Nghi Son Cement Plant – Vietnam

VSL post-tensioning and slipforming engineering in silo construction

▲ *The new cement plant enabled Nghi Son Cement Corporation to expand its capacity.*

The Nghi Son Cement Plant was constructed in Tinh Gia in Vietnam's Thanh Hoa province, approximately 270km south of Hanoi. This is a remote part of the country, where self-sufficiency through well-planned logistics, execution of the works and the capacity to operate from first principles are critical factors for success.

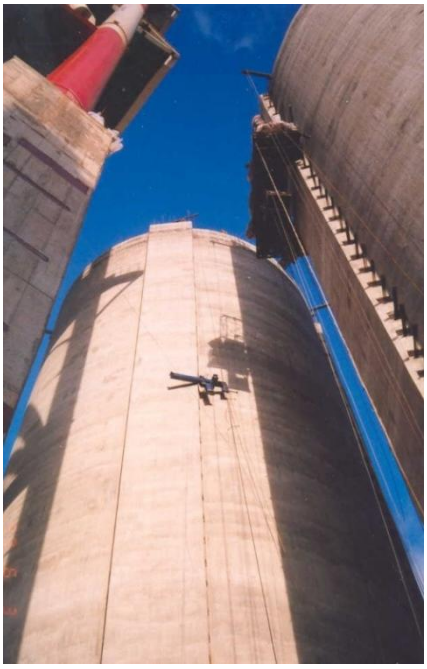
The goal of the project was to help Nghi Son Cement Corporation to maintain its leading position in Vietnam by expanding its production capacity and distribution network and to provide more high-quality cement to underserved areas. The supply of high-quality cement brought about by the project supports the growth of Vietnam's infrastructure, which is a critical component of the country's development programme. The cement supply is also important to the commercial and residential construction sectors.

Scope of works performed

- Design of seven silos
- Supply, installation and supervision of post-tensioning works in seven silos

VSL was awarded the contract for an alternative design using post-tensioning for the plant's seven silos. VSL's Technical Centre in Singapore designed the seven prestressed concrete silos in co-operation with the Shimizu Head Office Technical Department. Slipforming and heavy lifting methods were proposed as economical solutions for lifting the assembled roof at the same time as the slipform operations. This reduced the construction time for each silo to an average of just one month.

Under the leadership of Project Manager Geoff McKinnirey, VSL installed 430t of post-tensioning strands, 2,324 sets of EC5-12 anchorages and 51,000m of duct for two 60m-high cement silos (22m and 28m in diameter), two 44m-high clinker silos (23m in diameter), two 46m-high blending silos (18m in diameter) and one 37m-high limestone silo (24m in diameter).



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▲ *Cement Silo No. 1, viewed from the platform of the adjacent silo*

OWNER
Nghi Son Cement Corporation

CONSULTANT :
IBST (MOC)

MAIN CONTRACTOR
SHIMIZU-VINACONEX-HGCC J/O

VSL ENTITY
VSL International Ltd.

DATE
October 1998 – April 2000

▲ *Slipforming in progress on Cement Silo No. 1*

Post-tensioning has proved to be an economical alternate to conventional reinforcement for large diameter silos.

Another key aspect of the project was that VSL trained and managed a small crew of Vietnamese engineers, cost-controllers and supervisors for the post-tensioning works. The disciplined experience gained at Nghi Son further enhanced their skills in providing a high-quality finished product.

Nghi Son cement plant was completed on time and importantly to the satisfaction of all stakeholders of Nghi Son Cement Corporation. It represents the third cement plant in VSL's portfolio in Vietnam, following the Morning Star cement plant, completed in 1997 and one at Hoang Mai in 2000.

VSL Vietnam, which benefits from the VSL Group's network and experience, confirmed its ability to provide a local solution to its customers with top quality engineering and high quality work.

▲ *The silos were completed on time and to the client's satisfaction.*

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Edited 2008
ID 0095