

# SSCV SAIPEM 7000

CONSTRUCTION

## J-LAY EQUIPMENT

In 1987 GustoMSC carried out the basic design for the vessel hull of the Semi-Submersible Crane Vessel (SSCV) 'SAIPEM 7000'. The vessel is equipped with two 7,000 tons revolving cranes.

### General description

The SSCV consists of two lower hulls, six columns and an upper hull. Lower hulls, columns and upper hull are rectangular cross sections, with the exception that the lower hulls have a ship-shaped bow and stern to facilitate the installation of (retractable) azimuthing thrusters forward and aft, and tunnel thrusters forward.

In each lower hull a pump room is arranged below the middle column and a propulsion room.

Retractable azimuthing thrusters are installed in each lower hull, for maneuvering and station keeping, as a back-up for the mooring system. Recently the system has been upgraded to 12 thrusters.

The outboard side of the columns is placed in line with the outboard side of the lower and upper hull. The fore and aft columns are subdivided into a number of tank compartments.

The middle columns have been equipped with elevators, staircases, storage spaces for the pile drive hammers and tanks.

The following compartments are arranged in the upper hull

- accommodation quarters
- main and auxiliary engine rooms
- winch rooms
- boiler room
- moonpools for diving
- switchboard and control rooms
- air-conditioning and ventilation rooms
- workshops and stores

Two, fully revolving cranes have been installed on the upper deck above the forward columns, each having a max. lifting capacity of 7,000 tons.

Above the aft portion of the upper deck an accommodation deckhouse is located which also serves as a support for the helideck.

The accommodation in the deckhouse and in the upper hull aft, is suitable for a total of approx. 800 persons, and includes galley, mess room, offices and social and recreational facilities.

The navigation bridge and communication rooms have also been arranged in the deckhouse.

The SSCV can also perform as a full DP pipe-laying vessel.



# SSCV SAIPEM 7000

CONSTRUCTION

In 1997, in order to extend the operational use of the vessel and to accommodate anticipated changes in the market, Saipem decided to equip the vessel with a pipelay system suited for pipelay operations in ultra deep water.

GustoMSC carried out the conceptual, basic and detailed engineering for the so-called J-lay equipment and also designed the modifications of the vessel to enable installation of the new equipment.

The pipelay equipment is detachable. This means that the vessel can use its full original crane capacity if the pipelay system is demobilised. Installation and demobilisation of the J-lay system are done by its own cranes.

## Principal dimensions

• Length of vessel	175.00 m
• Breadth of vessel	87.00 m
• Depth to main deck	45.00 m
• Length of each lower hull	163.00 m
• Operation draught	27.50 m
• Transit draught, approx.	10.50 m

## J-lay equipment

The pipelay equipment consists of a J-lay tower which is supported by an A-frame and adjusted by means of a double adjuster system. The J-lay tower is made up of a lower and upper section, detachable to facilitate the installation and transportation of both sections. The total tower height is approx. 120 meters.

The pipelay system uses pre-assembled quad joint lengths of pipes. The pipe sections are lifted on board by means of the existing cranes. The pipe loader attached to the J-lay tower rotates the pipe section into a vertical position.

The pipe elevator lifts the pipe section to the upper tower section, where the pipe section is brought into alignment with the firing line. After being welded in the welding station at the lower to upper section location the pipeline is lowered by means of three pipe tensioners. The tower has additional facilities to hold the pipe independently of the tensioner, or to abandon the pipe in the event of exceeding the environmental design criteria, etc. IHC Gusto was involved from the earliest stages of the conceptual design up to the preparation of detailed specifications, workshop drawings building assistance, etc.

## The main characteristics of the J-lay system are

### Pipe laying

• Maximum water depth	2,000-3,000 m
• Significant wave height	4 m (maximum)
• Maximum pipe laying load (three tensioners, 1,750 kN each)	5,250 Kn
• Maximum pipe holding loads	20,000 kN
• Tower angle	90 – 100 degrees

### Pipe data

• Pipe diameters	4 to 32 in
• Maximum diameter special piece	1,200 mm
• Nominal maximum pipe length (4 x 12.2 m)	48.8 m
• Maximum pipe section weights	50 t

## Vessel upgrade

The vessel engineering involved the design of the internal stiffening for the hinges to receive the J-lay equipment, the upgrade of the DP capacity by means of additional thrusters and the power upgrade with four new diesel generator sets.

Power	Original	Upgrade	Total
Main	8 x 5,600 kW	4 x 5,600 kW	12 x 5,600 kW
Auxiliary	2 x 3,000 kW	--	2 x 3,000 kW
<b>Total</b>	<b>50,800 kW</b>	<b>22,400 kW</b>	<b>73,200 kW</b>
Thrusters			
Azimuthing	4 x 4,500 kW	--	4 x 4,500 kW
Retractable azimuthing	4 x 3,000 kW		4 x 3,000 kW
Retractable azimuthing		2 x 5,500 kW	2 x 5,500 kW
Bow	2 x 2,500 kW	--	2 x 2,500 kW
<b>Total</b>	<b>35,000 kW</b>	<b>11,000 kW</b>	<b>41,000 kW</b>