

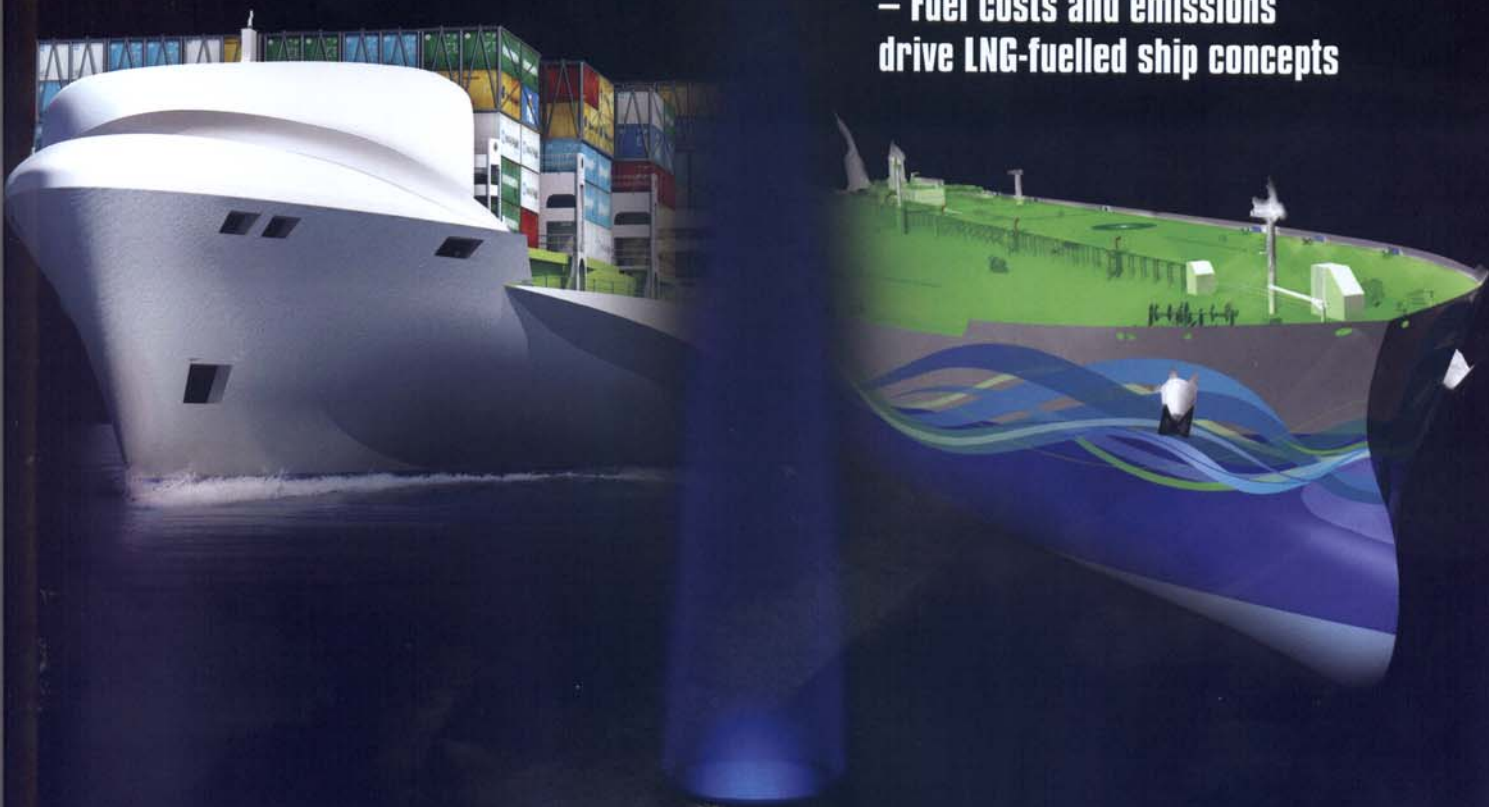
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Shipping World & Shipbuilder

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Elba & Omega 2

— FAR FROM THE END OF A SERIES



Ergonomic and economic are stand-out adjectives associated with Delta Marine's new 2600dwt product/chemical tanker design, the first of which, *Elba*, was delivered to Italian owner D'Alesio in June 2009. The second vessel built to the design, *Omega 2*, is currently under construction at Gisan Shipyard's Tuzla facility and will be delivered to Omega Marine, an affiliate of the Istanbul-based ship designer, for onward sail in the next few months.

Designed to carry IMO II type products and provide ship-to-ship bunkering services, the Omega-class offers the kind of practical functionality synonymous with a Turkish build. In this instance, both vessels have fewer cargo tanks compared to similar ships of this size; cargo loading/unloading operations can be performed both aft and amidships; there is a high degree of automation, with all cargo and propulsion systems controlled from the wheelhouse; and the hull form and propulsion arrangement has been specifically configured to engender a maximum speed of 12kts from minimal power and fuel.

Whilst there have been a few changes to the design since the delivery of *Elba* (Yanmar has replaced Guascor as the engine supplier, for instance, probably due to the change in ship-builder), the design ostensibly remains the same.

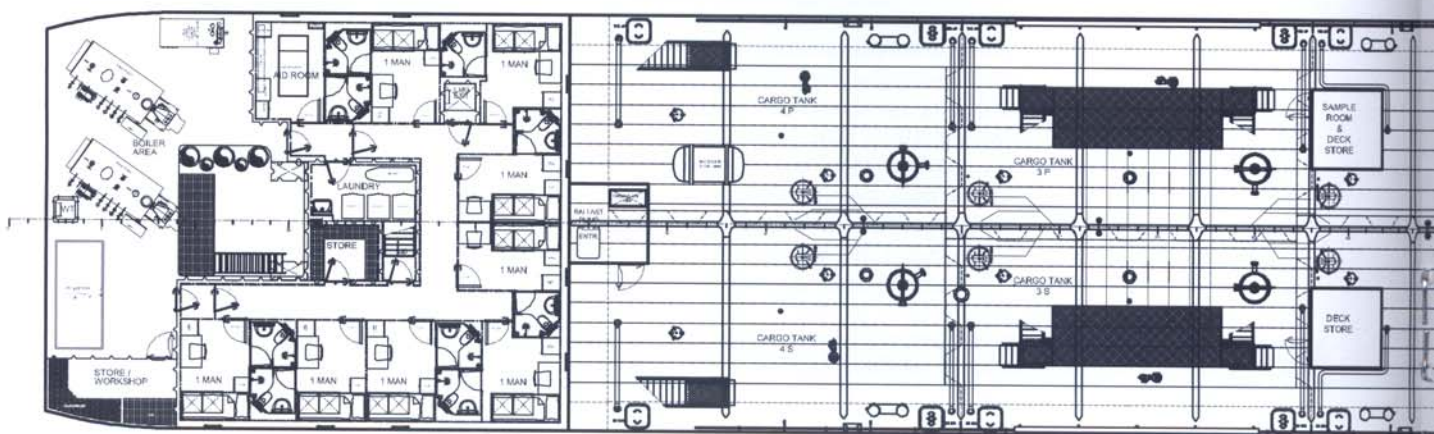
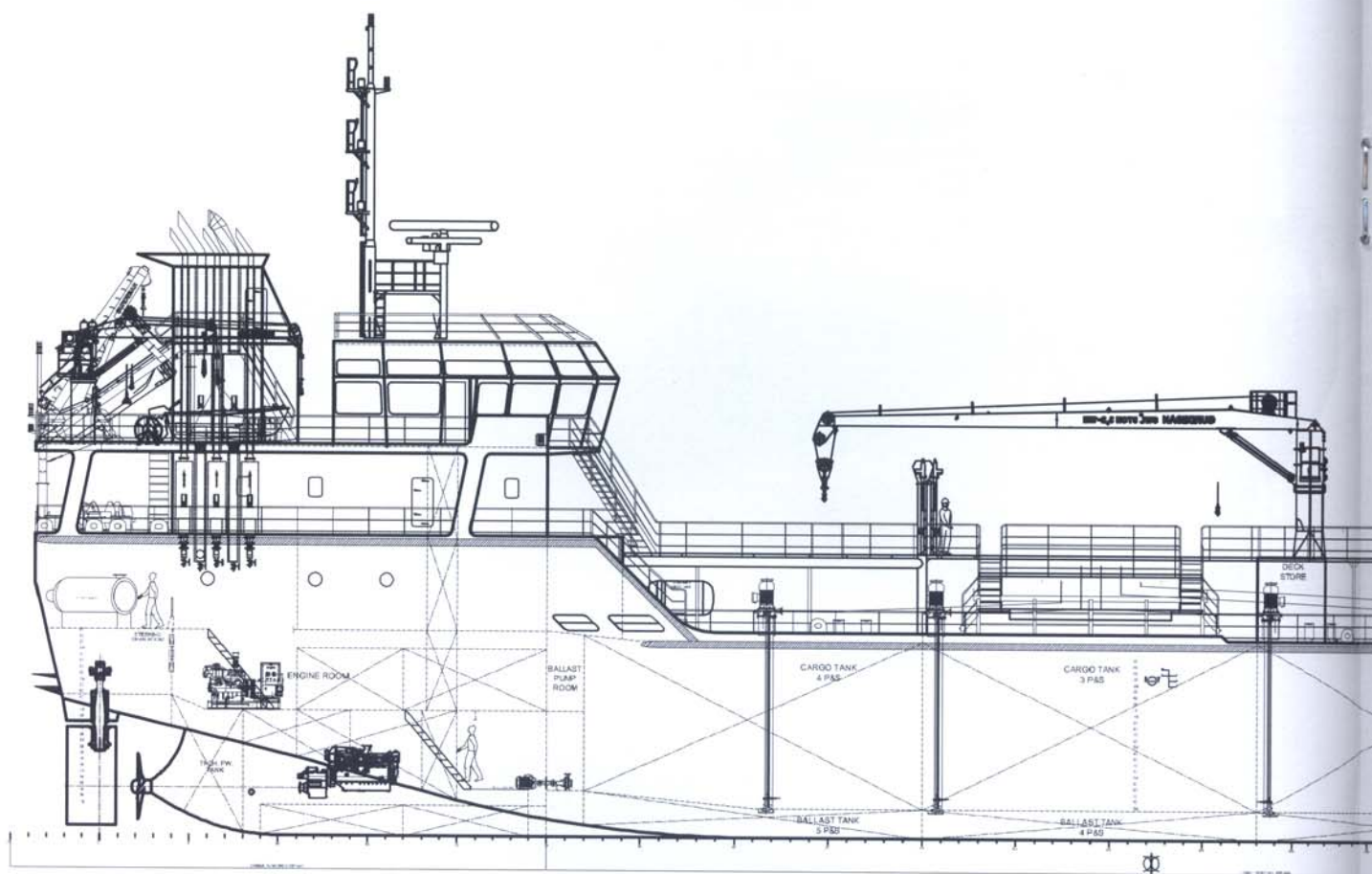
Using AH36 steel grade in the ice belt area, the 72.62m long, 13m wide vessels can operate in areas with ice thicknesses up to 60cm and are capable of withstanding cargoes that have a specific gravity of up to 1.54t/m³ at 66°C. Phenolic epoxy coated cargo tanks can be fully or partially loaded. Ice belt aside, A-Grade shipbuilding steel plate has been used throughout. Furthermore, the cargo area has been designed with web frames in every sixth frame, as opposed to every fourth, which lowers the lightweight of the ship but still, according to Delta Marine, maintains the longitudinal strength.

CARGO TANKS

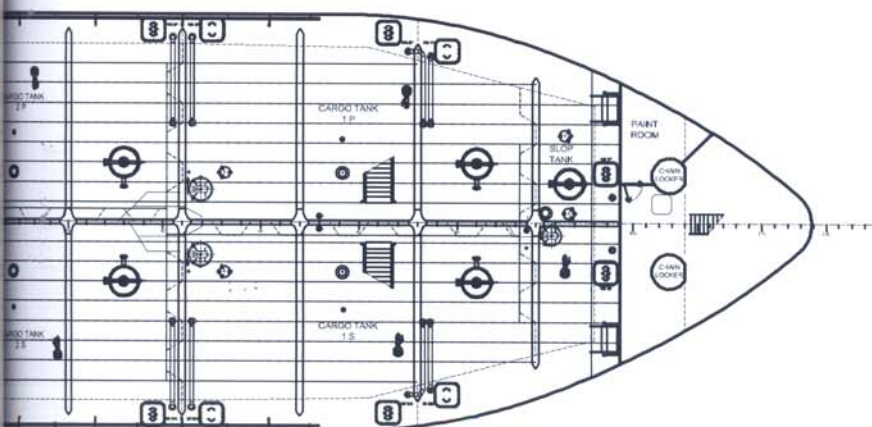
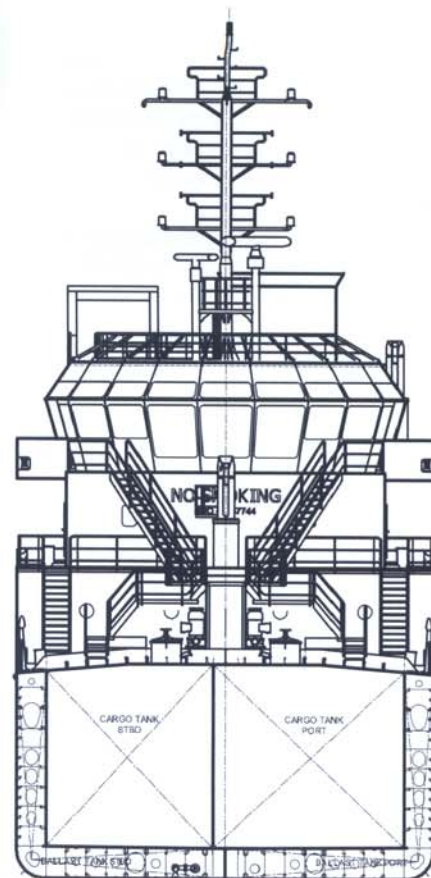
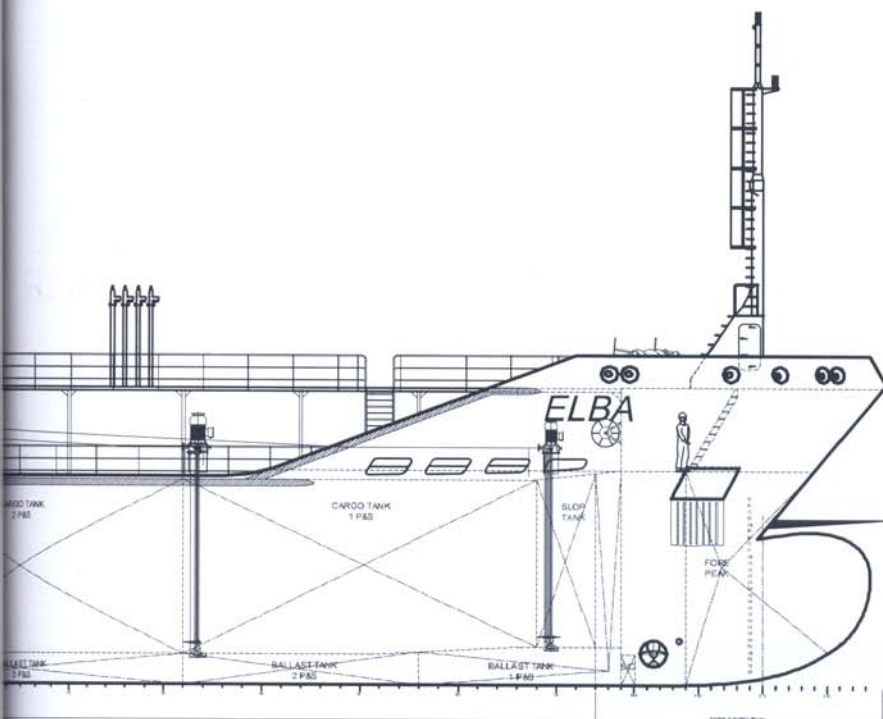
Divided by a corrugated centreline bulkhead, the cargo tanks comply with MARPOL and IBC rules governing the carriage of petroleum. The cargo tanks are made of stainless steel (316L). What is interesting, however, is that the cargo system has been designed in such a way so as to afford the simultaneous loading and unloading of products and IMO Type II chemicals. As such the cargo piping system together with all other pipes and fittings allows for the unloading of different substances in the mid-manifold area and two different substances at the aft manifold station. Total unloading capacity is 600m³/h. Cargo discharge and drop valves can be remotely operated, although manifold presentation butterfly valves are manually operated.

Principal particulars	<i>Elba</i>	<i>Omega 2</i>
Loa	72.62m	72.62m
Bmld	13m	13m
Design draught	4.8m	4.8m
Air draught	24m	24m
Deadweight (scantling)	2600t	2600t
Cargo capacity (liquid)	2633m ³	2641m ³
Speed	12.5kts	12kts
Sfoc	6.4t/d	5.1t/d
Range	3600nmiles	4100nmiles
Classification	Bureau Veritas	

A general arrangement plan of Elba



MAIN DECK



Based around a Hamworthy Svane-høj scope of supply, each cargo tank is equipped with a 150m³/h, electric-driven deepwell submersible pump. These can run concurrently at full capacity, with a discharge time of less than six hours with stripping facilities. (The slop tank is equipped with a 100m³/h capacity unit.)

To heat the cargo tanks, steam is fed from two 2500kW S-MAN oil-fired boilers to two lines of heating coils in each cargo tank. Coil length is sufficient to keep oil cargoes at temperatures of between 44°C and 66°C.

Each cargo and slop tank is equipped with an individual vent line fitted with a high velocity pressure/vacuum valve with flame screen along with the appropriate gas-freeing fans. However, to meet SOLAS requirements for the carriage of flammable products and to handle simultaneous cargo loading/unloading operations, a Generon system is installed to inert the tanks. This a 375m³/h capacity system, located on the cargo deck, has a separate N₂ supply line with pressure regulator for purging and padding respectively.

Cargo tanks are equipped with a fixed 150m³/h capacity Scanjet cleaning machine and heater, while tank and gas monitoring is achieved by way of an Enraf-supplied closed electronic and manual level gauging system and temperature and pressure measurement alarm system, all of which can be remotely controlled from the wheelhouse.

Additional crew is not needed for cargo or machinery operations since the functions of engine control room and cargo control room can be carried out from the wheelhouse using automation and tracking technology.

PROPULSION

To attain a 12.5kt design speed at 90% mcr, *Elba's* propulsion arrangement is based around two four-stroke diesel engines, each rated at 736kW at 800rev/min. This differs slightly from sistership *Omega 2* in that a lower speed requirement of 12kts has been achieved via a twin engine configuration with a total power output of 1154kW. However, in each case, each engine drives, via a reversible reduction gear, a four-blade, 200mm diameter fixed pitch propeller to optimise energy efficiency. At 90% mcr, the *Elba* has a daily fuel consumption of 6.4t, *Omega 2's* is 5.1t, although her design speed is lower, of course. For the same speed value the cruising range is 4100nmiles. With only one *Omega 2* can sail at 9kts.

Three 265kW auxiliary generators provide the requisite electrical power at 440 V at 60 Hz.



The *Elba* on sea trials in the Sea of Marmara

Omega 2 under construction at the Gisan Shipyard

One main switchboard enables manual and automatic synchronization of main diesel generators, providing the ability for automatic load share, stand-by and automatic setting for self-redundancy in case of partial damage.

Consumers include the vessels' manoeuvring system which comprise two spade-type rudders, each of which has a high leverage coefficient. These rudders are controlled by two independent ram type steering gears, again controlled from the wheelhouse either independently or in synchronization. A 150kW bow thruster



is installed at the fore part to enhance manoeuvring ability. When sailing at design speed the turning diameter of the ship is 2x^lwl and the stopping distance is 4x^lwl.

Elba and *Omega 2* are classified according to Bureau Veritas' AVM-DPS notation, which stipulates propulsion redundancy. All machinery operations including start/stop of the engines can be carried out from the wheelhouse. Both ships also fulfil the requirements of intact and damaged stability criteria in accordance with SOLAS, MARPOL and IBC rules. According to MARPOL damaged stability rules for all specific gravity values, criteria are met without taking ballast water while in case of IBC damaged stability rules the ballast water should be loaded only for 0.9 t/m³ specific gravity. As a result the cdwt and the dwt values of each vessel are the same.

The superstructure, which includes the main, wheelhouse and navigation decks, is located aft and divided across three decks. In total, 11 cabins all with private en-suite facilities provide crew accommodation. An air conditioning unit is installed to maintain the accommodation block at a constant 27°C at 50% humidity at summer and 20°C in winter.

The Tuzla-based facility of Gisan shipbuilding group (it also has a facility in Yalova) was awarded the contract to build *Omega 2* early last year. The vessel will be launched at the end of May with delivery following in September. The shipyard is also building a Delta Marine-designed 16 500dwt general cargo for a Bulgarian owner.

Principal suppliers to Elba

Design.....	Delta Marine
Coatings.....	Jotun
Hatches.....	JIS Standart
Cargo system.....	ACE Valve Co
Cargo pumps.....	Hamworthy Svanehoj
N2 System.....	Generon
Cargo monitoring.....	Enraf Marine Systems
Tank cleaning.....	Scanjet
Steering gear.....	Data Hidrolik
Bow thruster.....	Schottel
Bridge system.....	JRC
Mooring winches.....	Gürdesan
Lifeboats.....	Gepa Boat
Liferafts/Davits.....	Viking
Fire systems.....	Consilium
Accommodation.....	Staco
Galley.....	Domestic
HVA.....	Heinen Hopman
Sanitation.....	Jets Vacuum
Sewage plant.....	Jowa
Main engine.....	Guascor
Propeller.....	Schaffran
Gearbox.....	Guascor
Boilers.....	S-MAN
Gensets.....	MAN/Lindenberg
Purifiers.....	Alfa-Laval
Fire system.....	Consilium Marine
Instrumentation.....	Lyngsø

A general arrangement plan of Omega 2

