

Combination of Steel Springs and Air Suspension – Cost-effective Solution in Vibration Isolation

Steel spring isolators combined with air suspension systems ensure high stability and the functional integrity of machinery and equipment



Insulation

Fire Protection

Noise Control

Challenge

Air suspension systems are often used for the vibration-isolated placement of test benches, machinery and equipment. As they are horizontally soft, additional stabilizers must be added in cases where the weight is particularly high. Such elements prevent any air loss that might harm the machinery or even cause system failure.

Customer

Fraunhofer Institut, Stuttgart, Germany

Project

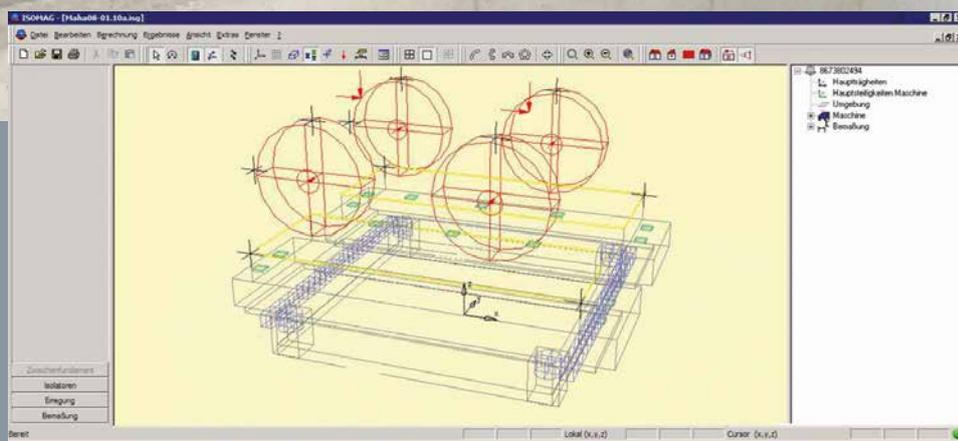
Vibration isolation
Acoustic dynamometer

Project Data

- Sprung mass: 245,000 kg
- Tuning frequency: 1.7 Hz
- Absorption factor: 0.2
- Levelling impact: 100 kN



Air suspension systems from G+H Noise Control are low-frequency, height-adjustable load-bearing elements (up to 0.7 Hz vertical natural frequency) to reduce the transmission of vibration and structure-borne noise into the environment. They consist of a cover plate and a cast aluminum piston. Between these elements there is a belted rolling lobe air spring, made from high-quality elastomeric material with a vulcanized wire belt. As the system is soft at this point, additional steel spring isolators with viscosity absorption are recommendable whenever a load is high. They provide extra strength. Thanks to the anti-blocking



properties of the steel spring systems, these isolators absorb the main load impact. The air spring system, on the other hand, handles the height adjustment within the structure and ensures that the height remains constant despite fluctuating loads.

CHALLENGE

- Ensure horizontal stability
- Ensure functional reliability if there is a breakdown of the compressed air supply
- Adjustable height

SOLUTION

- Combination of steel springs and air suspension
- Secure absorption via viscous fluid
- Automatic height adjustment whenever the load changes

ADVANTAGES

- Ensures functional integrity of machinery, equipment and test benches
- Steel spring isolators and vibration absorbers are maintenance-free