

Case Study – Construction Phase Monitoring

Railway Station Project „Stuttgart 21“

STRABAG/Züblin 
Germany 

Background

Stuttgart 21 is a comprehensive transport and urban development project that is redesigning the Stuttgart railway hub. The project involves the construction of new, predominantly underground routes, passenger stations, and a new central station. Among the heritage-listed structures is the historic “Bonatzbau” reception building of Stuttgart Central Station, which is undergoing extensive modernisation.



Requirements

During the renovation works, the monitoring system has to continuously measure vibrations, crack widths, settlements, and inclinations within the historic structure. The aim was to detect potential risk areas at an early stage, facilitate the prompt implementation of mitigation measures, and ensure complete digital documentation of all relevant structural changes.

Solution

SuessCo Sensors implemented an innovative digital monitoring system. This comprised high-precision 6D-Sensors capturing three linear axes, three spatial angles, and temperature data, combined with vibration sensors for continuous oscillation monitoring. Additionally, a GNSS system was integrated, determining the absolute position of a point relative to a defined zero point with an accuracy of ± 2 mm. All measurement data was transmitted automatically via mobile network to the SuessCo Datahub.



Result

This innovative sensor and monitoring system enabled a fully digital solution. The manual surveying activities previously required on such construction sites could now be carried out more efficiently, cost-effectively, and with less complexity. At the same time, the system provided the project operator with seamless and permanent documentation.

This project demonstrates how digital monitoring during the construction phase can contribute to both safety and documentation.

"As the general contractor, it was particularly important for us to have partners on board we could rely on 100%. On such a complex and high-profile construction site, nothing can be allowed to go wrong. Safety is the top priority. With SuessCo, we were able to ensure this significantly more easily, efficiently, and ultimately more cost-effectively. Many thanks for that!"

Linus Waltenberger, Project Manager, STRABAG

