

## ➔ KTI Project Report No. 8

### Vibrations absorbed in the Berlin Castle

<b>Customer</b>	➔ AL Verbundträger GmbH
<b>Location</b>	➔ Berlin, Germany
<b>Year</b>	➔ 2015
<b>KTI product</b>	➔ KTI vibration absorbers
<b>Special feature</b>	➔ Narrow design for installation in HEB support

With the reconstruction of the Berlin Castle as the new Humboldt Forum and its new use as an art and culture centre, planners anticipate a major volume of visitors. Plans include large and sophisticated exhibition rooms on self-supporting intermediate floors, which require steel beams with a span of 20 metres.

The high volume of visitors at exhibitions generates strong vibrations with lower natural frequencies around 3.5 Hz. Installation of specially constructed vibration absorbers leads to significant reductions in these vibrations. To preserve the attractiveness of the exhibition rooms, two narrow, long KTI vibration absorbers invisible from the outside were installed in each steel beam. Each beam is fitted with two absorbers for a total oscillating weight of 5,200 kg. This corresponds to 5% of the vibrating main mass of the particular ceiling panel.

A total of six steel beams with an overall oscillating weight of 31,200 kg thus bear a total ceiling weight of 600 tonnes. The absorbers are supported by high-quality steel springs. They are combined with a viscose attenuation and coordinated precisely to the natural frequency of the ceiling. If vibrations occur in the intermediate ceiling, these are safely cushioned by the absorbers. The low self-damping capacity in the intermediate ceiling is moreover significantly increased by the absorber, which means even minor residual vibrations will quickly subside.

KTI vibration absorbers have proven to be extremely successful in many different types of use, such as for absorbing bridge oscillations and vibrations in ceilings



**Berlin Castle - model view from the north-west**

© Stiftung Berliner Schloss - Humboldtforum / Architect: Franco Stella with FS HUF PG



**KTI vibration absorbers when installed**

© KTI Schwingungstechnik GmbH

and buildings. The KTI modular system also means individual solutions for special area requirements can be provided at a reasonable price.