

VICODA® SUCCESS STORY

TUNED MASS DAMPER

Rhein-Main-Congress-Center (RMCC) – Wiesbaden

PROJECT DATA

Brief description

Reduction of human-induced vibrations of a wide-span ceiling by installing tuned mass dampers (TMD).

Ceiling design

Steel construction on reinforced concrete ceiling

Requirement

During a large event, clearly noticeable vibrations occurred. The use of tuned mass dampers is intended to improve the comfort of use. The maximum possible number of moving persons can be increased by using tuned mass dampers until the comfort limit according to ISO 1037 is reached.

Data passive damper

Moving mass: 16 TMDs 2500 kg each
Frequency range: 2.3 Hz to 3.5 Hz
Fire protection: enclosure with Promat
Corrosion protection: EN 12944 class C4 medium
Design life: 30 years

Country, Year

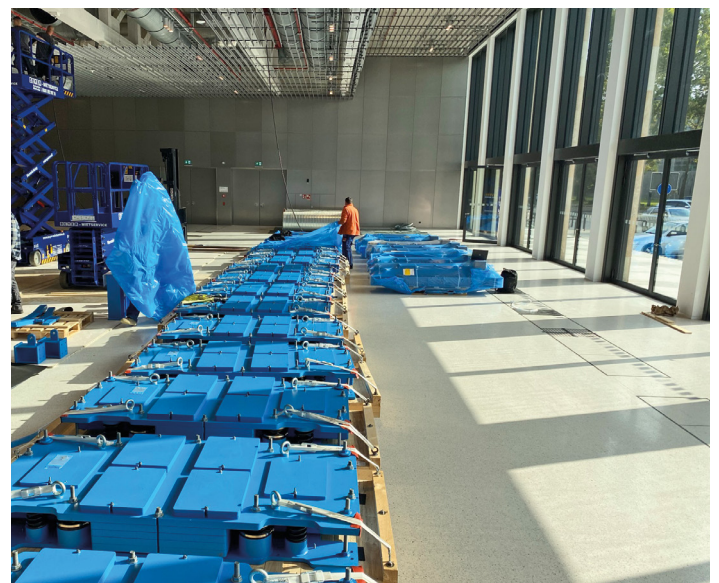
Germany, 2020

PROJECT DESCRIPTION

The Terrace Hall of the RMCC, with a $\approx 40\text{ m} \times 75\text{ m}$ wide-span ceiling floor, is located above the exhibition hall. During an event, noticeable vibrations were experienced. To reduce these vibrations caused by human movement and at the same time maintain the flexible use of the hall, the damping of the ceiling was increased by using VICODA® tuned mass dampers.

SOLUTION

VICODA® adjustable tuned mass dampers were designed for use in the particularly critical range of 2.3 Hz to 3.5 Hz by means of the specified load scenarios. 16 tuned mass dampers were used to damp the first two ceiling vibration eigenmodes. The TMDs were also encased in Promat to meet the high fire protection requirements. While maintaining the design specifications, the tuned mass dampers were integrated into the steel girder cross-section of the



ceiling. LISEGA SE not only carried out the design and delivery, but also the installation of the TMDs within a very short time frame.