

FLOATING DRYDOCK

As early as the end of 2003 Ching Fu Shipbuilding of Taiwan, contracted Vuyk Engineering Rotterdam for the design of a floating drydock to be built at their shipyard in Kaohsiung. The dock will serve as a repair facility in the Republic of Marshall Islands. In this region fishing is the main sector and therefore the dock is mainly designed for maintenance and repairs of purse seiners and feeders.

Our scope was the concept design, basic design and detailed engineering of the dock, and part of the equipment. The dock has been designed according to the rules for classification of Det Norske Veritas.

As the operating region is not industrially developed, the dock has to be a self-supporting unit. This has impacted on the design in the following ways:

- The dock is fitted with its own power generation and machinery systems. All machinery is located in the side walls of the dock. As the sidewalls are kept small for maximum clear width inside the dock, the machinery spaces are designed to be extremely compact.

- While most floating docks are connected to external resources, this dock is able to store and distribute its own consumables (fuel and fresh water) and stores.

- The dock is fitted with cranes and repair facilities as external equipment is hardly available in the operating area. This influences the arrangement of the side walls: a gantry crane is fitted on each side.

- The accommodation is fitted inside the side walls.

Dock particulars:

Length pontoon	104.80 m
Breadth extreme	28.52 m
Depth mld.	11.70 m

Docking Capacity:

Netto lifting capacity	3 500 ton
Maximum length	96.00 m
Maximum width	19.58 m
Maximum draught	6.55 m

The arrangement/machinery of the dock is optimized for easy operation and reliability. This resulted in an arrangement with the pontoon divided into several tank zones, each operated by its own pump room. For redundancy, each pump can be by-passed to other zones. The pumps are located inside the pontoon to maximize the efficiency of the ballast system.

As the operating region is surrounded by protected corals, the dock has been designed to minimize environmental pollution. In order to collect spray water from maintenance work, the dock is fitted with a modern bilge water collection system. This consists of four bilge wells at the corners of the pontoon. These wells collect all waste water from the dock floor. From there the water is distributed to a bilge water collecting tank, which is connected to a separation unit.

After some delays in the building process, the dock successfully performed its first docking in 2007. In the following period the dock was used multiple times at the shipyard in Taiwan, because the economic growth required extra facilities. In this period the owner, with Vuyk Engineering Rotterdam as a consultant, investigated the best suitable location for the dock. For several possible locations in the intended lagoon, we engineered a mooring system to which the dock will be attached in the future.

