

Historic Building

Background

Due to several years of metro construction in the heart of a major European city, a multi-storey historic residential building has suffered significant structural damage. Tunnelling activities and groundwater lowering have resulted in settlement of the surrounding ground, causing the building to tilt and extensive cracking to develop across multiple floors at the interface with the adjacent new-build wing.

To successfully pursue compensation claims, the property owner must now ensure the safety of the residents while simultaneously securing legally admissible evidence to establish the cause and extent of the damage.

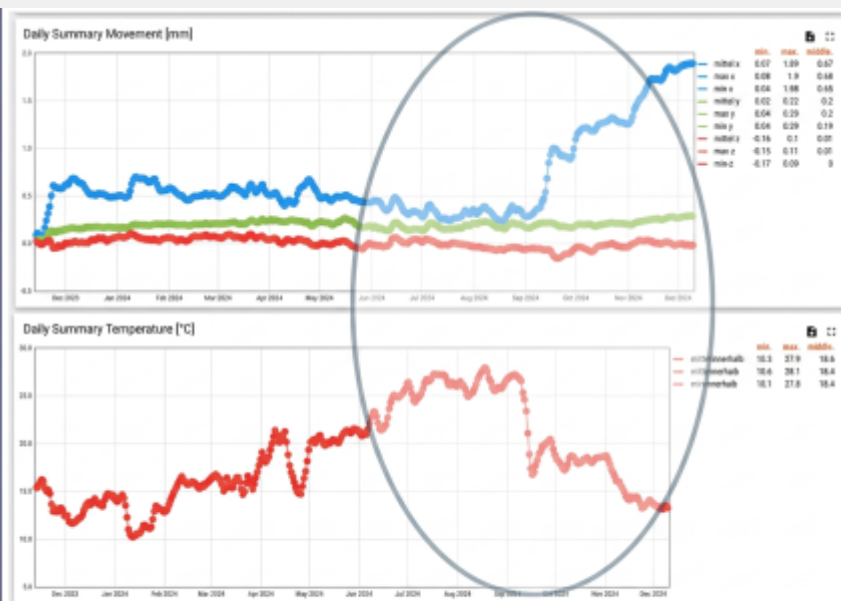
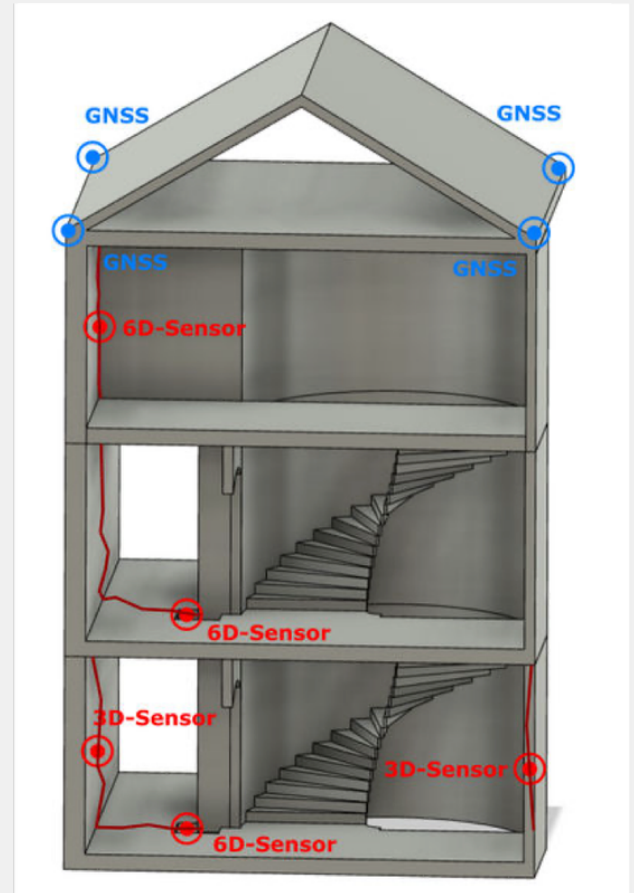


Requirements

The monitoring system must continuously and precisely capture changes to the building in order to detect hazardous situations early and prevent damage. Particular attention is paid to the visible cracks in the stairwell and the metal structure of the elevator shaft, which is critical for safe elevator operation. Sensor data must be permanently available online to enable ongoing assessment of the overall situation.

Solution

Based on structural analyses, the engineering office defined the optimal positions for the SuessCo monitoring system: Two 3D-Sensors in the stairwell monitored wall movements and crack development with micrometer precision, while three 6D-Sensors on intermediate floors and four GNSS sensors on the roof captured relative and absolute movements. Integrated temperature sensors provided additional data. All measurements were continuously transmitted to the SuessCo Datahub and visualised graphically. Experts and structural engineers had direct online access to detect stability changes in real time, while an alarm function immediately reported critical movements.



Blue = X-Axis = Crack Width
In September 2024, an increase of 1.2 mm on the X-axis was observed.
Temperature-induced, clearly visible due to a simultaneous temperature drop.

Result

The SuessCo sensors and digital monitoring provide the property owner with robust data for root cause analysis and evidence preservation. The direct involvement of a structural engineer and their access to the sensor data enable a well-founded, professional assessment of the building situation in real time. Necessary measures can be initiated promptly to prevent irreparable damage and unnecessary costs.

