Boskalis
Dredging & Marine Experts

PROJECT SHEET

NGHI SON, VIETNAM
NEW REFINERY AND PETROCHEMICAL COMPLEX

INTRODUCTION

Since the beginning of the decade, energy demand has been increasing in Vietnam, and investment in the sector has expanded rapidly. One of these developments was the construction of the Nghi Son Refinery and Petrochemical Complex in the north of country, some 200 km south of Hanoi in Tinh Gia District, Thanh Hóa Province.

The Complex is on a 328 hectare site, and has processing units with a total production capacity of 200,000 barrels a day, and a seaport accessible for vessels up to 30,000 DWT.

Boskalis executed the contract for the capital dredging of the access channel and sections of the port basin. The works consisted of deepening these areas by removing around 7.0 million m^3 of clay and sand material, and transporting this material to a designated offshore disposal site, located at a sailing distance of approximately 18 km.

SCOPE OF WORK

Boskalis executed the works with the Trailer Suction Hopper Dredger (TSHD) Cornelis Zanen and a medium-size Cutter Suction Dredger (CSD).

The CSD was equipped with a barge loading installation and initially working in the shallow areas of the port basin. The dredged material was

FEATURES

Client	Nghi Son Refinery and Petrochemical Complex Project Management Board
Location	Vietnam, Nghi Son Economic Zone, Tinh Gia District, Thanh Hoa Province
Period of Execution	May 2014 – February 2015
Main Contractor	Consortium of Petrovietnam Technical Services Corporation, Vietnam Waterway Construction Corporation and Petrovietnam Construction Joint Stock Corporation
Dredging Contractor	Boskalis International B.V.

A Location map
B TSHD Cornelis Zanen rainbowing

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discharged into pusher tug barges for transport to the designated disposal area. The TSHD Cornelis Zanen was deployed in the areas of sufficient depth to deepen the channel and port basin to the required depths and slopes.

CHALLENGES

The works were executed in a period of less than 9.5 months. The main challenges encountered during project preparation and execution were the extreme weather conditions during the monsoon season and the frequent typhoons during the summer period.

TIGHT TIMELINE

The contract included several milestones to ensure completion of parts of the works and handover to other EPC contractors for the construction of the port area. A critical milestone allowed only 75 days from the commencement date to deepen a section of the port basin by removing approximately 1.4 million m^3 of soil material and transporting it offshore.

TYPHOONS AND MONSOON SEASON

The project site in the Gulf of Tonkin is exposed to the north-east monsoon between December and April, and to frequent typhoons during the summer months (July to October). These challenging natural conditions were identified as a major risk factor that could affect dredging operations without deployment of suitable equipment. This risk was mitigated by deploying the TSHD Cornelis Zanen, which continued dredging activities during both the monsoon and typhoon seasons. Deployment of the TSHD ensured compliance with the contractual milestones, while maintaining the Boskalis high safety standard and complying the Boskalis NINA rules and values of no injuries, no accidents.

SOIL CONDITIONS

As well as sand, the material to be removed consisted of firm to stiff clay and some very hard clay, with a shear strength of more than 100 kPa. The material was removed by TSHD Cornelis Zanen equipped with a reinforced suction pipe and heavy duty draghead designed by Boskalis. The draghead has been designed to dredge soft and fragmented rock materials and its performance can be optimized by fitting various types of teeth to our specially designed visor.

SAFETY AND COOPERATION WITH OTHER CONTRACTORS AND STAKEHOLDERS

During the dredging operations, close contact was maintained with all project stakeholders including the client, the EPC contractor for the plant, and the large number of subcontractors working on land and the marine plant on the project site. The Boskalis safety philosophy NINA (No Injuries, No Accidents) was introduced at the start of the project. All employees, subcontractors, suppliers and visitors, including the Client's Representatives, received SHE-Q induction prior to boarding a Boskalis vessel.

CONCLUSION

Boskalis successfully completed the dredging works in compliance with the stringent project milestones, by operating during severe weather and sea-state conditions while maintaining a high safety level.


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C TSHD Cornelis Zanen enters the access channel
D TSHD Cornelis Zanen dredging in the port basin

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