

VICODA® SUCCESS STORY

TUNED MASS DAMPER

Visual Control Tower, Dublin Airport, Ireland

PROJECT DETAILS

Short description

Reduction of wind-induced vibrations of a new airport control tower by installing tuned mass dampers

Requirements

Increasing the structural damping of the tower

Product details Tuned Mass Damper

Moving mass: 35,000 kg

Damping principle: Viscoelastic damper

Corrosion protection: According to EN 12944 class C3 medium

Design service life: 50 years

Country, year

Ireland, 2018

PROJECT DESCRIPTION

Due to increased air traffic at the fast-growing Dublin Airport, the construction of a new air traffic control tower became necessary. The slim, elegant 87.7 m high control tower is the tallest occupied structure and a new impressive feature of Dublin's skyline. Given the height of the tower, minimising wind-induced vibrations was a crucial aspect of the design. Wind tunnel tests showed that the structural damping of the tower had to be increased. VICODA® tuned mass dampers were used to control the vibrations, thus creating a positive work environment for air traffic controllers.

SOLUTION

Based on the specified load scenarios, VICODA® tuned mass dampers were dimensioned with subsequent adjustability in the particularly critical range of 0.45 Hz to 0.75 Hz. The tower was designed with two vibration dampers each weighing 37 t for damping the first natural frequencies. In order to meet the design requirements, the tuned mass dampers were integrated into the extremely narrow cross-section of the tower. A special pendulum design allowed a wide range of adjustment of the TMD, in particular fine adjustment after installation.

