The concrete construction of the hull means that the ARCO facility can remain on station and produce continuous cash flow. No longer required are the periodic decommissioning and dry docking for hull maintenance typical of steel hulls.

ARCO’s floating liquefied petroleum gas (LPG) facility in the Java Sea off the coast of Indonesia illustrates how a BergerABAM design met a complex set of functional, environmental, cost, and schedule demands economically and efficiently.

Conceived and designed by BergerABAM’s engineers, this structure is the largest prestressed concrete floating vessel in the world. The hull measures 461 by 136 feet with a depth of 57 feet; overall height of the hull and topside is 100 feet; and the displacement is 65,000 tons. Twelve insulated steel tanks provide 375,000 barrels of LPG storage.

The vessel supports a system of integrated tanks, product loading arms, a liquefaction facility, and crew accommodations for 50. It is designed to bring gas on board through a single-buoy mooring system, store liquefied gas for two weeks, and transfer gas to a LPG tanker moored alongside.

Because this unique project included the first application of steel-based ship design rules (largely empirical) to a concrete structure, the design required careful development and combination of seaway loadings and consideration of effects, such as slamming and sloshing. The design also included techniques, methods, and concepts to assure a watertight hull in open-ocean conditions. Each of the vessel’s design approaches, design criteria, and actual design details were submitted to, and met the approval of, specific regulatory and underwriter classifications.

BergerABAM’s understanding of the principles used to develop criteria for safety, reliability, and economy matched with a proven ability to design those criteria provides clients with sound and affordable ocean structures.