

Case Study 152: Modern Passenger Ferry

SPECIFICATIONS

Waterjet:	DJ170HP x4
Engine:	Volvo Penta D16 750hp @ 190rpm
Gearbox:	Dong I DMT-240W (1.25:1)
Vessel:	34.0m L.O.A 5.6m Beam 50t (laden)
Performance:	38 Knots



34m Passenger Ferry

This aluminium ferry has been constructed by PT Palindo Marine shipyard in Indonesia. Powered by quad Volvo D16 marine diesels coupled to DJ170HP waterjets, the ferry has a top speed of 38 Knots and can carry upwards of 180 passengers.

The DJ170HP is a 17" (432mm) single stage compact high performance waterjet that uses Doen's latest impeller technology to delivers mixed flow type, high speed performance, within an axial build. This approach combines the key benefits of excellent high-speed efficiency with superior cavitation margins and efficiency at lower speeds and cruise conditions. This waterjet model incorporates many innovative features that enhance its application into high-speed craft. The lightweight fabricated intake tunnel for instance enabled DOEN to accommodate the requirement for tailor-made intake design to suit the hull form for this particular vessel.

A pair of DJ170HP-DT (Direct Thrust) together with a pair of DJ170HP-B (booster) waterjets were specified for this project. The former are coupled to the Volvo diesels at the wings via Dong I marine transmission. The booster jets are directly coupled to the diesels at the center.

The Direct Thrust variant (DJ170HP-DT) allows the waterjet shafting to connect directly and simply thrust to the gearbox coupling without the need for any intermediate shafting. The elimination of the waterjets own thrust bearing system provides cost benefits and simple and easy ongoing maintenance. It also allowed for a more compact installation.

Each DJ170HP-DT has its own fully integrated hydraulic system providing steering and reverse control. All of the hydraulic equipment including cylinders hydraulic and associated hose connections are inboard mounted. Each hydraulic pump is directly driven from the gearbox PTO's.

The vessel propulsion control is managed using Doen's own fully integrated electronic control system, ECS200. Configured for quad engine - single station, the system is the primary control device for control of engines throttle, as well as the steering and reverse functions of the wing waterjets. The system also provides the operator with gear command and all necessary monitoring, alarm and back-up control functions.