

# Leica Geosystems **TruStory** Building Oslo's new landmark



## ■ Company

Veidekke ASA is based in Norway and is Scandinavia's largest construction and property development companies. <http://www.veidekke.com/en>

## ■ Challenge

To adopt the Leica IRD3 drill solution on piling rigs

## ■ Location

Bjørvika, Oslo, Norway



## ■ Hardware/software used:

- Leica iCON VisualDriller (iRD3): iCP40 3D control panel, iCG82 GNSS machine receiver, CGA60 GNSS antenna, Leica iCON sensor technology

## ■ Benefits

- Easy and precise monitoring of the drill
- Lesser deviation from the target
- Built for construction: rugged and able to endure tough conditions.
- Costs savings and increased safety due to less people on the site
- Time and costs savings with faster navigation between the piles
- Documentation of pile position

**A new high-rise museum called "Lambda" is being built on Oslo's waterfront. The museum will house the collection of Norway's most famous painter, Edvard Munch, known for his emotionally charged work "The Scream".**

**Norway's largest construction company, Veidekke ASA, has won the contract to undertake the building shell. Ole Alexander Vanebo, survey engineer at Veidekke, has worked together with Leica Geosystems, to adapt a machine control solution for drill rigs on pile driving rigs. The result has brought about tremendous costs and time savings for Veidekke.**

Ole thought that it would be a great benefit if the operator could have an overview of his work. This would enable the operator to do his job of collecting measurement data without having the surveyor by

his side several hours a day. Also, because the pile driving rig splashes salt water and clay soil everywhere, the solution had to be rugged as well as highly precise. Ole contacted Leica Geosystems to help him find a solution.

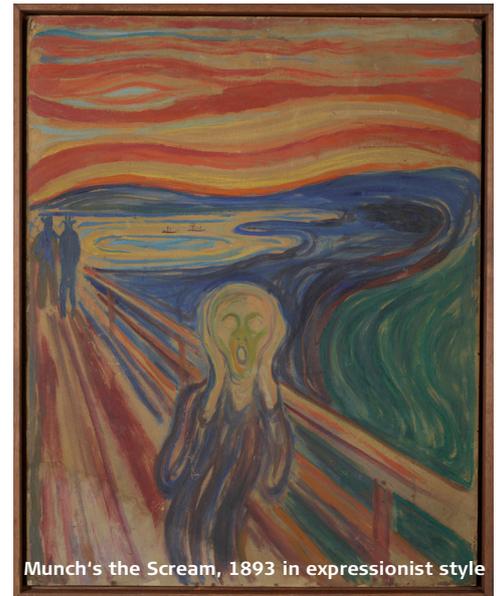
### **Adopting proven technology on pile driving rigs**

Petter Heyerdahl, market segment manager at Leica Geosystems, found that mounting the GPS antennas on the cab of the machine, a so-called body-mounting typically used for the Leica iRD3 drill solution, would ensure the required accuracy. In this way, proven technology was adopted to fill the needs of Veidekke.

"This was completely new to us, and we were prepared to encounter some start-up difficulties. Well, that didn't happen. Everything went smoothly, and we could get to work immediately!" says Ole.



Lamda - the new Munch Museum will be ready in 2020



Munch's the Scream, 1893 in expressionist style

### Preparatory work can be a challenge

Drilling and pile driving are essential parts of the project. If this work is delayed, it will postpone all other activities. Preparatory work is often unpredictable. When a project is started, the contractor will begin by digging a test hole in order to register the resistance and establish how much power is required to dig down. The different layers encountered are pumped up, and their thicknesses are registered.

In Oslo's harbour, the pile driving rigs were put to work because the drill encountered material from the 1950s consisting of sludge and wooden boxes filled with all kinds of waste material.

### Machine control warns about deviations

The problem with all this mixed foundation material is that it can start to slide when it meets the drill.

"Machine control's display on the drilling rig provides the operator

with important information, such as when the drill is out of angle and when something is going wrong," explains Ole.

When this happens, the pile must be taken up again. If the foundation is so unstable that it proves necessary to change the pile's location, the contracting authority has to be informed. If the deviation is not approved, a new pile has to be set. This is costly, and therefore critical to avoid too large deviations.

"The machine control system warns us about deviations and makes the work with the pile driving rig much more efficient," says Ole.

### Only one surveyor needed to get the job done

Work was done partially on land and partially on a barge. It is well-known working on a barge in the water is more challenging because the barge moves. However, the precision of the data proved to be very high even on the 20 m tall towers of the piling rig, and helped with the navigation of the barge.

Without the use of machine control two full-time surveyors would normally have been required. Machine control reduced this need to only one. The surveyor can quickly send the theoretical data with just a few clicks directly to the machine.

The solution for the pile driving rigs was the result of a close co-operation between the customer and Leica Geosystems, and Ole explains the benefits in the following way: "I believe that machine control on piling rigs will become a standard off-the-shelf item when more construction companies realise that the investment can be paid back on just one project."



Ole on the location in Oslo harbour

Leica Geosystems AG  
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- when it has to be right

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Geosystems