

ULSAN OIL STORAGE CAVERN

Multihole Grouting



The Ulsan Oil Storage Cavern project is transforming ground tanks over 30 years old into an underground cavern base as a new stockpile facility to stock raw oil.

Location

Ulsan, South Korea

Client

Korea National Oil Corporation

Contractor

Dongha

Field of application

Multihole permeation grouting

Products used

IC650/725 and recording unit for 6 lines

Throughput

Total ~ 5 m³/h

Delivery of plant

December 2016

Sales contact

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Background

More than thirty years have passed since the completion of the ground tank at the Ulsan Stockpiling Base in 1982. For this reason, it was imperative to build new stockpile facilities to counteract growing maintenance and operational costs. To this end, the KNOC (Korea National Oil Corporation) started work on a project to transform the Ulsan ground tank base into an underground cavern base. The scope of the project comprises the demolition of the ground tanks in order to offer the land to private companies and rebuild new rock cavern stockpile facilities under the site and at other remaining bases. The project is scheduled for completion in 2020.*

The challenge

The cavern, excavated by drilling and blasting, with final dimensions of 400 m x 18 m x 30 m (L x W x H), needs to be sealed effectively and economically by means of multihole grouting. A total of seven such oil caverns are being built in this project.

* Source: KNOC 2014 Sustainability Report



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Our solution

To seal the new underground oil storage cavern, the contractor entered into discussions with Sandvik Suhjun Ltd – the local Häny representative. Thanks to the long-standing relationship between Sandvik Suhjun Ltd and the customer, as well as the excellent reputation of Häny's equipment, a Häny IC650/725 plant was ultimately chosen for the project, consisting of a high shear mixer HCM300, an agitator HRW350, and a grout pump ZMP725. Multihole grouting is performed with this unit, with 3–6 holes typically grouted simultaneously. A mix with a water-cement ratio of 1 is prepared with the Häny high shear mixer HCM300, and the grout is injected at a pressure of ~ 10–15 bars by the Häny double acting plunger pump ZMP725. A recording unit displays and records the flow and pressure of each of the six injection lines individually and can also shut off the grout pump once a pre-set volume and/or pressure is reached

Reliable systems and services from Häny

The chosen compact Häny IC650/725 grout plant with its small footprint can be conveniently truck-mounted and brought into the cavern to perform the required grouting job. The recording unit, Cintac, displays and records the flow and pressure of the six grout lines individually, and all the data can easily be transferred via a USB interface for further evaluation. The project is continuously supported by local Häny representative, Sandvik Suhjun Ltd.

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