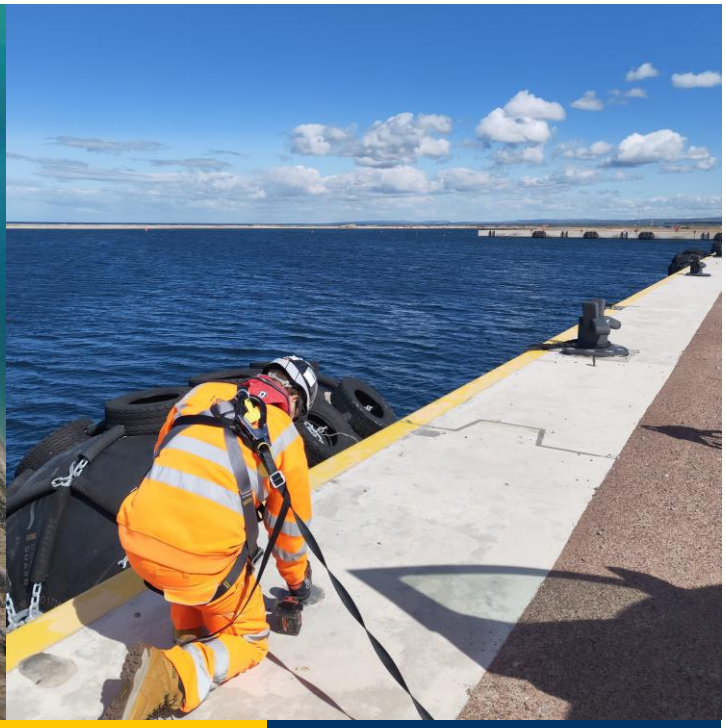
PORT DEVELOPMENT, ARDERSIER

GEOTECHNICAL MONITORING



Key achievements

- **Combined instrumentation and software supply for fully automated monitoring and reporting**
- **Carefully designed instrumentation setups for efficient monitoring and significant cost-saving**

The Project

The Ardersier Energy Transition Facility is a major new port facility being constructed in northern Scotland to support future large-scale deployment of offshore wind farms. GEO-Instruments provided a large excavation monitoring scheme to support the construction of the new quay.

The Challenge

Building the new harbour required a large excavation and the construction of two walls either side. The front wall and anchor wall are connected by arrays of tie rods to reinforce the harbour.
The walls are likely to exhibit movement during excavation, dredging and at high and low tides. It is vital to accurately monitor this movement to confirm it falls within expected limits and to verify the performance of the tie rods.

The Solution

GEO-Instruments has implemented a geotechnical monitoring scheme built around In-Place Inclinometers (IPIs).
The monitoring scheme is comprised of twenty-four IPIs installed into piles at regular intervals along the front and anchor walls of the excavation. Depending on the area and monitoring requirements, the instruments are installed to between 15 and 35 metres depth.
Each installation consists of a string of sensors fixed at intervals down the borehole, forming a profile that measures how the ground is moving horizontally at different depths.
The use of fewer, longer segments at less critical sections also provides a significant cost saving for the client.
Using IPIs over manual Inclinometers prevents issues with needing regular access to the monitoring locations and automatic measurement means readings can be taken at much higher frequencies.

Application
Excavation Monitoring

Technique
Geotechnical Monitoring
QuickView Monitoring Software

Market
Construction

Project Duration
2+ years

Instrumentation
In-Place Inclinometers (IPIs)

Keller companies
GEO-Instruments

GEO INSTRUMENTS

Geotechnical & Structural Monitoring Solutions

KELLER