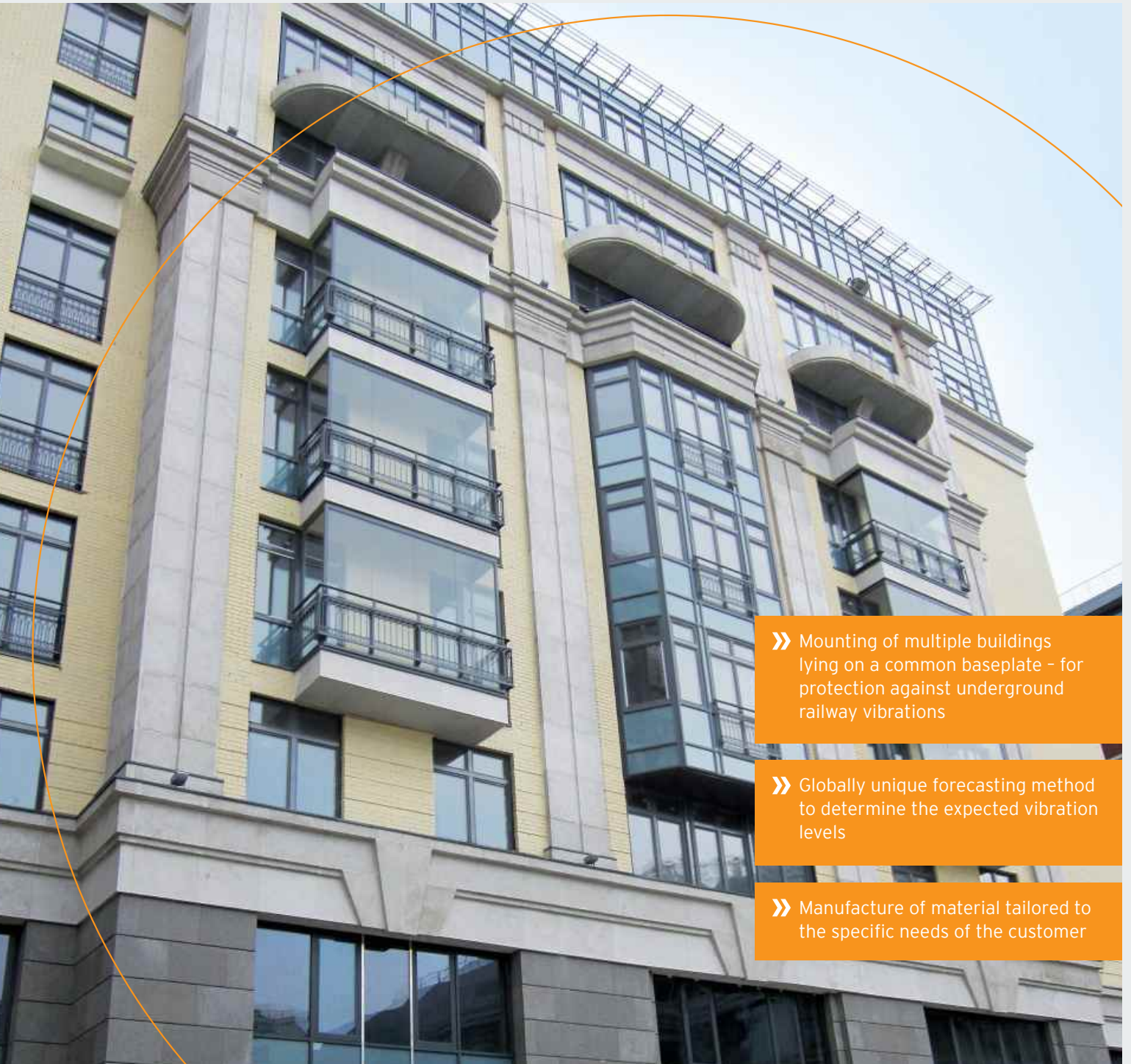


Case Study

Luxury residential complex "Four Suns", Moscow



» Mounting of multiple buildings lying on a common baseplate - for protection against underground railway vibrations

» Globally unique forecasting method to determine the expected vibration levels

» Manufacture of material tailored to the specific needs of the customer

Elastic mounting for buildings



Description of the project The Getzner Solution

“Four Suns” luxury residential complex in Moscow

Between 2006 and 2010, the Office Stroy general construction company completed a luxury residential complex with a total area of 110,000 m² in the heart of Moscow. The main challenge of this project was protecting the building complex from vibrations, owing to the location of the “Four Suns” which is directly above two underground rail lines.

The residential complex is situated on a common baseplate upon which four 8-10 storey buildings are located. Both the foundations for the baseplate and the residential buildings were constructed from monolithic reinforced solid-concrete plate. The traffic passing along the Kalininskaya and Kaluzhsko-Rizhskaya underground rail lines that run directly beneath the planned buildings, causes vibrations which can still be detected on the surface.

Elastic floor and wall mounting as protection against vibration

In 2006, “Ecocity”, the ecological fund for developing the urban environment, conducted an investigation of the building site. As a means of insulating the building against vibration, those in charge recommended an elastic mounting using Getzner Sylomer®. At the time, the “Four Suns” luxury residential complex was the largest building mounting project since Getzner Werkstoffe's existence.

Elastic floor and wall mounting of Sylomer® as protection against vibration was applied beneath the foundations of the residential block and to the surfaces of the foundation walls. The elasticated layer beneath the baseplate comprised of 37 mm (thickness) of Sylomer®. A thickness of 25 mm of Sylomer® was applied to the foundation walls.

Individual vibration levels

Ecocity predicted the anticipated vibration levels using the “Finite Element Method”. Here the following approach was used:

- 1 Measurement of the vibration levels in the foundation pit
- 2 Numeric calculation of the wave propagation from the source to the receiver, e.g. from the tunnel to the surface and then to the planned building
- 3 Combination of the forecast calculations
- 4 Testing in the completed building

Getzner was able to use the forecast results to calculate the requirements of the vibration-insulation materials, which allowed the experts to determine the ideal material for the elastic mounting of the residential complex. “This special forecast method was developed by Sergey Kurnavin of Ecocity over a period of 20 years. It is unique in the world”, states Andreas Stofleth, Project Manager at Getzner, explaining the significance of the method.





Design

Using concrete measurement results and the proposed technical solutions, Getzner was able to determine the most suitable vibration insulation for the luxury residential complex. The vibration experts produced a material especially to combat these challenges. "We can adapt both the thickness and parameters of the materials to the individual case, which allows us to devise very economical solutions", explains Stofleth, highlighting Getzner's unique selling proposition. The company operates not only as a developer and producer of materials for vibration reduction, but also as a construction advisor. Beside the material calculations, the specialists also took charge of project management during the construction phase at site.

Effective protection against vibration

After constructing the building shell, Ecocity 2010 once again performed a series of tests. By using Sylomer®, the construction specialists reached an effective level of protection against vibration: All areas subjected to investigation complied fully with the standards set by the Russian Federation. The professional building protection has created an excellent quality of living.

Feedback

"The full range of documentation from Getzner allows precise calculations of complex vibration issues. The excellent correlation between the prediction and the actual installation is also an indicator of the quality of the delivered product and the related services".

Sergey Kurnavin, PHD



Facts and data at a glance

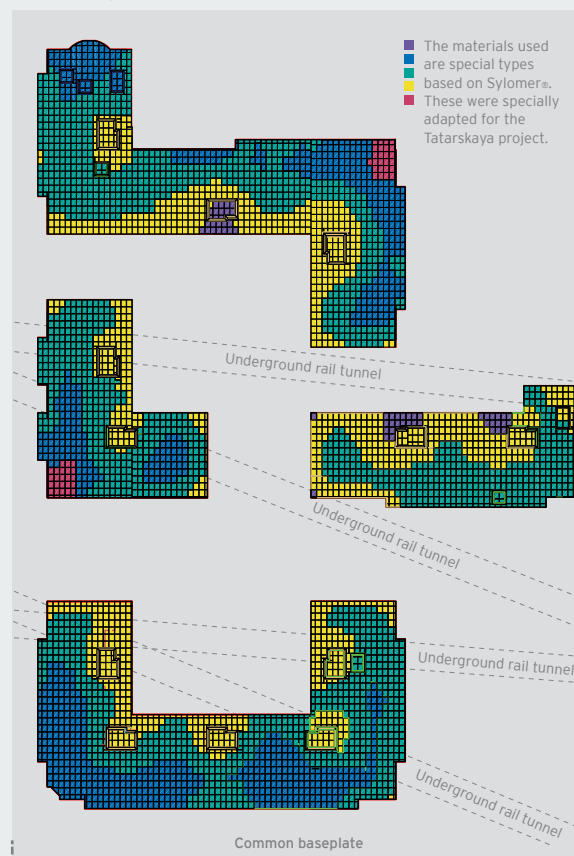
“Four Suns” luxury residential complex

Building complex:	Four 8-10 storey residential buildings
Location:	Bolshaya Tatarskaya Street, Moscow
Vibration insulation:	Getzner Werkstoffe GmbH
Solution:	Elastic mounting of residential building foundations and insulation above the foundation walls with Sylomer®
Realisation:	2006 - 2010
Contract value:	EUR 1.8 Mio.
Investor:	Legionstroyinvest Group, Moscow
General Construction company:	Construction company “Office Stroj”, Moscow
Representative of Getzner:	Novintech, Moscow (official representative in Russia)

Getzner Werkstoffe GmbH

Foundation:	1969 (as a subsidiary of Getzner, Mutter & Cie)
Managing Director:	Ing. Jürgen Rainalter
Employees:	212 in Bürs, 87 abroad
2011 turnover:	EUR 56.2 Mio.
Business areas:	Rail, construction, industry
2011 output:	7,209 tonnes of technical PU materials
2011 recycling:	51 tonnes of residual PU materials
Locations:	Bürs (AT), Munich (DE), Berlin (DE), Amman (JO), Tokyo (JP), Pune (IN), Beijing (CN), Kunshan (CN)
Ratio of exports:	80 percent

Installation plan



ClimatePartner • neutral printing

Construction references (extract)

- Teatro Nacional de Catalunya, Barcelona (ES)
- Welfenhöfe, Munich (DE)
- Arnulfpark, Munich (DE)
- BMW-Welt, Munich (DE)
- Beisheim Center Ritz-Carlton, Berlin (DE)
- National Training Centre, Tokyo (JP)
- Oslo Opera, Oslo (NO)
- Drachen-Center, Basel (CH)
- The Rushmore Building, New York (US)
- Bolschoi Theatre, Moscow (RU)
- Skyline Vienna, Vienna (AT)

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