

PROJECT SHEET

PUSAN NEW PORT SHALLOW DREDGING

The 4th largest container terminal in the world is located in the South East of the South Korean peninsula at Pusan. As the old port is completely surrounded by the metro-city, expansion of the old port is restricted. To solve the chronic phenomenon of cargo congestion MOMAF (Ministry of Marine and Fisheries) decided in 1997 to construct a new port situated 20 km west of Pusan with a final total handling capacity of 4.6 million TEU and total expenses of 4.2 billion US\$.

Pusan New Port will be constructed in a naturally sheltered area behind Gadukdo Island. Pusan New Port will be constructed in 2 phases. Presently under construction for phase 1 is a 1,490 meter breakwater and 22.7 km of embankment for future reclamation works, for dredging a total of 55 million m³, whereof 30 million m³ of sand for reclamation works. The project was awarded to a consortium of 11 Korean contractors, of which Samsung is the leading party for North Container Terminal (quay wall construction, dredging and reclamation and container yard).

Boskalis was awarded the dredging works of the removal of some 2.5 million m³ of silt and clay. The depth at commencement of the works varied from 7.5 m up to 8.5 m. Dredging was to be

FEATURES

Client	Samsung
Location	Pusan, South Korea
Period	June 2002 - December 2002



A Location map
B Artist's impression of Pusan New Port



made up to 12 m below Chart Datum. Since no land disposal sites were available at that stage of the project the material had to be taken away to an offshore dumping location. The dumping grounds were located at 35 km distance.

Since these dredging works were part of a greater planning the time frame was tight. According to schedule, the works were to be completed in 80 days. A tight schedule indeed, since the shallow depth of the channel did not allow for large trailing hopper suction dredgers to enter and the large sailing distance did not allow for high productions with small trailing hopper suction dredgers.

Boskalis mobilised two trailing hopper suction dredgers: the Resolution (5,050 m³) and the Barent Zanen (8,000 m³). The Resolution started at the far end of the channel on 4 June 2002. For the Resolution as well the shallow area was difficult to dredge, since the loaded draft of this vessel is 7 m. Precise planning of the works and making optimal use of the tidal movements (tidal range varies between 0.8 and 1.8 m) allowed that these shallow areas were dredged. The Barent Zanen joined the project on 10 June, immediately concentrating on the deeper areas.

The dredging tolerance was 0.40 m, which is low for this kind of work. To optimise the dredging works a plough vessel was used, using a tug boat of 2,500 kW and a plough barge of 8 x 20 m. The combination of the two trailers and the plough barge made sure that the project was completed within the project specifications.

In the same period Samsung started with the reclamation works of 13 million m³ of sand for the container terminal stacking area. Since sand is scarce in Korea, the most suitable borrow area was only to be found at 105 km distance from the site. The depth at this borrow area varies between 80 and 100 m. Sand can only be dredged from this borrow area using the largest type of trailing hopper suction dredgers with the newest technology of underwater dredging pumps.

The Queen of the Netherlands (22,000 m³), equipped with a 130 m. long, 1.10 m. diameter suction pipe with underwater pump, was involved in this works and arrived on site mid September 2002. After winning the sand at the borrow area the sand needed to be brought to the reclamation area where it had to be discharged through a pipeline. The length of the pipeline is between 1500 and 3500 m long.

This phase of the reclamation works is planned to be finished in December 2003. The PNC project showed that Boskalis is a very versatile company: dredging with relative large production in extreme shallow areas and winning sand at very large depths of more than 100 m and transporting over large distances. In Pusan New Port Boskalis accomplished both tasks to the full satisfaction of the client, according to all specifications.



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- C TSHD "Queen of the Netherlands"
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