

# FinMeas



## Case Kalasatama

The rock masses of Kalasatama are monitored with FinMeas' technology



## Case Kalasatama


**Kalasatama in Helsinki is one of the biggest and most visible construction sites in Finland. The enormous project continues also under ground where the upcoming shopping centre's large parking garage is being excavated. The safety of the work is monitored with automatic extensometers delivered by**

Kalasatama's shopping center will have five underground parking garages, four of which are two-storied. The garages have altogether 1150 parking spots. SRV Infra is responsible for the construction work and the project's manager is **Ville Järvinen**.

The reliability of the measurements is highlighted because of the unparalleled high tower buildings that are being built above the parking garage. The towers will be located above the rock pillars. Because the load will be large, it is necessary to get reliable and accurate information about rock movements. Thus, FinMeas' measuring devices have been situated in all the critical spots.

FinMeas has delivered four automatic extensometers for this project. With these, the rock movements are monitored during the excavation and construction work. The extensometers have three or five anchors at different depths. These anchors move along with the rock movements, in relation to the reference point. The movement is measured and sent wirelessly to FinMeas' webservice, where the measurement data can be viewed in real time.

The measurement system can also be set up with automatic alarms. If the specified threshold value is exceeded, the person-in-charge receives information about this immediately as an email or SMS message.



**"With automatic extensometers, we can monitor in real time how the rock mass is moving and living."**

## Case Kalasatama

### Movements are monitored in real time

The measurement devices were installed in the rock mass already before the excavation started. This way also pre-work information is collected for future use.

“The rock masses always move during excavation. With automatic extensometers, we can monitor in real time how the rock mass is moving and living. If the movements are greater than we expected, we can react to it and strengthen the foundation if needed”, says Järvinen.

The normal movements resulting from the natural strain state of the rock mass is usually a few millimeters.

Kalasatama’s soil is good and there is an old rock island in the region. The rock movement has not at any point been close to the limits we have set. At one point we decided to make extra reinforcements after which the rock movement ended.”

### Remote reading saves valuable working time

One challenge with the excavation of Kalasatama’s underground parking garages is that a lot of above-ground construction work is also taking place in the area – for example the foundations of the new shopping center.

“Construction work involves a lot of daily coordination. If there is concrete work going on somewhere, we can’t explode in the same place at the same time.”

Järvinen praises the reliability, effortless and cost-efficiency of the automatic measurements. Earlier the measurements were made manually and someone needed to come weekly and take the readings on the spot.

“In a project as long as this one, the worker gets a lot more time to do other things instead.”

“The devices have worked well and they are easy-to-use. The reading scale of the user interface is clear – the colour codes tell immediately if the measurement data is within the set limits”, says Järvinen.



**“In a large and multi-dimensional project like this we want to keep things simple. FinMeas’ system helps us greatly in this.”**

## Case Kalasatama

"It's a great advantage that the devices are so easy-to-use. In a large and multi-dimensional project like this one, something is happening all the time and in many different places. That is why we want to keep things simple. FinMeas' system helps us greatly in this."

### Everyone has access to important information

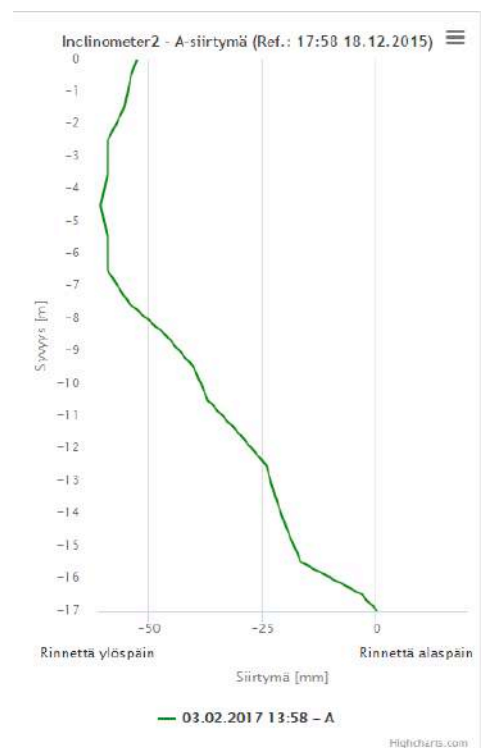
Järvinen also appreciates the fact that automatic measurements can be made in real time. It is important that all the parties can use the important information.

"The data from the manual measurements first went to the contractor and then to the supervisors and designers. Now all the parties can view the information in the webservice whenever they like. This is a major improvement compared to what it was earlier."

The planning of the parking garage started in January 2014 and the construction work begun in May 2015. The shopping center and the parking garages are planned to be ready for use in September 2018.

Before the construction of the parking garages can begin, altogether 200 000 solid cubic meters of stone will be mined from the area. In January 2016 almost half of this amount was already mined.

Movement since 30.09.14



**"It's a great advantage that the devices are so easy-to-use."**

