

# 7000m<sup>3</sup> Self-propelled trailing suction hopper dredger for sale

## 1. Principal dimensions and main parameters

Length O.A:108.60m

Length B.P:98.80m

Molded breadth:20.60m

Molded depth:8.50m

Designed draft:5.50m

Structure draft: 7.70m

2. This trailing suction hopper dredger is designed by Shanghai hongguan ship design Co., Ltd, and approved by CCS class. It is constructed under CCS supervision.

## 3. General characteristic

### 3.1. Self-

propelled trailing suction hopper dredger with the functions of hopper dumping, rainbow and pumping shore.

3.2. It is a single steel deck ship with bulbous bow and twin tail fin. The wheel house is located on the top of poop.

3.3. Two main engines, twin propellers (with nozzle) and twin rudders with electrically driven bow thruster.

3.4. Dredging in great coastal area and navigating in unrestricted area.

3.5. Tank capacity: 7114m<sup>3</sup>

3.6. Soil loading capacity: 8800 t

3.7. Dredging depth: 27m      Max. dredging depth: 30m

3.8. Suction pipe/discharging pipe diameter: 800/750mm

3.9. Two trailing suction pipes with three lifting points

3.10. Totally 14 conic hopper bottom doors of  $\Phi$ 3000mm and 14 hopper self-emptying doors of  $\Phi$ 600mm, arranged in two lines.

3.11. Two overflow tubes of DN1300mm with a stroke of 3500mm to adjust the hopper capacity from 7114m<sup>3</sup> to 4812m<sup>3</sup>.

3.12. Hopper loading time: abt 50 min

3.13. Time of hopper dumping by hopper door: 5 min

3.14. Time of pumping ashore by self-emptying system (hopper full, medium and fine sand  $d_m=0.235$ mm, pumping height 6m, pumping distance abt 1500m): 70~80 min.

3.15. Rainbow distance: >50m

3.16. Full loaded navigation speed: 12.85kn, Dredging speed (two suction pipes dredge, converse water current speed 4kn): 2-2.5kn.

3.17. MGO. Used for all engines onboard, oil stored in tanks is 850 t

3.18. Complement: 33P

3.19. Navigation duration: 25days

3.20. Total power of engines: 10922Kw

3.21. Hopper capacity coefficient: 0.41

3.22. Loaded soil coefficient: 0.653

3.23. Power coefficient: 1.535

3.24. Dredging operation type:

After the soil is dredged into the hopper, the soil

- a. can be dumped by hopper bottom doors.
- b. can do rainbow by self-emptying system
- c. can be pumped ashore by self-emptying system connecting with pipeline by fast-connection ball joint.

The vessel can use one or two suction pipes to dredge, it can supply a head of 150m high-pressure flushing water for any one of the drag heads to improve the suction efficiency when needed.

#### 4. Main equipments

4.1. Two propulsion main engine, model: 8DKM-28, rated power: 2500kW, speed: 750r/min, produced by Shanxi diesel engine work (introduce into Japan Daihatsu technology)

4.2. Three 450kW generator sets (with self-start function), Diesel engine: model is TBD604BL6 with the rated power of 500Kw and speed of 1500r/min, produced by Henan diesel engine work (introduce into Germany Deutz technology); Generators: IFC2 451—4SB of Fenxi Siemens.

4.3. One 250kW harbor/emergency generator set, diesel engine: model is TBD234V8 with the rated power of 281kW and speed of 1500r/min, produced by Henan diesel engine work (introduce into Germany MWM technology); Generator: IFC2 351—4SB of Fenxi Siemens.

4.4. Two dredge pump engines, model: CAT3516B, rated power: 1491 kW, speed: 1600r/min, produced by American CATERPILLAR

4.5. Two dredge pumps, model: IHC190-40-80, produced by Holland IHC. Maximum pressure for #1 and #2 dredge pumps are 423kPa and 825kPa respectively.

when hopper loading, pump shaft maximum power 1100kW at the speed of 180r/min  
when pumping ashore, pump shaft maximum power 1360kW at the speed of 220r/min  
The CAT3516B diesel engine can meet the requirements of above two conditions, the maximum discharging head of two pumps working in series for pumping ashore is ~60 m.

4.6. Two jet pump engines, model: 8190ZIC, continuous power: 720kW, speed: 1450r/min, produced by Jinan diesel engine work.

4.7. Two jet pumps, model: OTS400-620B, water flow: 2500m<sup>3</sup>/h, head: 80m, can be used for diluting mud when dumping and self-emptying, or work in series to provide a head of 150m to flush drag head when dredging, produced by Feixuan pump factory.

4.8. Main engine gearbox, dredge pump engine gearbox and jet pump engine gearbox are all produced by Hangzhou advance gearbox group company

4.9. One electric bow thruster, model: TT1300B/BMS-CP, power: 375kW, CPP speed: 384r/min, diameter: 1300mm, thrusting force: 60kN, produced by Jiangsu Sixin marine mechanical Co., Ltd.

4.10. Propulsion propeller (fixed pitch), diameter: 3300mm, pitch ratio: 0.93, 4 blades, speed: 190r/min

4.11. Four air compressor, model: WF—0.6/30, three cylinders, air cooling, Q=36m<sup>3</sup>/h, P=3MPa

4.12. One fuel oil/exhaust gas boiler, model: LYF0.5/70-0.7, vaporization capacity 500kg/h, working pressure: 0.7MPa

4.13. At aft and fore of hopper, there are one 12x15m and one 8x16m crane, electrically driven.

- 4.14. One SBTC-40 sewage treatment plant, two USHC-10 oil water separators, produced by Japan Taiko.
- 4.15. Three Lub. Oil and fuel oil purifiers, produced by Nanjin luzhou mechanical factory
- 4.16. Two single side drum hydraulic windlasses of  $\phi$  48mm(AM3) on forecastle deck.
- 4.17. YB50 type 50kN combined double-drum warping winch on poop deck  
windlass and warping winch use Japan KYB hydraulic motor and Japan HYDROGEAR manual proportional reversing valve.
- 4.18. One YDC250 type 250 kN steering gear, hydraulic pump and main valves use products of TEXROTH in Beijing and Shanghai
- 4.19. One 5.7m fully enclosed type life boat on port side of boat deck, one 5.7m fully enclosed type life/rescue boat on starboard, produced by Wuxi Hongsheng marine glass steel company.
- 4.20. One set of center air conditioner, model: CJKR-151, cooling capacity: 151kW, heating capacity: 157kW. Compressor and control components are foreign famous brand. Cabinet type air conditioners are used in wheel house, galley, E/R monitoring room and P/R monitoring room, produced by Zhaosheng air conditioner group China.
- 4.21. Rated pull force of winch for drag head and intermediate gantry is 350KN, and bend hydraulic winch rated pull force is 120KN, pumping ashore ball joint hydraulic winch rated pull force is 250KN, produced by Shanghai Shenchen hydraulic pneumatic company, the Italy SAI big torque hydraulic motors are used.
- 4.22. Hydraulic pump station consists of 6 plunger pumps (55kW), 2 plunger pumps (11kW) of 25SCY14, hydraulic oil tank of 3t, heater, cooler, filter, alarm device and gauge etc.
- 4.23. The length of trailing suction pipe is 34.8m with diameter of DN800mm, the drag head width is 3.0m with weight of 12t.
- 4.24. Communication/navigation equipments such as FAR2137S and FAR2117 radars, M/H F radio system, INMARSAT-C, gyro compass autopilot etc are Japan FUAUNO and international brand products.
- 4.25. VDR and AIS are provided
- 4.26. Computer remote control device to be provided for main engines, operated on navigation console by single stepless handlebar. Dredge pumps and engines, jet pumps and engines can be remote operated by control panel in wheel house. Control board of bow thruster is installed on navigation console.
- 4.27. ANSCHUETZ gyro compass autopilot operation system is provided
- 4.28. On monitoring panels of engine room and pump engine room, SB-2001 monitoring alarm system is provided to display running parameter, alarm and print record for main equipments.
- 4.29. As per rule, fire alarm system, general alarm system and engine room combined alarm system are provided
- 4.30. CO2 system is provided for engine room and pump engine room
- 4.31. In engine room and pump engine room, fixed type water-based local fire fighting system is provided with the working pressure of 7-8MPa, high pressure water spray protects 10 areas of engine room and pump engine room
- 4.32. Dredging monitoring system  
Including dredge vacuum, pressure measurement and display; mud flow, density measurement and display, the data is computerized to display production, and print result. Besides the display by screen, important parameters such as vacuum, pressure, flow speed and density etc are displayed by gauges. Three computers of dredging monitoring control system all can display draft, loading data and suction tube position. Draft pressure sensor used is imported high precision, low temperature draft capacitance type micro-

pressure transmitter. Overflow tube position display and hopper door open/close control display are on dredging control panel. When use self-emptying system to pump ashore, through the dredging control panel to control diluting water

leading valve and starboard dredge pump suction valve, and show valves' open degree. On the simulation map of dredging control panel, use PLC to control display the gate valve, butterfly valve and self-emptying door in the system.

4.33. DGPS positioning system is equipped to provide navigation aid positioning and dredging control information to dredger so that to achieve the position accuracy of sub-meter and bow direction of 0.5 degree.

The design, building, material and equipments used for this vessel all satisfy the requirement of CCS towards unrestricted navigation area. Main equipments employed in the vessel can provide global service. This dredger can be used internationally for sea-route, port dredging and reclamation project.

The design, building and equipments used in the vessel are to achieve the safety and reliability of the utilization of the vessel so that acquire high return for owner.

This new building ship is planned to be delivered in May of 2009.

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