

FRIDA KNUTSEN – OIL TANKER



Shipbuilder:**Daewoo Shipbuilding & Marine Engineering Co., Ltd (DSME)**
 Vessel's name:**Frida Knutsen**
 Owner/Operator:**KNOT (Knutsen NYK Offshore Tankers)**
 Country:**Norway**
 Designer:**DSME**
 Country:**Republic of Korea**
 Model test establishment used**KRISO, MARIN and Force Technology**
 Flag:**Norway**
 IMO number:**9905916**
 Total number of sister ships already completed (excluding ship presented):**1**
 Total number of sister ships still on order: **0**

Designed and built by DSME, the 123,602dwt *Frida Knutsen* delivered in August 2022 allowed owner Knutsen NYK Offshore Tankers to join the ranks of operators of dual-fuel shuttle tankers. Sister ship *Sindre Knutsen* was delivered less than four weeks later.

It is the power and propulsion system of the vessel which makes it significant. Dual-fuel vessels are becoming common across ship types but the smaller of the two deck tanks on *Frida Knutsen* are not for LNG but for storing VOC emissions from the cargo. The stored VOC is for use both as fuel and to meet a forthcoming Norwegian requirement to limit VOC release to the atmosphere.

The main power supply comes from a pair of WinGD 6X52DF of 6,705kW output engines each connected to a Wärtsilä 9L34DF engines power the Hyundai Electric generators. Each set produces 4,150kW at 720rpm. Surplus energy from the auxiliaries and main engines is stored in an ABB energy storage battery system for use in positioning during cargo operations.

TECHNICAL PARTICULARS

Length oa:277.548m
 Length bp:264.5m
 Breadth moulded:46.0m
 Depth moulded
 to upper deck:22.9m
 Width of double skin
 side:2.53m
 bottom:2.7m
 Draught
 scantling:14.9m
 design:14.9m
 Gross:85,504 MT
 Displacement:154,500MT
 Deadweight
 scantling:123,602MT
 design:124,000MT
 Speed, service:12.9kts
 Cargo capacity (m³)
 Liquid volume:144,000

Bunkers (m³)
 Heavy oil:2,800
 Diesel oil:890
 Water ballast (m³):52,000
 Daily fuel consumption (tonnes/day)
 Main engine only:51.7 (Oil) / 41.7 (Gas)
 Classification society and notations:DNV
 +1A, Tanker for Oil ESP, CSR, EO, COAT-PSPC(B, C), BIS, TMON, LCS, DYNPOS(AUTR), BWM(T), Clean(Design), HELDK(S, H), NAUT(AW), Bow Loading, VCS(2, 3), PLUS, CSA(FLS2), COMF(C-3, V-3), CCO, Recyclable, SPM, Gas fuelled, Battery(Safety), F(A,M,C)##

Propulsion
 Main engine(s)
 Design:Winterthur Gas & Diesel Ltd
 Model:WinGD 6X52DF
 Manufacturer:Hyundai Heavy Industries
 Number:2
 Type of fuel: ... HFO, LSMGO, FG, vaporized LVOC
 Output of each engine:6,705kW
 Is this a diesel-electric or hybrid?:No

Propeller(s)
 Material:Ni-Al Bronze
 Designer/Manufacturer:DSME / Wärtsilä
 Number:2
 Fixed/Controllable pitch:Controllable
 Diesel-driven alternators
 Number:2
 Engine make/type: .. Wärtsilä / 4-stroke, trunk piston, in-line, dual fuel 9L34DF type
 Type of fuel: ... HFO, LSMGO, FG, vaporized LVOC
 Alternator make/type:Hyundai Electric / HSJ9
 811-10P, Synchronous generator
 Output/speed of each set:4,150kW
 (5,187.5kVA) / 720rpm

Turbo generator
 Number:1
 Make/type:Mitsubishi Heavy Industries / Horizontal, impulse type condensing turbine
 Output/speed of each set:3,600kW
 (4,500kVA) / 1,800rpm

Boilers
 Number:1 x Aux. boiler, 1 x Donkey boiler
 Type:Vertical, composite
 Make:Aux, Mitsubishi Heavy Industries; donkey boiler, Kangrim Heavy Industries
 Output, each boiler:Aux. boiler: 35tons/h x 16bar g; donkey boiler: Oil-fired section 5tons/h x 6bar g, Exh. gas section: 2 x 0.7ton/h x 6bar g
 Stern appendages/special rudders:
 Type:2 x High lift fish tail rudder
 Make:Becker Marine

Bow thruster(s)
 Make:Brunvoll
 Number:4 / 2 x tunnel, 2 x retractable
 Output (each):Tunnel (1.7MW) / retractable (2.5MW)

Stern thruster(s)
 Make:Brunvoll
 Number:1 x tunnel
 Output (each):1.7MW
 Deck machinery
 Cargo cranes/cargo gear
 Number:2

Make:Oriental
 Type:Ele. Hyd cylinder luffing
 Performance:15MT SWL
 Other cranes

Number:2 x 5MT SWL for Provision crane / 1 x 5MT SWL for Bow loading system

Make:Oriental
 Type:Ele. Hyd cylinder luffing
 Tasks:Provision / BLS
 Performance:5MT SWL each

Mooring equipment
 Number:Total 8 x sets
 Windlass:2 - 1C/L +2 M/D+1W/H
 Mooring winches:6 - 2M/D +1W/H (Capacity: 25MT)

Make:Flutek
 Type:Hydraulic high pressure
 Special lifesaving equipment

Number of each and capacity:1 x lifeboat & 1 x fast rescue boat

Make:Viking
 Type:Lifeboat (freefall)/Rescue (pivot hinged)
 Cargo/capacity

Bow loading system (Green line only)
 Design:In-board loading, 5th generation
 Manufacturer:MacGregor
 Loading rate:up to 9,000m³/h
 Pulling force of traction winch:130MT
 Brake capacity:170MT

Cargo tanks
 Number:12 (in six pairs) + 2 Slop tanks
 Coated tanks:International Paint, Epoxy anti-corrosive as per IMO PSPC-COT

Structure/piping:carbon steel/carbon steel

Cargo pumps
 Number:4
 Type:Centrifugal, vertical, single stage
 Make:Shinko
 Stainless steel:Bronze
 Capacity (each):3,000m³/h x 135mTH

Cargo control system
 Make:Shinko

Ballast control system
 Make:Shinko

Ballast water treatment system
 Make:HHI

Complement
 Officers:13
 Crew:17

Suez/Repair Crew:6 Suez crew

Navigation and other equipment
 Bridge control system

Make:Kongsberg
 Type:Bridge Manoeuvring System
 Is bridge fitted for one-man operation?Y

Integrated bridge system:N

Fire detection system
 Make:Consilium

Type:Addressable

Fire extinguishing systems
 Engine room:CO₂ fire extinguishing system

Make/Type:NK / CO₂

Waste disposal plant
 Incinerator

Make:Hyundai Marine Machinery Co
 Model:MAXI NG150SL WS

Waste compactor
 Make:EVAC

Model:UBP-30S

Sewage plant
 Make:Il-Seung

Model:ISB-06

Efficiency
 Attained EEDI value:2.51 g/ton-mile

Required EEDI value:3.19 g/ton-mile

Installed Fuel Meters:Coriolis type gas flow meter for ME, GE and Aux. boiler

Positive displacement type FO flow meter for ME, GE, Aux. boiler and Donkey boiler

Other installed monitoring tools:Ship performance monitoring system

Energy Saving Technologies*:Partial LED lighting, VFD for thrusters, Main CSW pumps, ER fans and cargo pumps, Shaft generators, ABB Energy storage system

Hull coatings:High performance, TBT free, low friction self polishing anti-fouling paint

Contract date:6 February 2020

Launch/float-out date:4 December 2021

Delivery date:August 2022

