SPIRIT OF DISCOVERY: Cruise ship

Shipbuilder: .....**Meyer Werft GmbH**
Vessel's name: .....***Spirit of Discovery***
Owner/Operator: .....**Saga Cruises**
Country: .....**United Kingdom**
Designer: .....**Meyer Werft GmbH**
Country: .....**Germany**
Model test establishment used: .....**Maritime Research Institute Netherlands (MARIN)**
Flag: .....**United Kingdom**
IMO number: **9802683**
Total number of sister ships already completed (excluding ship presented): .....**Nil**
Total number of sister ships still on order: **1**

Built by Meyer Werft in Papenburg, Germany, *Spirit of Discovery* was delivered in May as the first of two sisters and as Saga Cruises new flagship.

The 58,119gt vessel, which can accommodate 999 passengers in 540 cabins, was the only cruise ship built for the British market in 2019. It is described by its owner as featuring the design cues, cuisine and levels of service expected in the world's finest boutique hotels. All cabins are outside and have their own balconies.

Spirit of Discovery has been designed as an expedition cruise ship and has a Finnish-Swedish ice class IC to allow operation in higher latitudes. Its cruise programme for 2020 includes voyages to Greenland, marking a return of this type of cruise after a 10-year absence.

In the spirit of environmentalism, the ship has several energy saving features allowing it to achieve an EEDI rating of 10.158 against a required value of 15.871. The measures include extensive use of variable frequency drives, waste heat recovery and LED lighting, among others. To meet the 2020 SOx rules, the vessel is fitted with a Yara scrubber that will clean the exhaust from the four MAN 32/44 9L engines.

As with most cruise vessels, the power and propulsion system is a diesel-electric arrangement and the combined 21,600kW from the engines covers all power requirements. The propulsors are a pair of 6,500kw Siemens SISHIP eSiPODs of the single propeller type. Siemens also provided the four alternators for the vessel.

TECHNICAL PARTICULARS

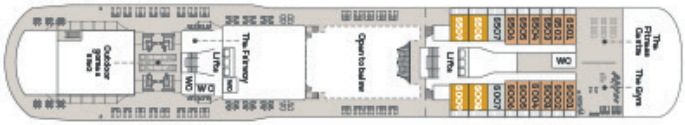
Length oa: 236.71m
Length bp: 210.5m
Breadth moulded: 31.2m
Depth moulded
to main deck: 10.4m
to upper deck: 13.30m
Draught
scantling: 7.6m
design: 7.3m
Gross: 58,119gt
Displacement: 32,850t
Lightweight: 24,978.7t
Block co-efficient: ..... 0.632 @7.3m draught
Speed, service: . 19knots = 3 engines at approx. 80%MCR
Bunkers (m^3)
Heavy oil: 1,482
Diesel oil: 517
Water ballast (m^3): 1,529
Daily fuel consumption (tonnes/day)
Main engines only: .... 38 (calculated average for season)
Classification society and notations: ..... DNV *1A1, passenger ship; LCS-DC, BIS; BWM-T; RPS; NAUT-AW(without certificate); ECO; CLEAN-DESIGN (without certificate)
% high-tensile steel used in construction: 100%
Heel control equipment: .....2 axial flow pumps 500m^3/hr and two pairs heeling tanks 218.76 & 202.6t
Roll-stabilisation equipment: .....1 pair fins SKF S700 16m^2
Propulsion
Main engine(s)
Design: ..... 4 stroke tier III compliant
Model: 32/44 9L
Manufacturer: ..... MAN
Number: 4
Type of fuel: .....HFO & MDO
Output of each engine: 5,400kW
Is this a diesel-electric or hybrid?: .....Diesel electric
Azimuthing pods
Make: ..... Siemens
Model: .....SISHIP eSiPOD 10M
Number: 2
Maximum speed: 117rpm
Output power 6,500kW
Propeller(s)
Material: ..... Cu3 Bronze
Designer/Manufacturer: .....Mecklenburger Metallguss GmbH
Number: 2
Fixed/Controllable pitch: .... Fixed monobloc 5 bladed inward turning over top
Diameter: 5m
Speed: ..... 117rpm at rated speed ahead
Special adaptations: .....DNV GL ice class 1C-free flow design, anti-singing edges applied
Main-engine driven alternators
Number: 4
Make/type: ..... Siemens
Output/speed of each set: 720rpm 5,844kVA, 5,260kWe, 5,400kWm
Exhaust-gas scrubbing equipment
Manufacturer: .....Yara
Type: .....Hybrid
On main engines: ..... Yes
Boilers
Number: 2
Type: ..... Aalborg CHB
Make: .....Alfa Laval
Output, each boiler: 7t/h
Bow thruster(s)
Make: ..... Brunvoll
Number: 2
Output (each): 2,200kW
Mooring equipment
Number: ..... 6 mooring winches (3 on aft mooring deck, 3 on fwd mooring deck)
Make: ..... Rolls-Royce (Kongsberg)
Type: .....Electric (frequency converter type)
Special lifesaving equipment
Number of each and capacity: .....2 marine evacuation system (max 450 pers. Per MES; each MES consisting of 1 x 150 p + 1 x 50 p. life rafts + 2 spare liferafts of 150 p + 2 spare liferafts of 50 p.)
Make: .....Brude / Survitec
Type: ..... Brude MES
If MES, vertical or sloping chutes?: ... Vertical

Ballast water treatment system
Make: ..... Alfa Laval pureballast 3.1 compact
Capacity: ..... 135m^3/h
Complement
Officers: 75
Crew: 468
Supernumaries/Spare: 6
Single/double/other rooms: .....64: 233: 5 (shared facilities)
Passengers
Total: ..... 1,054 max (999 normal)
Number of cabins: 540
Percentage/number outboard: ...100% balcony
Navigation and other equipment
Bridge control system
Make: .....Kongsberg
Type: .....K-Master / K-Bridge
Is bridge fitted for one-man operation? .....No
Integrated bridge system: ..... Yes
If yes, make: .....Kongsberg
Radars
Number: 4
Make: .....Kongsberg
Model(s): ..... 1 x S-band (30kW), 3 x X-band (25kW) ; 1 wave radar
Fire detection system
Make: .....Consilium
Type: .....Salwico
Fire extinguishing systems
Engine room(s):
Make/Type: .....Marioff hifog water mist (total flooding and local protection) & Minimax CO_2 (secondary)
Cabins:
Make/Type: ..... Marioff hifog water mist
Public spaces:
Make/Type: ..... Marioff hifog water mist
Waste disposal plant
Waste handled: .....Black water, accommodation grey, laundry grey, galley grey; food waste; cardboard; plastics; galley oil (partially recycled reminder incinerated), tins, glass (fully recycled) dewatered biowaste; medical waste; sludge oil; oily rags (incinerated)
Incinerator
Make: .....Michalis GmbH & Co .KG
Model: 1,200kW
Sewage plant
Make: ..... Wärtsilä
Model: .....Type III MBR 10 Murkowski and helcom compliant
Efficiency
Attained EEDI value: 10.158
Required EEDI value: 15.871
Installed Fuel Meters: ..... All fuel consuming devices with exception of emergency generator are fitted with Coriolis mass flow meters.
Other installed monitoring tools: .....trim, roll and heel are continuously monitored and recorded against propulsion power consumption.
Energy Saving Technologies*: ..... Waste heat recovery, thermally circulated exhaust gas economisers; VFDs on pumps and fans, RO plant to maximize available waste heat use, oil-free multi compressor HVAC chillers, cascade-cooled deep freeze compressors using CO_2 as refrigerant, LED lighting, silicon-coated vertical sides; fat bottom with hard coat
Performance Monitoring Regime: .....Steam and electrical consumption recorders on all main consumers e.g. galley, laundry & HVAC via the automation system

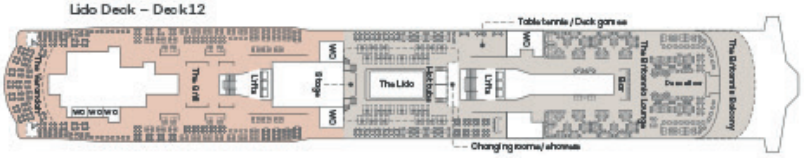
Contract date: .....21 December 2015
Launch/float-out date: .....10 May 2019
Delivery date: .....20 June 2019

Observation Deck – Deck 14

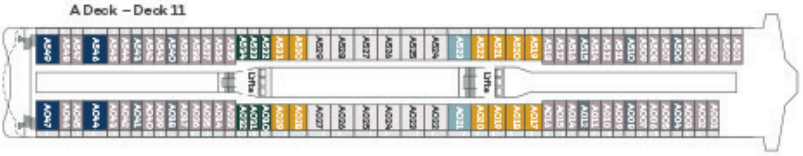
Sun Deck – Deck 13



Lido Deck – Deck 12



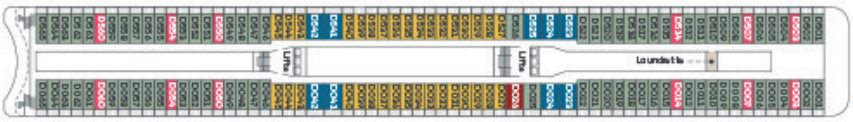
A Deck – Deck 11



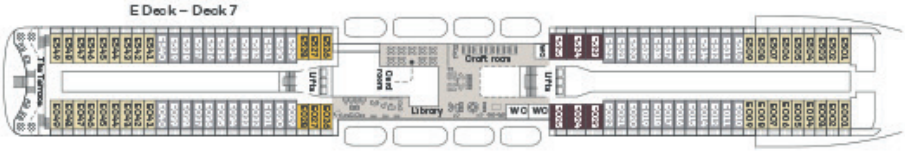
B Deck – Deck 10

C Deck – Deck 9

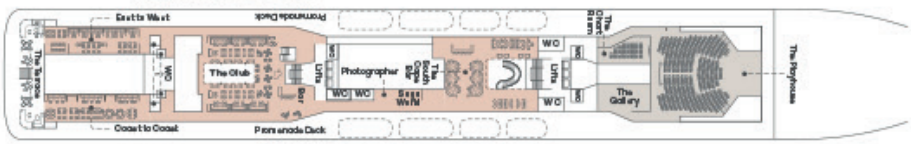
D Deck – Deck 8



E Deck – Deck 7



Promenade Deck – Deck 6



Main Deck – Deck 5