

# Case Study

## Toranomon Hills Mori Tower, Tokyo (JP)



» Vibration suppression for once-in-a-century construction project in Japan

» Decoupling at the source of the interference: Providing bedding for a four-lane underground urban motorway

» Vibration-related internal construction measures for a 247 m high-rise complex with tunnelling below



# Decoupling of a Four-Lane Urban Motorway and a 247 m Tall Tower Standing above it

## Project description

In the centre of Tokyo, on a site covering a total area of about 6,000 m<sup>2</sup>, a prestigious multi-function area was built; the centrepiece of this development is the Toranomon Hills Mori Tower, a high-rise around 247 m in height with 52 floors, which is set to become the tallest building in Tokyo.

Directly beneath this structure the planners designed a four-lane underground urban motorway – a new main traffic artery for getting across Tokyo. To enable this impressive skyscraper to be built to the required usage standards, a solution had to be found for the vibration produced by the urban motorway, which runs through a tunnel for some 200 m. The Tokyo Metropolitan Government selected the Japanese property company Mori Building as its partner for this major public-private sector project. Mori in turn engaged Getzner as its specialist partner for vibration isolation.

Getzner has developed vibration protection for two significant sub-projects: an elastic solution for the hotel on the uppermost floors of the high-rise complex and a solution for the urban motorway running directly underneath the building.

## The Getzner solution

### Full-surface bedding of a four-lane urban motorway

The first implementation phase of the project involved applying a resilient bedding to the 200 m underground length of motorway. The full width of this section was bedded on the high-tech Sylomer®. This has the effect of providing the structure erected above the road with effective and long-term protection against vibration. The solution directly addresses the cause of the vibration, as the four-lane urban motorway, which is the source of the disturbing structure-borne noise, has now been isolated. The elastic bedding decouples the source of disturbance from its surroundings, and thus also from the structure erected over it.

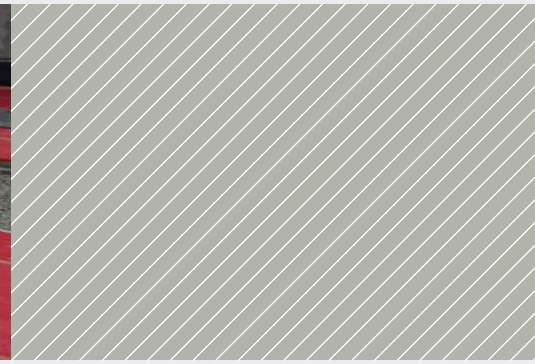
### Protecting outstanding architecture

In the second implementation phase of the project, a variety of internal vibration-damping construction measures for decoupling the hotel that occupies the upper floors of the tower are being carried out. In order to protect this sensitive area in the best possible way against vibrations, Getzner is bedding the hotel floors, the pool areas and the fitness and machinery rooms of the hotel on Sylomer®. This prevents structure-borne noise from spreading through

the building. The building is thus effectively protected against unwanted vibrations.



The project goal, which was to provide the maximum quality of life and work by reducing vibration and noise, has been achieved.



### Vibration experts on site

Getzner also assumed responsibility for overseeing the installation process. „On a project of this magnitude it is not only very important to work closely with our Japanese partners, one really needs to be on site oneself, as only then can we constantly monitor the quality of the work and ensure that our materials protect this superb architecture in the long term. For Getzner, this order is a valuable reference for future projects all over the world“, is how Werner Ebster, project manager at Getzner, underlines the importance of this major project.

### The advantages of the Getzner solution

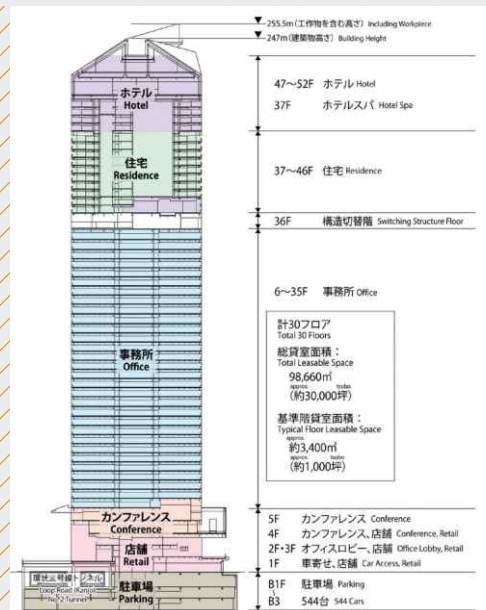
- Sylomer® performs extremely well in the long term
- Expert, well-informed contacts on site
- Material is easy to handle and to install
- Getzner's experience spans decades and has been gained across all sectors
- Overseeing construction
- Comprehensive documentation
- Excellent price/performance ratio

## Feedback

### What do our clients have to say about the project?

Installing Sylomer® mats has the effect of reducing noise and vibration. The material has been employed successfully for decades - Getzner has demonstrated this on numerous occasions in the rail sector. Another important criterion for future-oriented urban planning is that the material should be easy and quick to install.

Toru Tsuchihashi,  
Deputy General Manager,  
Mori Building





## Facts and figures at a glance

### Project Toranomon Hills Mori Tower in Tokyo (JP)

Key facts:	Tallest building in Tokyo (247 m, 52 floors)
Location:	Loop Road No. 2 (trunk road from Shimbashi to Toranomon)
Project coordination in Japan:	Nihon Getzner K.K. und Getzner Werkstoffe Bürs
Owner:	Mori Building
Carriageway solution:	Full-width elastic bedding of a four-lane carriageway
Hotel solution:	Hotel floors, pool complexes plus fitness suites and machinery rooms underlaid with Sylomer® bedding
Elastic bedding:	Getzner Werkstoffe GmbH
Execution:	2014

### Getzner Werkstoffe GmbH

Founded:	1969 (as a subsidiary of Getzner, Mutter & Cie)
Chief Executive Officer:	Jürgen Rainalter
Employees:	420
2017 turnover:	95.2 million euros
Business areas:	railway, construction, industry
Headquarter:	Bürs (AT)
Locations:	Munich (DE), Berlin (DE), Stuttgart (DE), Lyon (FR), Amman (JO), Tokyo (JP), Pune (IN), Beijing (CN), Kunshan (CN), Charlotte (US)
Ratio of exports:	94%

### Construction references (extract from Japan)

- National Training Center, Tokio (JP)
- Palace Hotel, Tokio (JP)
- The Peninsula Hotel, Tokio (JP)
- The St. Regis Hotel, Osaka (JP)
- Pacifico Yokohama, Conference Center (JP)
- Tokyo American Club, Sports Center (JP)
- Kabukiza, Tokio (JP)
- QVC Studio, Chiba (JP)
- Toppan Rotary Printing Press, Osaka (JP)