

Visual Control Tower, Dublin Airport, Ireland

PROJECT DATA

Brief description

Reduction of wind-induced vibrations at a new airport control tower by installing passive absorbers.

Request

Increasing the structural damping of the tower

Data passive absorber

Moving mass: 35.000 kg

Damping principle: Viscoelastic damper

Corrosion protection: According to EN 12944 class C3 medium

Design life: 50 years

PROJECT DESCRIPTION

In order to cope with the increased air traffic of the rapidly growing Dublin Airport, the construction of a new air traffic control tower became necessary. This 87.7m tall slender, elegant control tower is the tallest structure in use in the country and helps to define Dublin's skyline as an impressive new feature. Given the tower's height, minimizing wind-induced vibrations was a critical design consideration. Wind tunnel tests, for example, showed that the tower's structural damping had to be increased. Tilters from VICODA® were used to control the vibrations, creating a comfortable working environment for the air traffic controllers.



SOLUTION

In relation to the specified load scenarios, vibration dampers with subsequent adjustability were dimensioned by VICODA® in the particularly critical range of 0.45 Hz to 0.75 Hz. The tower was designed with two vibration dampers with a total weight of 37 t each to combat the first vibration eigenmodes. In order to meet the design specifications, the vibration dampers were integrated into the extremely confined tower cross-section. A special pendulum design allowed a wide range of adjustment of the absorbers, even subsequently during fine-tuning.