

# Leica Geosystems **TruStory**

## Building the longest road in Greenland



### ■ Company

Qaqortoq Entreprenørforretning Aps is one of the leading construction contractors in southern Greenland. Based in Qaqortoq, this company has been providing needed infrastructure to southern Greenland for over 20 years.

### ■ Challenge

To upgrade the Leica iCON iXE2 2D to the iCON 3D machine control solution.

### ■ Location

Qaqortoq, Greenland.



### ■ Benefits

- Fast and precise excavation.
- Cost and time savings
- Robust equipment that works well even under extreme conditions.
- Higher job satisfaction for machine operators.

With a population of little more than 3,000, Qaqortoq is the city with the most residents in southern Greenland. It is also the fourth largest city on the island. As all populated places in Greenland, Qaqortoq is not connected to other places by roads. The city is linked by helicopter to the Narsarsuaq Airport, which is located 90 kilometres away. These helicopters can only transport nine people at one time. The only other way to get to Qaqortoq is by boat, and this can only be done as long as it is warm.

Transport to and from Qaqortoq is challenging and expensive. Vast distances, severe climate and difficult terrain make it actually less expensive to construct a new airport than to connect the towns

with roads. A new airport can be of major importance for economic growth, provide employment and encourage tourism, which plays an increasing role in Greenland's economy.

In 2014, Greenland's Parliament, Inatsisartut, granted funding for the construction of a 6.2 km road leading to the future airport. Qaqortoq Entreprenørforening won the contract and have worked on the construction of the road for 20 months.

### **An adventure in its own right**

The transportation system in Greenland is truly an adventure. No roads, no railways – nature rules. Historically the major means of transportation have been by boat in summer and by dog sled in winter. There are only a total of 150 km of roads in the whole country and only



Leica iCON iXE3 on the Hitachi 350 excavator.



Building the subgrade layer.

60 km of these are paved. The 6.2 km road in Qaqortoq is the longest single road that has been built since the Second World War.

Constructing a road in southern Greenland is extremely difficult and expensive. There are no construction materials since the subsoil only consists of rocky mountainous terrain, which must first be blasted and then crushed in order for it to be used as foundation for the road.

"We have used 35 tonnes of explosives to blast 70,000 m<sup>3</sup>," explains Lars Motzfeldt Jensen, who is one of the two owners of Qaqortoq Entreprenørforretning.

#### Harsh winter climate

Qaqortoq Entreprenørforretning already had a Leica iCON excavate 2D solution installed on their machine but last year, they decided to upgrade to a Leica iCON excavate 3D solution and buy a second one for their new Hitachi 350 excavator. The solutions from Leica

Geosystems have worked faultlessly even in the harsh climate conditions of the arctic winter with temperatures of -25 °C after dark.

However, there are certain challenges in Greenland as Per Eriksen from Leica Geosystems A/S explains: "500 m away from the centre of Qaqortoq, we lose the telephone connection. This makes calibration and service of the solutions very difficult. We used radio repeater stations in order to transmit the correction signals from the reference station to the GNSS antennae on the machines."

#### Building a road is now more fun

Lars says that the 3D solutions have saved them a lot of time and cost. A positive side effect of using machine control has been the increased job satisfaction for the machine operators.

"It's so much more fun building a road when we use 3D equipment," says Nikki Davidsen who works as machine excavator operator.

"If we had known that we would save that much time and cost, we would certainly have bought a 3D solution for our driller as well," says Lars.

#### Ready for building the airport

Lars explains that Qaqortoq Entreprenørforretning performs many sanitation projects, which would benefit from using Leica Geosystems 3D solutions.

"We are the best equipped construction company in Greenland, and if the Greenland parliament decides to build the airport, we are definitely ready for the task," Lars concludes.



Nikki Davidsen in the Hitachi 350 excavator.

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- when it has to be **right**

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