



**Solutions, When the Conventional Ones
Run Out of Breath**



CASE STUDY

CONSTRUCTION LOAD TESTING & MONITORING

Finding Out If The Existing Ceiling Beams Could Hold Up One Floor Extension

ABOUT OUR CLIENT

Client:

one of the largest e-shops

Location:

Prague, Czech Republic

Industry:

Structural Health Monitoring

Our client wanted to expand its headquarters and add an extra floor. He needed to find out how much the current beams can withstand and whether an extra floor is even possible to be extended. With this aim he turned to SAFIBRA to measure the load limit of ceiling beams.

- ▶ Using a deformation test, determine what is the highest possible load on the beams.
- ▶ Recommend under what conditions it is possible to build the extra floor.

KEY FACTS

Initial state

- ▶ More than 30 year old TT ceiling beam
- ▶ The percentage and the placement of the reinforcement were not known

Products and technologies used

- ▶ FBGuard 1550 FAST
- ▶ Data Processing solution
- ▶ Graflux service
- ▶ PeriGuard security system
- ▶ AcousticGuard system
- ▶ ATENA computer program

SOLUTION

We fitted the 2 selected beams with 7 different technologies and created a simulation of their behaviour to make an accurate estimate of their maximum load. Then we synchronized all 7 measurement methods, performed the calibration of all units and the so-called “zero” measurement of beams without load.

Afterwards, with the help of a 500-ton crane, we gradually lowered 3 reinforced concrete blocks with a total weight of up to 35,000 kg onto the centre of the beams, up to the breaking point. At the same time, we constantly monitored the condition of the beams and deflections from a safe distance, and we streamed all data into the cloud for further processing, evaluation and interpretation.

4

evaluation
methods

7

measuring
channels

7

different
technologies

30

measuring
points

250

meters
of optical fiber

35 000

kg
weight

PROJECT RESULTS

Our client obtained detailed numerical information about the loading process at all points of the beams, together with the most accurate results regarding the load capacity and the recommended load, confirmed by different measurement technologies. We were able to please him with the following result:

“With regard to the loading limits, the current ceiling beams comply with the standards for the construction of an additional floor.”

Verified load capacity
of ceiling beams:

33

tons

Duration
of the load test:

10

hours

Further use of beams
in the construction:

100%

recommended

PROJECT PARTNERS



GET IN TOUCH WITH US
and we will recommend you the most suitable
solution for your project.

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