Design of a new concept of product tanker

Paolo Balestra

DTU Mechanical Engineering, Technical University of Denmark

General Descriptions

The vessel is built to answer to a continue request of energy-saving and less CO2 emission way of oil transport in the market trend. The Product Tanker with twin podded propulsion alimentated by diesel gensets, respecting the actual TIER. The main features in the design and construction are pointed to a higher safety, less EEDI final index and to less initial and maintenance costs. Due to the common shipyard elevation capacity (supposing a crane which can lift objects weighing 2000 tons, at 20-33 m outreach at 70m elevation and 50tons at 95 m outreach and 43 m elevation), the vessel has to be built in 6 separated main blocks. A continuous single deck from fore to aft is located at D=19m. Twelve (12) cargo tanks of about 22 m length are provided, answering to the request of 55000 m. of liquid with a Cargo specific gravity 0.85 ton/m.. A single accommodation block is located before the cargo tanks, with five decks, 22 cabins and a wheelhouse offering all-round vision located above and after. To ensure safe and good maneuverability characteristic, also having a double podded propulsion, a bow thruster is provided in the forward part. Seven main corrugated transverse bulkheads subdividing the hull below main deck. MDO tank arranged in a side of engine room longitudinal position.

Principle Dimensions and Characteristics

Length Overall LOA : 182.000 m
Length of Waterline (Summer) LWL : 176.100 m
Length between perpendicular LPP : 166.450 m
Length of Subdivision : Approx. 30.000 m
Moulded Breadth B : 32.200 m
Depth D : 19.000 m
Design Draft (Scantling) T : 12.000 m
Summer Draft Ts : 11.990 m
Design Draft Td : 11.900 m
Total Block Coefficient at Td Cb : 0.814
Cargo Tank Capacity about : 56000 m.
Slope Tank Capacity about : 2000 m.

Speed and Endurance

The service speed of about 14 knots in deep and calm weather (Smooth sea with wind force not exceeding Beaufort scale 2) with no current presence.

Propulsion and Maneuvering System

- Podded Propulsion : Approx. 2 * 6000 kw
- Bow Thruster: One (1) Tunnel thruster L-Drive 1100 HP, 66 inch od diameter

Conclusions

The project have developed a new tanker concept, which could be collocate in the actual market situation. An analysis of the last market trend and oil prices have been made to take in account of the possibility and feasibility of the designed construction. The final result is that if new propulsion characteristic are provided, this new product tanker type could be seen as a way to save money in the the liquid transport market and therefore also in oil one.