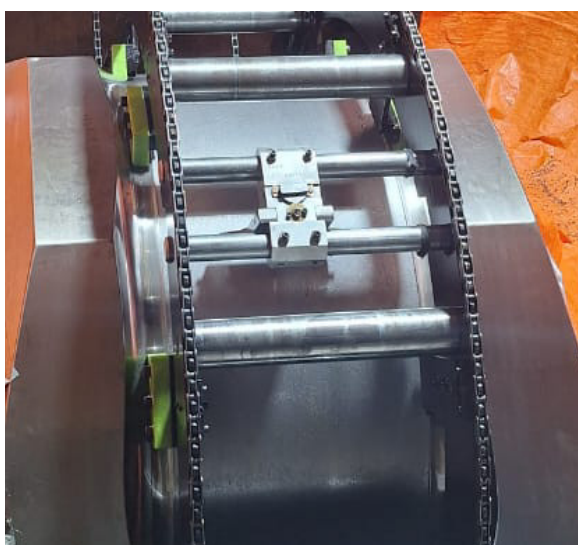
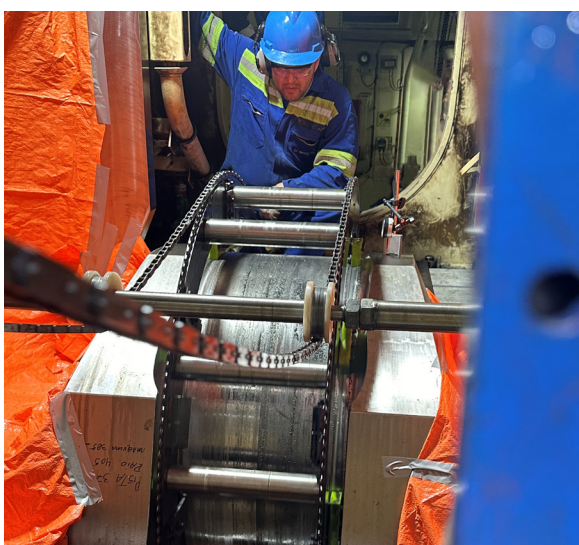


CRANKPIN MACHINING



THE CLIENT

One of the largest shipping companies in Greece, operating globally with a fleet of container vessels, faced a serious issue with one of its ships.

This specific vessel, with a capacity of over 9,000 TEUs, suffered a breakdown in one of the main engine cylinders during a voyage from Central America to Asia. The impact was significant, forcing the vessel to be towed at sea to prevent further damage.

With a reputation to uphold and deadlines to meet, the company sought the expertise of Metalock Brasil to carry out the repair.

THE SITUATION

During the voyage, a failure in crankpin number 6 of the main engine was identified. This crankpin, with an original diameter of 1062 mm, showed cracks and substantial wear.

The extent of the problem was confirmed after hardness tests and magnaflux inspection. As a result, there was a risk of more severe damage to the engine, which could lead to even higher operational costs and reduced efficiency of the vessel.

After a series of meetings at the shipowner's headquarters in Piraeus, Greece, it was decided to tow the vessel for over a thousand nautical miles to the Bay of All Saints in Salvador (Bahia, Brazil), so the repairs could be performed with the appropriate infrastructure and proximity to Metalock Brasil.



THE SERVICE

Perform crankpin machining and reconditioning. The work involved several detailed stages:

• Mobilization:

Specialized technicians from Metalock Brasil were immediately mobilized to Salvador, along with precision machining equipment, ready for immediate operation.

• Inspection and analysis:

The service began with a detailed inspection of crankpin number 6, using hardness and magnaflux tests. The inspection revealed micro-cracks with depths of up to 3 mm, and a detailed analysis confirmed the need for reconditioning.

• Crankpin machining:

Machining was carried out on-site, with controlled material removal to ensure the crankpin was restored to its ideal shape and strength. Throughout the process, 6 mm of material were removed, reducing the pin's diameter to 1056 mm, as per the client's specifications.

• Lubrication system flushing:

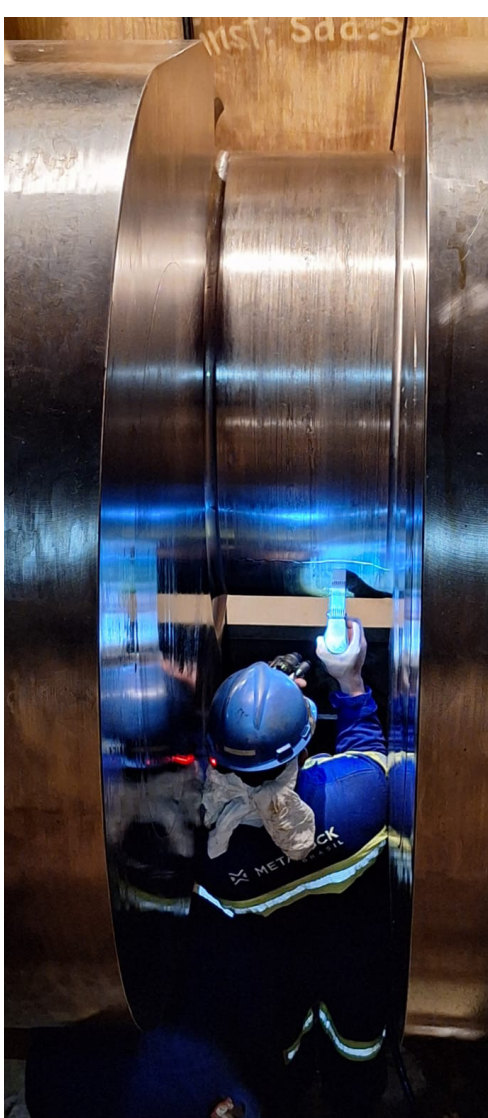
In addition to machining, a complete flushing of the main engine's lubrication system was performed to remove impurities and ensure proper system function after the repair.

• Inspection and cleaning of additional components:

The lubricating oil cooler was inspected and cleaned, and multiple engine cylinders were opened and checked by specialized mechanics.

• Shift work:

To ensure efficiency and speed, a team of 10 Metalock technicians worked in shifts 24 hours a day for 20 consecutive days. The complexity of the work required supervision from engineers and superintendents from Greece and Korea, as well as inspectors from the Classification Society and the insurer.



THE RESULTS

The service was successfully completed on schedule and with highly satisfactory results. The main outcomes were:

• Precision reconditioning: The removal of 6 mm of material and precise machining ensured that the crankpin was restored to ideal conditions, eliminating the cracks and wear previously detected.

• Restored lubrication system: The complete flushing of the lubrication system and thorough inspection of components such as the oil cooler ensured the correct and efficient operation of the engine.

• Sea trial approval: After the service was completed, the ship underwent rigorous sea trials, which were passed without any issues. This allowed the vessel to safely and efficiently resume its journey to Asia.

• Minimized downtime: The quick and efficient work of Metalock Brasil ensured that the vessel's downtime was minimized, preventing further financial losses for the shipowner.