



Contents



By Builder



By Ship Type

Dynamic Positioning System for FT400 Crane Barge (Non-Self Propelled) 90

The "FT400," developed by Fudo Tetra Corporation and built by Fuji Kaiji Kogyo Co., Ltd., was delivered in March 2025. This next generation dredging and crane barge integrates advanced environmental performance, safety, operational efficiency, and crew's comfort. Fig.1 and 2 show the external appearance and the general arrangement of FT400, respectively.

The vessel incorporates a battery-based power system designed to reduce the number of onboard generators and minimize CO₂ emissions. Notably, it is the first non-self-propelled barge in Japan to be equipped with a Dynamic Positioning System (DPS), for which our system was adopted. Fig.3 shows the DP Console.

This DPS equipped the following key features:

- Four electrically driven pump jet thrusters (rated thrust: approx. 20kN each) are installed on the hull bottom, enabling efficient thrust generation in any direction and allowing anchorless position keeping against external forces such as currents, wind, and waves.
- The system has been assessed by Class NK (Nippon Kaiji Kyokai) as equivalent to DPS Class-1, marking the first such assessment for a push-type barge in Japan.
- A feedforward control function is implemented to compensate for the rotational moments generated during crane slewing operations with heavy buckets, thereby it becomes possible to minimize the impact on the vessel's motion.
- The system is operated using joysticks, dials, and button switches, and features a large touch-panel LCD to enhance usability.
- A dedicated monitor is installed at the crane operator's station to enable real-time monitoring of DPS operations,



Fig. 1 External Appearance

facilitating information by sharing between the bridge and crane control stations.

Furthermore, the DPS supports very low speed automatic tracking along predefined routes with high precision, making it suitable for a wide range of marine engineering applications, including port development works.

In addition, the vessel is equipped with AI-based navigation assistance and ICT-based construction support systems. It also features land-based power supply capabilities for emergency scenarios and includes a convertible onboard shelter space, which can be rapidly transformed into an evacuation facility. These attributes position the FT400 as a critical asset for future marine construction and disaster response operations.



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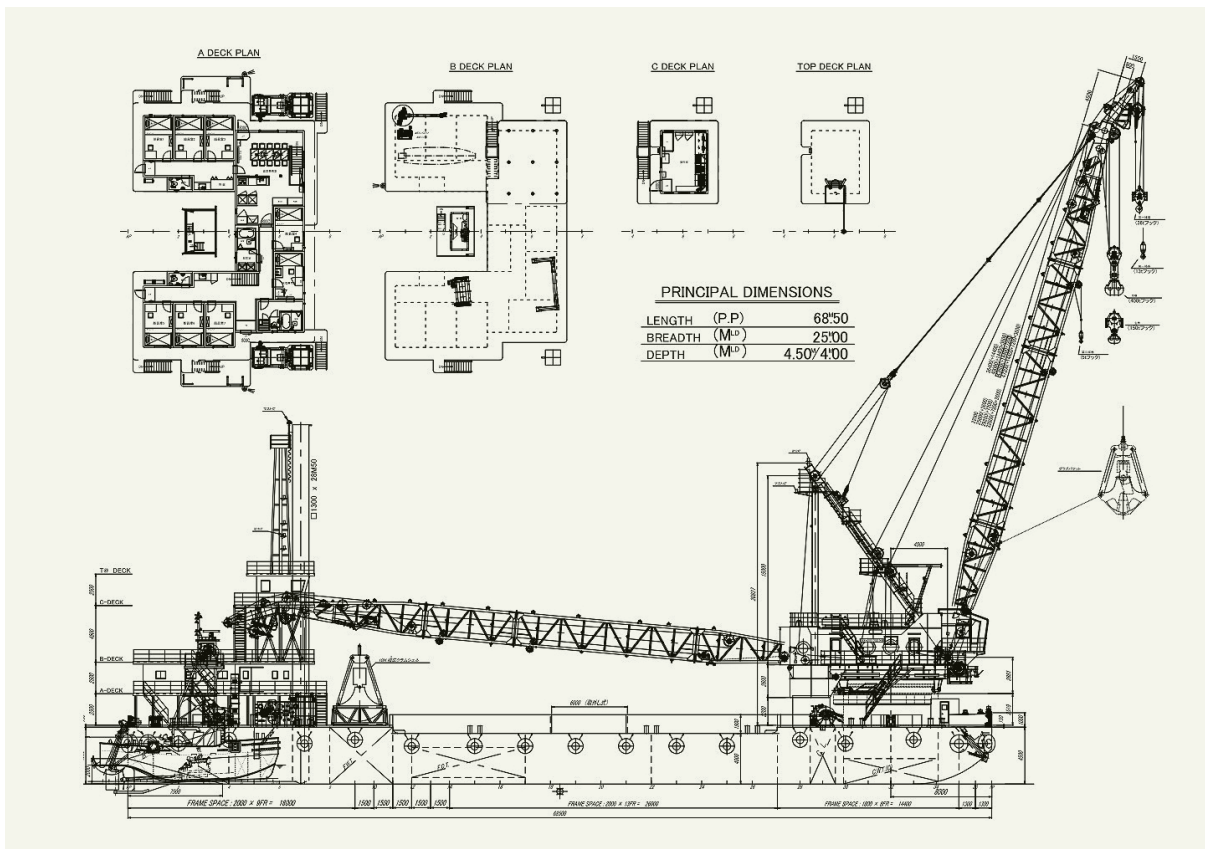


Fig. 2 General Arrangement

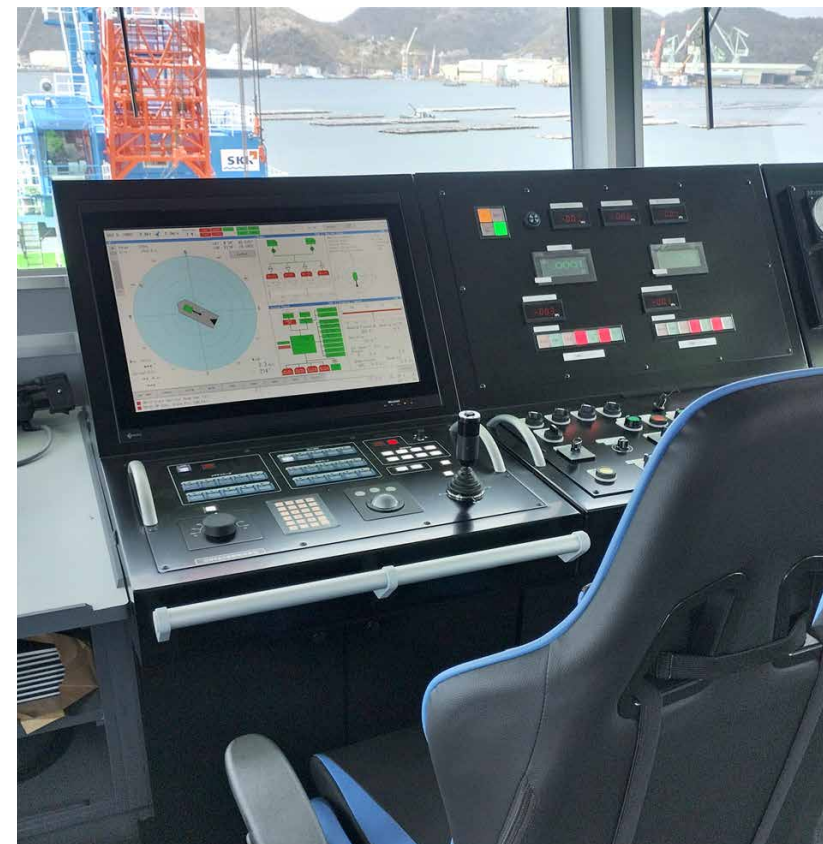
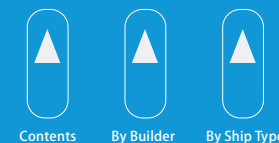


Fig. 3 DP Console

PRINCIPAL PARTICULARS

Length (o.a.).....	68.5 m : Crane Barge	Gross tonnage.....	2,033 ton : Crane Barge	(service).....	9.0 knots : Pusher Ship
Length (b.p.).....	68.5 m : Crane Barge	Deadweight.....	4,011 ton : Crane Barge	Complement.....	12 : Pusher Ship
Breadth (mld.).....	25.0 m : Crane Barge	Main engine.....	837 kw (1,138PS) x 2 : Pusher Ship	Classification.....	JG : Pusher Ship
Depth (mld.).....	4.5 m : Crane Barge	MCR (kw x rpm).....	837 kw x 1450 min-1 : Pusher Ship	Handling gear.....	all-around traverse Crane : Crane Barge
Draft (mld.).....	1.314 m (Light Weight) : Crane Barge	Speed (max. trial).....	9.5 knots : Pusher Ship	Loading capacity.....	Crane Lifting Capacity 400 ton : Crane Barge
				Builder.....	Fuji Kaiji Kogyo Co., Ltd. / SKK Corporation





Development and Design of LFSS(MeOH) 98

Introducing T-SOL LFSS: A Compact and Reliable Methanol Fuel Supply System for Marine Engines

TSUNEISHI SOLUTIONS TOKYOBAY Co., Ltd. proudly presents the T-SOL LFSS — named after the company's own abbreviation "T-SOL" (Tsuneishi Solutions) — a Low Flash Point Fuel Supply System specifically engineered for methanol-fueled main engines.

Developed with simplicity and compactness as core design principles, the LFSS minimizes the number of primary components, resulting in a lightweight and space-efficient configuration. The system consists of pumps, heat exchangers, and a control unit, with manufacturing entrusted to reputable suppliers and skid assembly conducted in Japan to ensure high quality and reliability.

Key Technical Features:

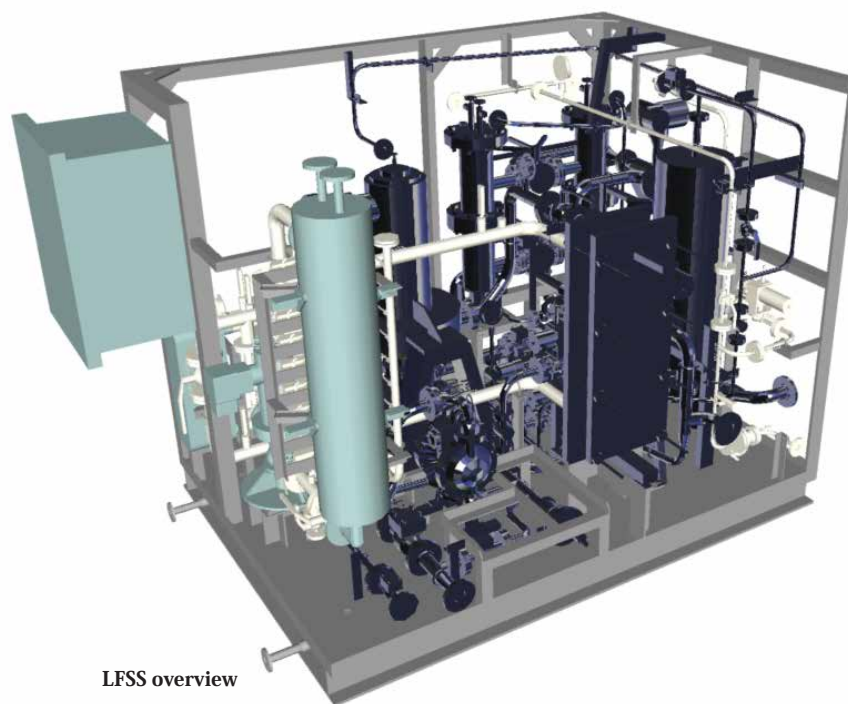
- Approval in Principle (AiP) : Obtained from ClassNK in April 2024, confirming compliance with international safety standards and design guidelines.
- HAZOP Study : Conducted in December 2024 in collaboration with Prime Tech Consulting Service, verifying that potential hazards are effectively mitigated through integrated safety measures.
- Safe Maintenance Procedures : Methanol drainage and nitrogen purging before maintenance.
- Low Residual Liquid Design : Engineered to minimize methanol retention during pump and filter maintenance.
- Anti-Cavitation Measures : Optimized suction valve type, diameter, and strainer sizing to prevent pump cavitation.

- Dry-Run Prevention: Pump startup sequence based on liquid presence detection at the inlet.
- Methanol Leakage Prevention : Use of magnetic couplings or canned-type motors eliminates risks associated with shaft seal leakage.
- Inlet Strainer Configuration : Protects pumps and heat exchangers from foreign object contamination; can be used as a commissioning filter by changing the mesh size.
- System Integration Capability : All operational data can be output to the vessel's integrated monitoring system for

seamless shipboard integration.

- Wide Operating Temperature Range : Compatible with methanol inlet temperatures from -10° C to 45° C.
- Accurate Fuel Consumption Monitoring : Equipped with a Coriolis mass flow meter as standard for precise fuel measurement.

The T-SOL LFSS offers a robust, efficient, and future-ready solution for vessels adopting methanol as a next-generation marine fuel.



LFSS overview



AiP certificate