

# Hermod

## 4,000 and 5,000 tons



|                  |                            |
|------------------|----------------------------|
| <b>Owner</b>     | Heerema Marine Contractors |
| <b>Builder</b>   | Mitsui, Japan              |
| <b>Delivered</b> | 1978                       |

### Description

The semi-submersible crane vessel "Hermod" and her sister ship "Balder" of Heerema Marine Contractors B.V. became operational in 1978. They were the first of its kind in the offshore industry. Originally each vessel was equipped with a 3,000 short ton revolving crane, mounted on the aft starboard, and a 2,000 short ton revolving crane on aft portside.

In 1984, the lifting capacities were upgraded to 5,000 and 4,000 short ton respectively. The main hoist can lift 92 m (302 ft) above the work deck. The auxiliary hoists can lower to a depth of 3,000 m (10,000 ft) below the work deck. A tandem lift using the main hoists can lift 9,000 short ton at 39 m (128 ft) radius.

Both cranes are designed and engineered by GustoMSC and built under license by Sumitomo Heavy Industries in Japan. One of the prime design criteria for each crane was a minimum weight. On the 3,000 short ton crane bogie hook rollers together with a mere 1,000 metric tons of counterweight take the load moment. The 2,000 short ton crane was designed without any counterweight.

The wide-base crane booms are constructed in high strength steel tubulars and a steel-plated box girder type jib, providing the suspension points for the main-, auxiliary- and whip hoisting tackles. On the 3,000 short ton crane four hooks were provided for respectively 3,000, 1,000, 500 and 80 short tons S.W.L. The 2,000 short ton crane had three hooks for 2,000, 500 and 80 short tons S.W.L.

The winch drums each have floating gearboxes at either side to minimize any effects from crane and/or vessel deflection. The specified hoisting speeds require a substantial winch power. The 3,000 short ton crane had a central hoist winch train with five independently supported drums, nine floating gearboxes and four DC motors of 710 kW. With a total length of nearly 30 meters the winch renders an imposing sight. To keep the tail swing as small as possible, the boom hoist winch is situated one floor up. The 2,000 short ton crane had a central hoist winch train with four independently supported drums, seven floating gearboxes and four DC motors of 500 kW.

The slewing motion is DC driven through gearboxes and pinions engaged with a toothed rack, which is attached to the top of the tub collar.

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The power generators of the vessel supply 3.3 kV AC power through sliprings fitted on the kingpin of the cranes. Static AC/DC converters are positioned in the crane winch houses.

In 1984 GustoMSC upgraded the lifting capacity of the Hermod cranes. Next to an increase in load capacity the upgrade also consists of a conversion that allows the revolving mode of both cranes to be converted into a fixed position.

This is achieved through disconnecting a portion of the boom hoist tackles and tying these back to the foreside of the maindeck of the vessel. In this fixed mode, where minor slewing motions up to 4° are still possible, the hoisting capacity of the starboard crane is increased from 3,000 to 5,000 short tons and for the portside crane from 2,000 to 4,000 short tons.

The starboard crane 2nd auxiliary- and whiphoist have been upgraded from 500 to 660 short tons and from 80 to 250 short tons respectively. For the portside crane the auxiliary hoist has been upgraded from 500 to 660 sht.

The upgrade also enables an increase of lifting capacity in the revolving mode of both cranes to respectively 5,000 short tons and 3,000 short tons. As a consequence two slewing gears are added to each crane while both cranes have been provided with removable counterweights to counteract the increase in overturning moment. With the upgrade it became a requirement to boost the installed power of the central winches. The installed power on the central winch of the 4,000 short ton crane has increased to 4 x 920 kW and for the 5,000 short ton crane to 4 x 1,200 kW. An additional change for both Hermod cranes is the split of the whiphoist from the central winch. The whiphoist winch is now provided with its own 2 x 710 kW DC power.

### Design criteria Hermod 4,000 tons

#### Original 2,000 sht crane

| Load sht | Speed in m/min |
|----------|----------------|
| 2,000    | 4.8            |
| 500      | 20.3           |
| 80       | 92.5           |

#### Upgraded crane 3,000 sht revolving / 4,000 sht fixed

| Load sht | Speed in m/min |
|----------|----------------|
| 4,000    | 4.8            |
| 3,000    | 6.0            |
| 660      | 28.0           |
| 80       | 92.5           |

- Slewing speed 0.3 rpm with 3,000 sht at 30.5 m
- Boom hoist speed: with 1,400 sht load from radius 45 m to 26 m: 3 min
- Without load from boom rest to minimum radius: 10 min
- Roll: 0.5° amplitude, 12 s
- Pitch: 0.5° amplitude, 12 s
- Side lead 1°, roll and/or pitch included
- Dynamic factor 1.1 on live load
- Calculated wind thrust forces equal to Beaufort 9
- All environmental loads simultaneous for lifts up to 3,000 short tons fully revolving and 4,000 short tons fixed
- The crane is designed according Lloyd's Register Code for Lifting Appliances in a Marine Environment and carries the appropriate certificate

### Design criteria Hermod 5,000 tons

#### Original 3,000 sht crane

| Load sht | Speed in m/min |
|----------|----------------|
| 3,000    | 4.6            |
| 1,000    | 9.8            |
| 500      | 20.0           |
| 80       | 81.5           |

#### Upgraded crane 5,000 sht revolving / 5,000 sht fixed

| Load sht | Speed in m/min |
|----------|----------------|
| 5,000    | 4.8            |
| 1,000    | 14.0           |
| 660      | 20.0           |
| 250      | 60.0           |

- Slewing speed 0.3 rpm with 5,000 sht at 30.5 m
- Boom hoist speed: with 1,400 sht load from radius 45 m to 26 m: 3 min
- Without load from boom rest to minimum radius: 10 min
- Roll: 0.5° amplitude, 12 s
- Pitch: 0.5° amplitude, 12 s
- Side lead 1°, roll and/or pitch included
- Calculated wind thrust forces equal to Beaufort 9
- All environmental loads simultaneous for lifts up to 5,000 short tons fully revolving and fixed
- The crane is designed according Lloyd's Register Code for Lifting Appliances in a Marine Environment and carries the appropriate certificate

*Data presented in this product sheet is for information only. Unit specific specifications as provided by the Owner shall prevail.*



**Hermod 4,000 tons**

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