

# Renovation of the Palace Hotel, Luzern

## Automatic height monitoring with hose levelling and tachymeter



The Hotel Palace Lucerne is a Belle Époque hotel that was built between 1904 and 1906. From the end of 2018 to 2020, the hotel was completely renovated at a cost of CHF 100 million.

During the renovation work, load changes occurred due to lowering work in the basement on the one hand and the complete gutting and conversion of the 5th and 6th floors on the other. Since the historic building already had minor cracks before the extensive structural conversion work, these load changes had to be permanently monitored using an automated height monitoring system.

The civil engineers had put out a call for tenders for an automated tube level measuring system on 65 statically relevant supports. During the on-site inspection, it became apparent that a tube level system inside the building would hinder the construction work too much, or that the risk of damage to the measuring system from the work with rolling scaffolding was too great.

Together with the construction engineers, it was decided to install a combined measuring system consisting of several hose balance systems and a precision tachymeter inside the building. The measuring system was in operation from December 2018 to the beginning of 2020 and provided reliable and highly accurate point-by-point height changes of the building in the sub-millimetre range!

- 📍 Luzern, Switzerland
- 👤 Civil engineer: Itten + Brechbühl, Zürich
- 🕒 2018 - 2020

### Leistungen

- ◆ Installation of a combined height monitoring system consisting of 4 liquid levelling systems and 1 total station
- ◆ Evaluation of a total adjustment by including all 5 measuring systems
- ◆ Operation of the system during the one-year conversion phase
- ◆ Automatic measurements at hourly intervals
- ◆ Automatic alarm when limit values are exceeded

### Technologien

- ◆ 50 liquid level sensors
- ◆ 1 precision total station with 20 measuring points
- ◆ TEDAMOS Web, password-protected customer portal with 24/7 access