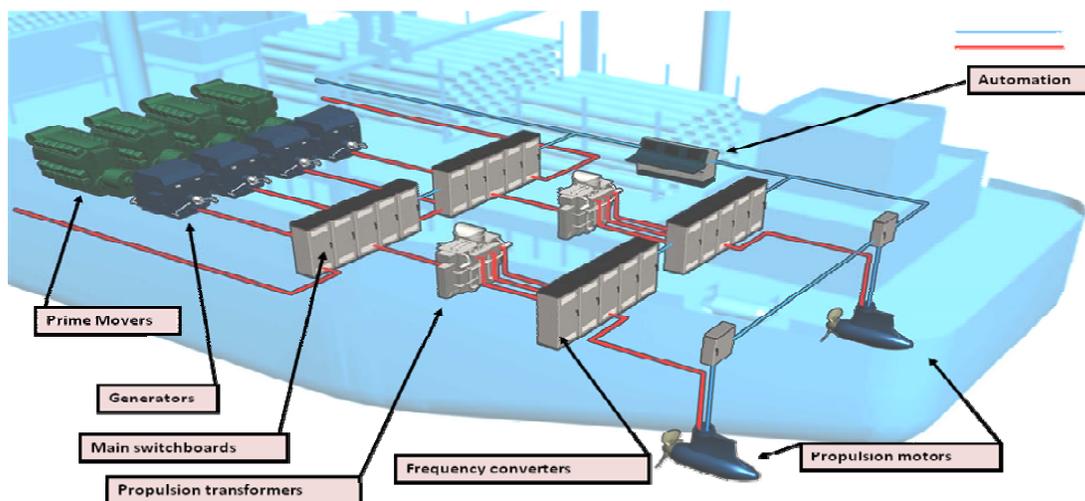


These are photographs of a podded propulsion system. One is obviously the exterior view showing the propulsion module of the pod. The picture on the right shows the slip ring unit (consisting of the slip rings, power connection box and the power cables). You will also not that you can see one of the four hydraulic motors (in red) that are used to articulate the pod.

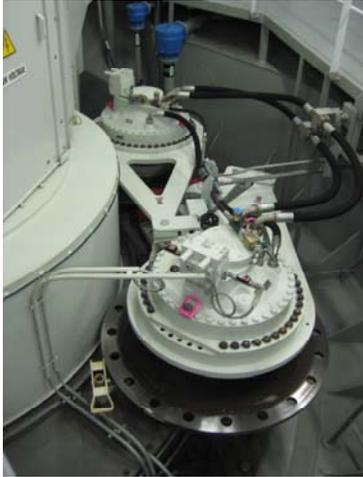
These steering/propulsion systems replace the typical shaft and rudder systems dominant in the marine industry and are very prevalent on most modern cruise ships with some ships having up to 3 units.

Why are they so prevalent? Because the electric motor is inside the pod, and the propeller is connected directly to the motor shaft. By not using a traditional propeller shaft, the propeller can be farther below the stern of the ship in a clear flow of water providing greater hydrodynamic and mechanical efficiency increasing the maneuverability of the vessel. In addition to superior maneuverability, podded propulsion systems also deliver fuel efficiency, with savings of around 10-15 per cent compared to conventional shaft-line propulsion systems. This reduces fuel costs and cuts greenhouse gas emissions. The units are also far quieter and more compact than alternatives, allowing ship designers to utilize the machinery spaces more efficiently.

The full ship system consists of the required number of propulsion motors, frequency converters (alternating the frequency allows the pod to reverse). Additionally, propulsion supply transformers (if needed), automation, and the power plant (prime movers, generators and switchboards).



## Major system components (and pictures)



Here is a picture of the two of the hydraulic motors used to rotate (articulate) the pod. There are four motors for each pod, and the pod can operate without reduced capacity with the loss of one motor. The pod can operate with the loss of two motors, but there may be some reduction in maneuverability.

This is a picture of the hydraulic pumps that provide hydraulic power to the hydraulic motors. Typical operation has one pump in operation with the second pump in automatic startup in the event the primary pump fails.



This is another view of the slip ring unit. This unit sits directly over the slewing bearing for the pod. All cables and piping enter the pod at this point.

How to address during a FPV Examination: Even though this system is both propulsion and steering, we look at the steering aspect of it during the exam. The pod is examined in the same manner as a traditional rudder as required in SOLAS II-1 Regulation 29.