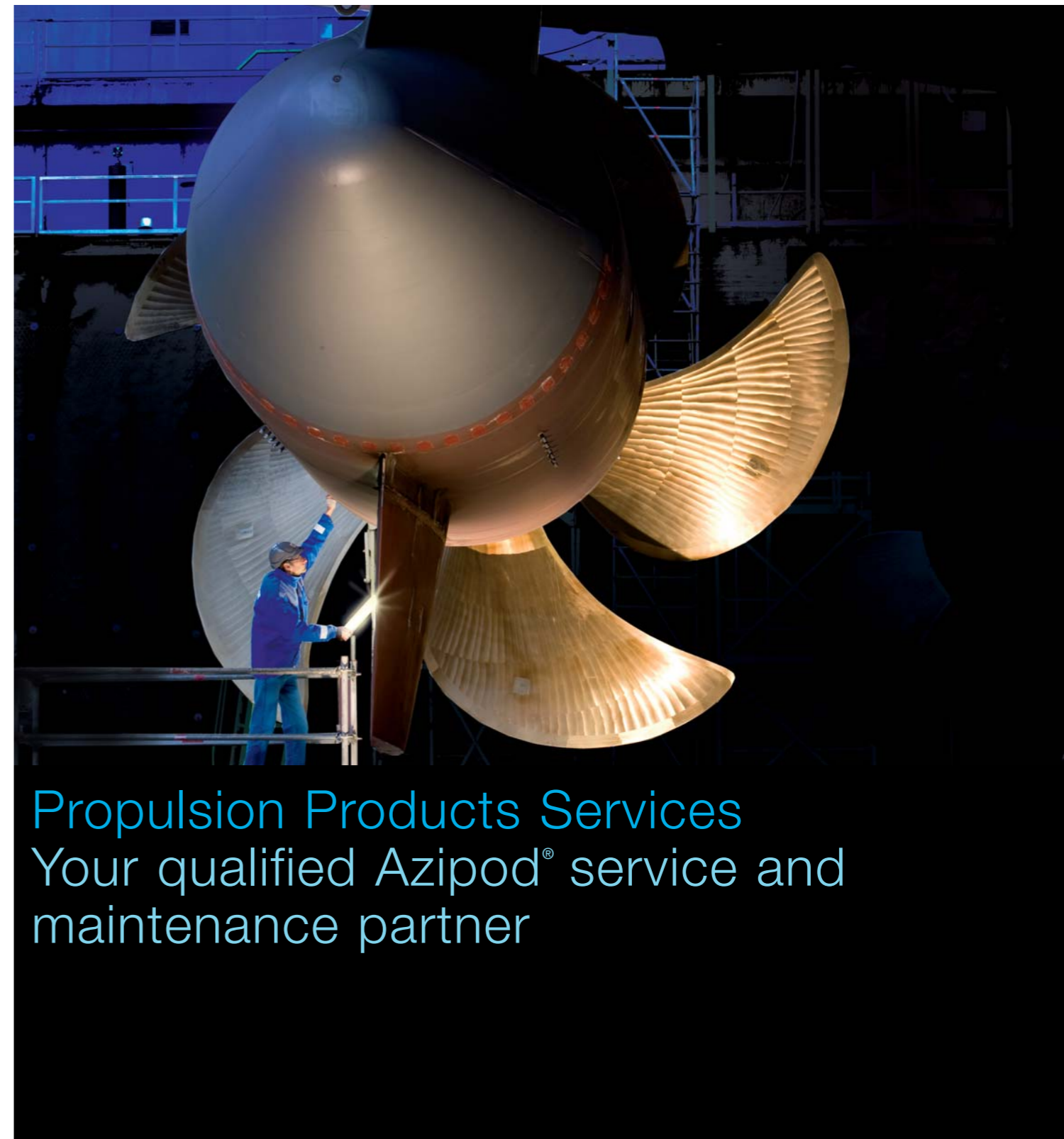
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Propulsion Products Services
Your qualified Azipod® service and
maintenance partner

Azipod® service and support wherever and whenever you need it

ABB's commitment to support customers throughout the lifecycle of each Azipod® propulsion system is carried out by ABB Propulsion Products Services.



A service organization fit for the future

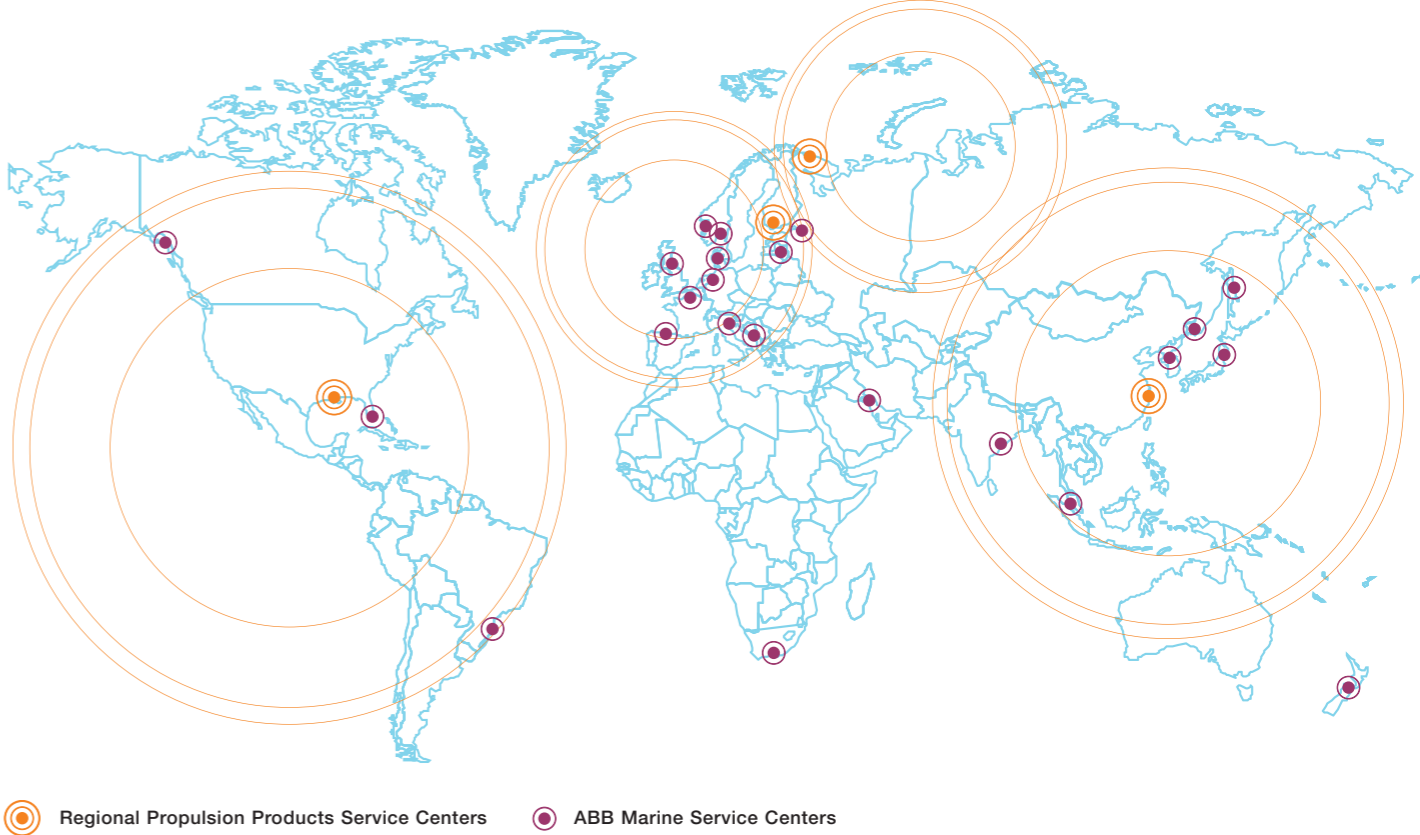
ABB introduced Azipod® to the market more than 20 years ago. Today more than 200 Azipod® systems are in operation on a wide variety of vessel types. To keep pace with the ever expanding Azipod® fleet, we have greatly extended our range of services as well as our global service network.

The focus of our organization is to offer customers fast access to service, parts and qualified support wherever in the world they operate, and to deliver a full range of preventive services to ensure optimum operation and maintenance of their Azipod® system.

A service partnership with ABB

We understand customers' business needs for continuity in operations and profitability. As a result more and more operators choose ABB as their Azipod® service partner.

- ABB service gives the following benefits:
- Factory approved maintenance schedules
 - Maintained maximum reliability, performance and fuel efficiency
 - Advanced Condition Monitoring solutions
 - 24/7 support by certified Azipod® specialists
 - Adherence to stringent safety routines
 - Modernization to extend Azipod® lifecycle and improve performance
 - Crew training programs
 - Continuous service history



Orange circle icon: Regional Propulsion Products Service Centers
Purple circle icon: ABB Marine Service Centers

Our strategically located service centers have resources in readiness to support the expanding world-wide fleet of Azipod® propelled vessels.

Our global service network

The heart of our Azipod® organization is our factories in Finland and China, together with 4 Regional Propulsion Products Service Centers that are strategically located in areas where Azipod® ships are operated. The regional centers support our network of Marine Service Centers that provide local contacts and cost-effective handling of minor service and maintenance tasks.

Based on the local needs the regional centers have well equipped workshops for repairs and reconditioning of parts and complete pods.

Providing the support and maintenance services that fulfill the needs of each customer

Together we will maintain and develop the profitability of your Azipod® investment, building on our 20 years of accumulated experience of installations in a variety of vessel types.

Tailoring the service delivery to your need

ABB provides a full range of Azipod® after sales services from which a vessel operator can receive the level of support best suited to a particular project and own resources. For the customer this means achieving an optimum balance between the maintenance responsibilities carried out by ABB and the customer's own staff.

Service agreements

Common to all service agreements are our close cooperation with the customer who will benefit from having predictable maintenance costs, and from sharing maintenance responsibilities with a qualified partner. Different ship segments have different priorities for availability, performance and lifecycle costs, and we will adapt service agreements to individual customer's needs.

Examples of service agreements:

- Condition Monitoring services including PCMS (Propulsion Conditioning Monitoring System)
- Regular Azipod® drydock overhauls including work, spares and tools
- Spare parts availability services
- Special arrangements for exchange pods



Periodic Azipod® dry dock maintenance can be part of a long term service agreement.

The Azipod® maintenance regime for keeping your profitable operation on course

Preventive maintenance is the key to uninterrupted vessel operation and profitability, and costs only a fraction of the unwelcome expense of emergency repairs.

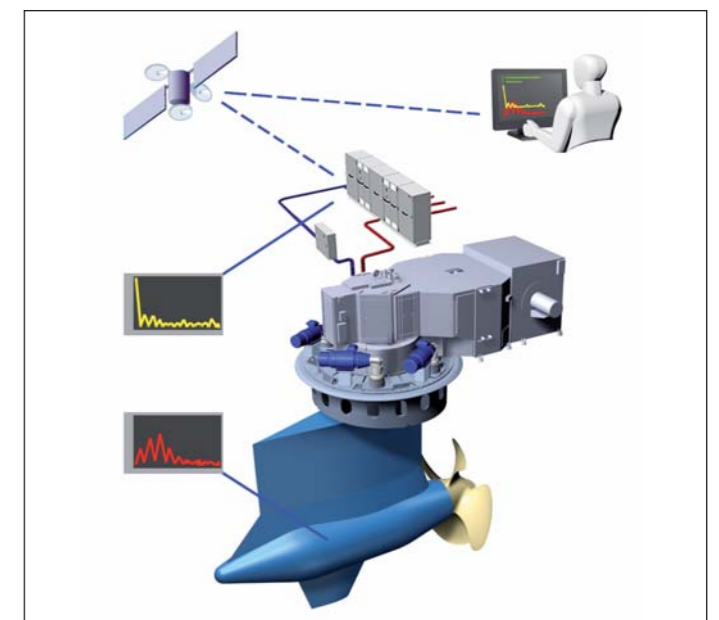
Azipod® – a family of high quality propulsion products

The Azipod® has a robust design that employs electric power transmission with a minimum of moving parts, which makes it both durable and reliable. The four models (see below) that are available in various powers are suitable for a wide range of vessel types, and they will give a long and dependable operating life when properly maintained according to the procedure specific for each model.

A well proven maintenance regime

From studies of data from decades of Azipod® operations and advanced mathematical analysis, ABB have developed a maintenance program that is both cost effective and gives optimum availability. The program contains a comprehensive strategy for replacing Azipod® parts, both critical and non-critical. Replacement of a part can be prompted by its time in service or its condition, and may be done onboard or on regular dry-dock visits.

Condition monitoring is a core feature of the Azipod® maintenance regime. It has been developed to detect trends and identify early warning signs, and thereby allow a future repair to be planned at the user's convenience. Condition monitoring may be carried out manually by the crew and/or ABB personnel, or automatically by means of a Propulsion Condition Monitoring System (PCMS).



PCMS monitors and reports the Azipod® condition data locally and remotely to ABB specialists for diagnosis and troubleshooting.



Azipod® XO and VO - open water versions, up to 25 MW



Azipod® VI - ice version, up to 20 MW



Azipod® CO - propulsion version, up to 4.5 MW



Azipod® CZ - thruster version, up to 4.5 MW

Your one-stop Azipod® service and support partner

Site surveys

Condition Monitoring

Preventive Maintenance

Dry-dock Services

Spare Parts

On-Call Services

Modernization

Training

Range of services

To support our customers in meeting their business and operating goals we offer a comprehensive range of services which spans from 24/7 on-call expert support to total responsibility for Azipod® maintenance and modernization projects. A single call to ABB puts the resources of our wide-ranging network at your service and you are sure of our full attention.



ABB is a dedicated partner who takes full responsibility for planning and executing the Azipod® maintenance project.

Regular maintenance - onboard and in dry dock

We carry out professional periodic or pre-planned Azipod® maintenance tasks, both onboard and in dry dock. In preparation for larger maintenance projects and dry-docking services, ABB can carry out a Site Survey that gives the customer information of the status of the Azipod® installation with recommended actions.

Leaving the project responsibility to us, we will ensure that all necessary resources and parts are made available on time for the work and that the task is performed to the agreed specifications, price and time.

ABB offers a full range of services and modernization products to keep your Azipod® propulsion system in peak working condition throughout the lifecycle.

Modernization and upgrades

To extend the vessel lifetime, and to keep pace with increasing demands for energy efficiency and evolving safety and environmental regulations, we carry out Azipod® reconditioning, rebuilding and modernization programs. Since it is important to make new Azipod® technology available to earlier models, we offer complete upgrade packages for energy and environmental improvements.



For semisubmersible drilling rigs ABB provides refurbishment, storage and exchange of rotation pods (Azipod® CZ thrusters).

Spare part management

With genuine ABB spare parts your Azipod® can be maintained to its original high standard. Spare parts are delivered from comprehensive stocks. ABB's spare part organization operates in many countries 24 hours a day, 7 days a week. As part of an Azipod® delivery, ABB recommends the spare parts holding that best suits your maintenance, operational and availability targets.

In vessel segments where harsh operating conditions are combined with extreme demands for availability, we make agreements on exchange pods for rotation. This means that we periodically replace the Azipod® units and take the dismantled pods for reconditioning and storage.

Training at ABB Marine Academy

ABB offers various courses on operating Azipod® vessels in a safe, efficient and environmentally friendly manner. We use advanced simulators for training captains and pilots. This training has proven to be effective and pays for itself in the form of safer and more cost efficient operations. ABB also offers technical courses for the various Azipod® models, and a special safety course for Azipod®.



The Azipod® simulator gives realistic training of maneuvering. This training has been developed in cooperation between ABB Marine (Helsinki) and Aboa Mare (Turku, Finland).

Condition monitoring services

Condition monitoring is a valuable activity for preventive maintenance. It provides an analysis of the lifecycle status of individual components, and detects trends in the health and performance of the Azipod® system as a whole. Our condition monitoring services that are often part of a service agreement include vibration analysis, oil analysis, boroscope inspection and an annual site survey.

To enhance the quality of our monitoring services and reduce service costs, ABB provides the Propulsion Condition Monitoring System. This system continuously monitors the critical parts of the Azipod® system and makes the data accessible for land-based ABB specialists for diagnosis. PCMS is installed in new models of the large Azipods® and available as an upgrade kit for earlier models.