

Gediminas' Tower



Project Summary

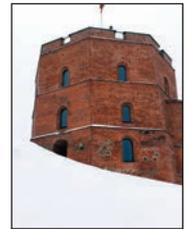
NAME: Landslide affecting Gediminas' Tower

YEAR: 2017

CLIENT: National Museum of Lithuania

CONSULTANT: Geosense

INSTRUMENTATION SPECIALIST: GPS Partneris



Overview

Gediminas' Tower is part of the Vilnius Castle, the Palace of the Grand Dukes and the National Museum of Lithuania. Gediminas' Tower dates back to the early 15th Century. In spring 2016, part of the North side of Gediminas' Hill started sliding. The area is protected with a temporary geotextile white cover.

GPS Partneris approached Geosense before Christmas 2016, with an urgent requirement to monitor a landslide taking place in this historic site.

Different options were considered but it was decided to install six biaxial Wi-SOS 480 wireless tilt meters and one Gateway.

As well as controlling any movement in two retaining walls - a small stone one at the top and a main masonry wall at the bottom - the aim was also to activate an on-site landslide alert. The site and the funicular are currently closed to visitors.

Landslides at Gediminas' Hill have made the news many times during last year. There is a lot of pressure from the media on getting Gediminas' slope and Hill back to its original state and re-opening the site to the public.

This Wi-SOS 480 system is the first wireless, remote control system installed in Lithuania.

Monitoring

GPS Partneris installed eight monitoring prisms at the end of December 2016. They were surveyed by an Automatic Total Station every hour but it became clear a more accurate measuring system was needed.

Results from monitoring prisms were in the range of ± 0.5 mm of real resolution, but the Wi-SOS 480 tilt meters' resolution and repeatability are ± 0.03 mm/m. Biaxial tiltmeters have been set to measure every hour to give an earlier on-site warning than monitoring prisms.

Installation of the Wi-SOS 480 system was done in one day on Wednesday January 18th, 2017, with temperatures well below 0°C all day long. GPS Partneris installed the biaxial tiltmeters within 0.5 degrees both in A and B axis, using special brackets designed by Geosense. Remote access to the Wi-SOS 480 system has been successful both via SIM card and on Ethernet while temporarily locating the gateway 7 Km away from the site at GPS Partneris' offices.

Readings are currently stable and GPS Partneris are hoping to increase the number of biaxial Wi-SOS 480 tiltmeters installed on-site in the coming months. GPS Partneris and the Contractor were impressed by how easy the installation was and by the data's immediate availability and reliability.

Products used

- ~ **Wi-SOS 480 Wireless Tiltmeters**
Biaxial - 3 on brackets onto existing retaining walls and 3 on stakes in the landslide.
- ~ **Wi-SOS 480 Gateway**
GPRS Gateway, mains connected.



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