

Azipod®



# ABB Technology Guide

**ABB**

# What is Azipod®?

Azipod is the registered trademark of a family of electric propulsion systems for ships, the first of which was developed by ABB about two decades ago. The latest product in the range is the most energy-efficient electric propulsion system on the market.



## The background and technology

A typical power and propulsion-system arrangement in a cargo ship includes diesel generators for generating the electrical power needed on board and a separate diesel engine driving the main propeller shaft. This is a diesel-mechanical propulsion system and because the engine and propeller speed are rigidly coupled, fuel efficiency drops considerably at low speed.

Diesel-electric propulsion is a relatively new way of powering ships and differs by consisting of a larger electrical power plant, usually with diesel-engine driven generators, and an electrical motor driving the main propeller. ABB is the world's biggest maker of electric-propulsion systems.

In this system, the electrical propeller motors, which are the largest consumers of electricity, are controlled by drives that provide stepless power and control the speed of the propellers. The electric propulsion system is therefore able to run the diesel engines at or close to their optimum efficiency point regardless of the vessel's speed. Using electric cables rather than a mechanical transmission system also reduces vibration on board.

## Azipod and fuel efficiency

ABB electric propulsion systems range from variable-speed electric machinery to a unique family of highly efficient products, the Azipod. The first Azipod propulsion system was completed in 1990.

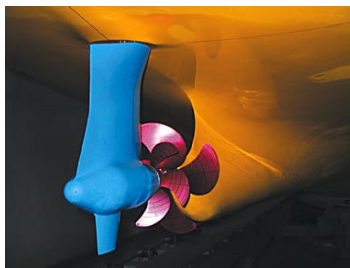
The Azipod unit is fixed outside the ship in a pod, or casing, which combines the functions of a propulsion motor, main propeller, rudder and stern thruster. These traditionally separately installed units are no longer needed, vacating space on board for other purposes.

The Azipod system arrangement in a cruise vessel has been shown to reduce fuel consumption by about 10 percent when compared to diesel-electric propulsion systems with a conventional shaft-line arrangement.

In 2002, ABB introduced the CRP Azipod. The CRP concept, which stands for contra-rotating propeller, involves two propellers facing each other and rotating in opposite directions and is achieved when an Azipod unit is installed in the place of the rudder in a conventional shaft line arrangement.

It is most suitable for fast ferries and other ships that need very large propulsion power. Two ferries built for ShinNihonkai, Japan's leading ferry operator, were equipped with the CRP Azipod in 2004. The company reported fuel savings of 20 percent, as well as 15 percent more transportation capacity, compared with ships of a similar size using diesel engines.

ABB's Azipod systems are used in a wide variety of ships including luxury cruise vessels, yachts, ferries, drilling rigs, arctic tankers, offshore supply vessels and icebreakers.



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