

Sembawang Shipyard Rises to the Challenge of Bedplate Renewals

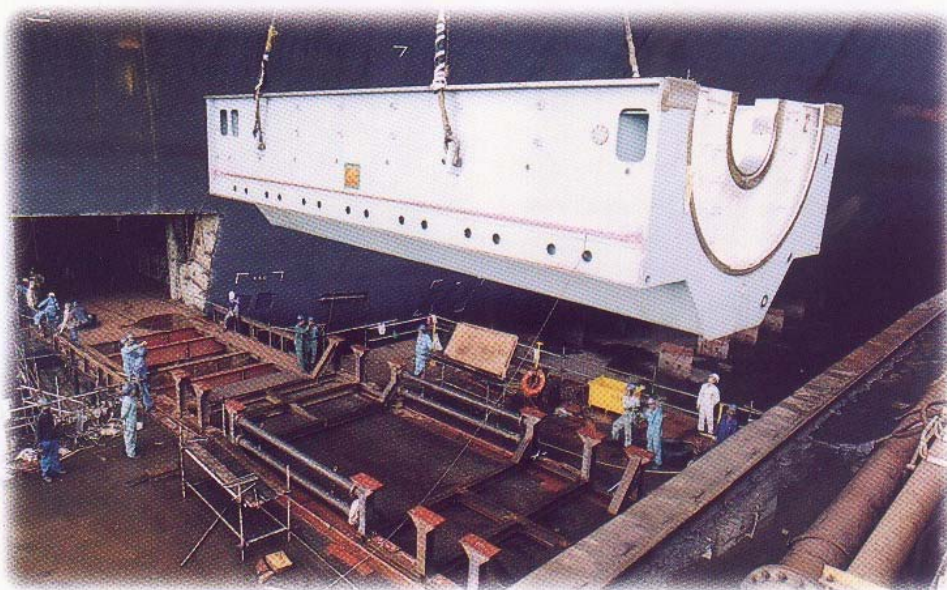


Highlighted as early as June 2000 in major marine publications such as the Lloyd's List, the biggest problem to hit Korean built Very Large Crude Carriers (VLCCs) was the issue of the cracks on the main engine bedplates. It was estimated that approximately 19 engines used to power some of the world's latest and largest vessels would have to be changed due to these bedplate cracks.

The initial prognosis by the engine manufacturer estimates that the repair job, which would undoubtedly include the complicated procedure of replacing the bedplates, would take 70 to 90 days to complete. These massive repair works also indicate that the vessels would have to be dry-docked at the builder yards with high off-hire costs to ship owners.

Sembawang Shipyard approached this as an opportunity to carve a niche as an alternative bedplate repair location to the builder yards. A special team was set-up with the following mission:

- To develop an innovative procedure to reduce repair time that will cut down the owner's loss in charter rates.
- To ensure that the innovative bedplate renewal procedure is acceptable to engine



Lowering of the new bedplate into position beside the vessel

makers and owners, and is both safe and cost effective.

- To design and develop an innovative procedure to position the shipyard as the first in the world to carry out this bedplate renewal process for such class of vessels.

We carried out our first bedplate and "A" frame renewal project in April 2000, on a 143,750 dwt tanker **Star Ohio** which is technically managed by Northern Marine Management,

United Kingdom. Three months prior to the arrival of the vessel, our team set to work together with the engine maker's specialists and Class Society to engineer the most effective methodology and procedure to perform the task. Critical considerations included how the main engine bedplate should be removed from the ship without destabilizing the ship's hull, and how all the heavy machinery items and equipment should be handled to minimize lifting operations. The project execution had to be

precise to ensure that the main engine bedplate renewal work was carried out using the most technically safe procedure; in the most cost-effective and timely manner.

Being a pioneer in this specialized work, and following our success with the **Star Ohio** in which valuable experience was gained in terms of project management, co-ordination and precise engineering methodology, we were awarded a series of VLCCs Sulzer RTA84TB main engine bedplate renewals. The VLCCs are **Venus Glory**, **Mars Glory**, **Neptune Glory** and **Saturn Glory**, from Gulf Marine, UK, and **Myrina** from our Alliance partner, Shell International Trading and Shipping Company Limited, UK.

The 300,000 dwt **Venus Glory** is the first of the six VLCCs to carry out main engine bedplate renewal in Sembawang Shipyard. Built by Daewoo Heavy Industries in 2000, she arrived in Sembawang Shipyard on 23rd January 2001. A dedicated project team, consisting of members from the various production trades as well as engineers from the Engineering Design Office, who were also responsible for the success of **Star Ohio**, were deployed on **Venus Glory**. This introduced an accelerated learning curve and propelled the yard to yet another successful completion of the bedplate renewal within 68 days, which includes the time for owner's repairs. The attending Superintendent, Mr Alastair McKee, commended Project Manager Tharumar on his management and leadership capabilities. He

was generally pleased with the skills, competence, work attitude and quality performance of the mechanical, steelwork, pipework and electrical department teams. The success of the bedplate renewal attests to the close and excellent co-operation between owners, Daewoo, the builders, engine makers and the shipyard.

The second of the series of VLCCs awarded to Sembawang Shipyard, sister vessel **Mars Glory**, arrived on 19th March 2001. The same dedicated bedplate-renewal team members were deployed, and were able to further refine

the methodologies and procedures used on the earlier projects, minimizing lifting operations, increasing precise execution, and maximizing cost effectiveness and timeliness in a technically safe manner. The team completed the project in a record time of 55 days. Mr Alastair McKee, also the attending Superintendent for **Mars Glory**, commended that this project was "even better organized" compared to **Venus Glory**, and he was pleased to observe significant improvements from the earlier project. To date, work on **Neptune Glory** and **Saturn Glory** have also been successfully completed.



Final adjustments being made before the bedplate is repositioned in the main engine compartment



As such, we have managed to successfully leverage on our continuous improvement system to create a real-world process innovation to address a critical marine issue, which puts Sembawang Shipyard at the forefront, as the solutions provider for the marine industry. This also presented an opportunity for us to further enhance our world-class mechanical repairs and facilities and the ability of our workforce to respond positively and swiftly to the global marine community needs. 🌐