



THE OSLO HARBOR'S STRUCTURES ARE PROTECTED AGAINST CORROSION

Photo: Erling Sundqvist

A large cruise ship glides into Oslo Harbour and docks. The harbor's concrete structures are being equipped with efficient cathodic protection, which prevents corrosion caused by the salt in seawater. Savcor's Project Manager Mikko Neuvonen recognizes that a busy harbor makes a challenging work location, and he is also aware of the amount of manual work required in the construction of effective corrosion-protection.

With its salty water and high tides, the Norwegian coastal area is a harsh environment for concrete structures. The total area requiring corrosion-protection at the Oslo harbor is about 4,650 square meters. The harbor had a cathodic protection system in the past, but that system had to be scrapped for failing to meet expectations. After the failed protection attempt, Savcor's experts were called in for the job.

- The customer has already been disappointed once, so this

is a real test for us. With two consulting firms working on the project, we can be certain that the work will be carried out in line with all regulations. The choice was to renovate the old system or demolish it. We recommended pulling down the old system because renovating it would have been more expensive, with no guarantees of a good end result, explains Neuvonen.

CRUISE SHIPS BRING WORK TO A STANDSTILL

The Savcor team is collaborating with Skanska on the harbor project. The team compiled detailed information on the location and designed various work stages, while bearing in mind that the harbor constitutes a customs area covered by international safety-management regulations.

- The work must be halted whenever a large cruiser arrives at the harbor and tourists disembark. Occupational safety is a priority, and we take great care to adhere to all regulations. This allows us to ensure safety, says Neuvonen.

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ERLING SUNDQVIST
Production manager, Skanska Norge AS



The work kicked off in January 2015, and the project will be completed in June 2016. Last summer alone saw 77 cruise ships dock in the harbor, bringing with them thousands of tourists. This means that interruptions are a regular occurrence on the project site.

MISSING DOCUMENTATION CAUSES HEADACHES

Skanska is rebuilding all of the concrete structures in the southern part of the harbor. The concrete is inspected for cracks and weaknesses, and all the findings are documented.

- The next step is hydrodemolition, after which we will be left with only the intact concrete. To date, some 700 tons of concrete has been removed from the harbor. After the hydrodemolition, we will inspect the rebar elements and the complete structure before constructing new cathodic protection. Finally, shotcrete will be applied to the harbor deck, explains Skanska Norge AS's production manager for the project, **Erling Sundqvist**.

Adding to the complication of the project, there were no accurate original drawings available for the harbor.

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THIS PROTECTION WILL LAST FOR DECADES

The corrosion-protection at the Oslo harbor was designed in compliance with the ISO 12696 standard. The standard specifies the minimum technical and quality requirements for work of this nature. Savcor guarantees that the new protection system will last 30-50 years. The agreement also covers remote

monitoring, with checks at agreed intervals, and any maintenance required. The customer will have access to a monitoring log that includes all the tests performed and their dates.

- Documentation consisting of design drawings, as-built documents, and monitoring and maintenance reports adds transparency to the project. We are fortunate to have extensive experience of challenging projects. Therefore, we can guarantee that the structure will remain free of corrosion for decades to come, says Neuvonen. ■

