PRESS RELEASE

06/10/2021

**Mass-spring system ensures excellent acoustics in world-famous Vienna concert hall**

**An underground line in the immediate vicinity of one of the world's best-known concert halls? Elastic bearings from Getzner Werkstoffe protect Vienna's Musikverein building from noise and vibrations.**

**Vienna (Austria). Millions of people in more than 90 countries watch the Vienna New Year's Concert each year. The Golden Hall in Vienna's Musikverein building is one of the acoustically best halls in the world and the pride and joy of the concert house. When an underground tunnel was built just four meters from the building in 2002, vibration protection specialist Getzner Werkstoffe supplied Sylodyn discrete bearings for the mass-spring system (MSS), thus ensuring continued, undisturbed music enjoyment. The system has now been in operation for 17 years, has withstood a load of roughly 450 million metric tons and continues to impress with its unchanged high performance.**

In 2019, various measurements were used to check whether the mass-spring system with 192 Sylodyn discrete bearings still fulfilled the high requirements set during the planning and construction phase. In tests with various train types, the natural frequency of the mass-spring system and the radiation of vibrations to the slab, tunnel floor and tunnel wall as well as the slab deflection when trains pass were measured. In three concert halls, including the Golden Hall, secondary airborne noise emissions were measured at a height of 2.5 m.

The results were remarkable: "Even after 17 years, the vibration isolation was still as efficient as it was on day one. All assessment criteria for vibration immission are still being fulfilled," explains Markus Heim, project manager at Getzner Werkstoffe. "No changes were identified in the vertical natural frequency of the pulse-excited slab of the mass-spring system compared to the acceptance tests in 2003!" The dynamic properties of the Sylodyn bearings have remained the same over all these years.

**New trains, new challenges**

New measurements were taken in 2019 due to a change in conditions: The Vienna underground now operates with more modern trains, which generate noise and vibrations in a different way to the earlier trains. The building structure has now also been adapted, for example new windows have been installed. Markus Heim: "In view of the changed conditions, we wanted to check the long-term behaviour of the MSS, which has already had to withstand a total of approximately 450 million metric tons from 250 trains per track per day since the tunnel's construction."

**High requirements**

Back then, the requirements were already very high. For the construction of a new underground line next to Vienna's Musikverein building to be approved in 2002, it was first necessary to prove with appropriate investigations that the noise and vibration levels in the famous concert halls would not increase. "Our solution has a vertical natural frequency of 5.5 Hz - the lowest vertical natural frequency ever achieved with a mass-spring system made from elastomer bearings," explains Markus Heim, who is also responsible for the Austrian supplier's system development. Visitors to the concert hall are optimally protected from disruptive vibrations and noise generated by the nearby underground line - in the same way as on day one.

**Further information:** [**www.getzner.com/musikverein**](file:///\\svatbu-data.ad.getzner.com\work\RDIV\CC\PR\Presseaussendungen,%20Interviews\2021\2021-Vienna%20Musikverein\www.getzner.com\musikverein)

**References, Europe (extract):**

Mass-spring System (MSS):

* Berlin subway, City Rail Dortmund, Munich-Garching subway, Stuttgart subway (DE)
* Nottingham Tram (UK)
* Tram Bordeaux, Grenoble, Marseille, Montpellier, Strasbourg, Paris, Nice, Avignon, Angers, Annemasse, Caen, Lyon, Clichy, Toulouse, St. Etienne (FR)
* Tram Budapest (HU)
* CEVA Zone Rolex, Eppenberg Tunnel (CH)
* Urban Railway Tunnel Madrid, Metro Madrid (ES)
* Tram Warsaw, Gdansk (PL)
* Vienna subway, Tram Graz, Tram Innsbruck (AT)
* Istanbul Metro (TR)
* Tram Bratislava (SK)
* Metro Catania (IT)
* Tram Luxembourg (LU)
* Sofia Metro (BG)

**Picture 1:** Vienna Musikverein 1

**Caption 1:** Effective since 2002: Getzner Werkstoffe protects Vienna’s Musikverein building against noise and vibrations.

**Picture 2:** Vienna Musikverein 2

**Caption 2:** The secondary airborne noise immissions were measured in the Golden Hall, proving that the bearing material properties remain unchanged after 17 years.

**Picture 3:** Vienna Musikverein 3

**Caption 3:** The underground railway tunnel is just 4 metres from the Musikverein building. Showing both train types in use

**Picture 4:** Vienna Musikverein 4

**Caption 4:** Efficient and long lasting: The mass-spring system with Sylodyn point bearings and a vertical natural frequency of 5.5 Hz.

**Picture 5:** Pictogram Mass-spring systems discrete bearings

**Caption 5:** Mass-spring systems from Getzner Werkstoffe have been installed in metro, railway, and rapid transit lines all around the world.

**Image source:** Getzner Werkstoffe, publication free of charge

**Click here for the** [**press kit**](https://www.getzner.com/en/press/mass-spring-system-ensures-excellent-acoustics-in-world-famous-vienna-concert-hall)

**Getzner Werkstoffe GmbH**

[Getzner Werkstoffe](https://www.getzner.com/en) is the leading specialist in the field of [vibration isolation and protection](https://www.youtube.com/watch?v=koMOxXcDZAw). Its solutions are based on the products [Sylomer®](https://www.getzner.com/en/products/sylomer), [Sylodyn®](https://www.getzner.com/en/products/sylodyn), [Sylodamp®](https://www.getzner.com/en/products/sylodamp) and [Isotop®](https://www.getzner.com/en/products/isotop), all of which were developed and manufactured at Getzner's own facility. They are used in the rail, construction and industry sectors to reduce vibrations and noise, improve the service life of bedded components and minimise the need for maintenance and repairs on tracks, vehicles, structures and machines. The company was founded in 1969 as a subsidiary of Getzner, Mutter & Cie.

Getzner markets its vibration protection solutions around the world. Alongside its locations in Buers and in Germany, Getzner also has offices in China, France, India, Japan, Jordan and the USA. Its tightly-knit distribution network in Europe is complemented by its distribution partners in the USA, South America and the Far East. Partners in a total of 40 countries around the world distribute Getzner Werkstoffe products to every location. By reducing noise and vibrations, Getzner is making a valuable contribution towards enhancing the quality of living and working conditions.

**Facts and figures – Getzner Werkstoffe GmbH**

Founded: 1969 (as a subsidiary of Getzner, Mutter & Cie)

Chief Executive Officer: Juergen Rainalter

Employees: 490 (360 in Buers)

2020 turnover: 105.5 million euros

Business areas: Railway, construction, industry

Headquarters: Buers (AT)  
Locations: Beijing, Kunshan (CN), Munich, Berlin, Stuttgart (DE), Lyon, Paris (FR),   
 Pune (IN), Amman (JO), Tokyo (JP), Charlotte (US), Melbourne (AU)

Ratio of exports: 91 percent

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