

# Case study

## Berlin to Cottbus line



» Efficient vibration protection for adjacent buildings with an increase in train speeds

» Specially developed polyurethane sleeper pad with effective acoustic damping

» World's largest railway project using sleeper pads for vibration protection

# Berlin-Cottbus



## Description of the project The Getzner Solution

### Development of the Berlin-Cottbus railway line

In 2010 Deutsche Bahn (DB) upgraded the heavily used railway line between Berlin and Cottbus, which lies in the county of Brandenburg. Following the southerly section of the Berlin-Cottbus line, the middle section of the route was also upgraded to allow trains to run on it at higher speeds. The entire railway track structures were replaced along a 60 km long section between the spring and autumn of 2010. The challenge facing us in this project was to provide buildings in close proximity to the track with efficient protection against vibrations, despite the faster train travel which had been planned.

What is more, in order to keep this extensive project on budget and on schedule, the complete track structure could not be removed. Since the completion of the construction work, the track which was previously designed to accommodate a top speed of 120 km/h can now be used by trains travelling at speeds of up to 160 km/h and at greater frequency, without causing additional structural stress due to vibrations or noise.

### Padded railway sleepers as protection against vibrations

Getzner worked closely with DB to develop a special polyurethane sleeper pad with effective acoustic damping for the Berlin-Cottbus line. The pad was designed within the scope of the research project "Quiet train on real track" (LZarG) which was aimed at developing new technologies for lower-noise railway traffic. The PUR mats dampen the vibrations of trains as they pass through built-up areas.

The new pad has been specially tailored to meet the requirements of these projects. "DB already had good experience of working with us before we embarked upon this major project. Faith in our expertise and in our ability to deliver the right product were key to securing the order. So far, Berlin-Cottbus has been the biggest railway project of its kind in the world involving the use of sleeper pads to protect against vibrations. All in all, some 52,000 sleepers and 17 points were fitted with pads made from our material," pointed out Christian Dullinger, project manager of the Rail Division at Getzner's plant in Grünwald near Munich, emphasising the significance of this major project. By using sleeper pads, specialists were able to integrate the vibration protection without completely removing the track structure.

### Product development in close cooperation

Getzner developed the new sleeper pad which was designed to suit the Berlin-Cottbus line in close cooperation with DB's Technology and Acoustics Department in the course of the LZarG research project. The solution reached production stage and ultimately received approval by DB Technology.

While the R&D work was in process, Getzner had the product tested at the Technical University of Munich. Those tests have confirmed the high quality and durability of the product. "We conducted a rigorous series of tests in a very short time. We now have a well-engineered, highly resilient product in use. In addition, compared to





conventional solutions, the sleeper pads also boast longevity on account of the improved way in which they are connected," said Christian Dullinger, summing up the special features of the major order.

### Just-in-time logistics

Dullinger described how "this order presented a big challenge for project management, quality management, production and logistics - around 30 people worked on its successful implementation." Finally he stated that "Volumes of this great magnitude create high demands: Not only did we manage to coordinate the internal processes excellently, we were also able to coordinate the timing of the manufacturing of the sleepers and pads with our customers on site to great effect. By virtue of its sheer

scale, this project provided us with valuable experience, which will benefit our clients in future projects."

Given the high production capacity utilisation, the new elastic layer for the sleepers was produced at the Getzner plant in Bürs under great time pressure and under the most stringent quality controls. Liaising closely with the company that manufactures the sleepers, Getzner delivered over 50,000 pads to Frankfurt and to Neumarkt in der Oberpfalz between June and September 2011. They were then affixed to the sleepers at Rail. One's two plants. As this then meant that sleepers could be delivered to the track with the pads already in place, which made installation quick and straightforward.

## Feedback

### What does the sleeper manufacturer have to say about the project?

"The cooperation with the Getzner team was exemplary. The quality of the pads for the sleepers was consistently high and enabled us to affix them to our concrete sleepers without any trouble. Deliveries were excellently coordinated: they arrived on time and in the agreed volume."



Gundolf Spitzner,  
Head of European Sales,  
RAIL.ONE GmbH



Getzner created pads for 50,000 sleepers along a section of over 60 km between Königs Wusterhausen and Lübbenau.

## Facts and figures at a glance

### Berlin-Cottbus line

Long upgrade section between Königs Wusterhausen and Lübbenau: around 60 km  
Target speed: up to 160 km/h

### Order details

Scope of the order: Pads for around 50,000 sleepers and 17 points  
Client: Deutsche Bahn AG  
Project manager: Dipl.-Ing. Dipl.-Wirtsch.Ing. Christian Dullinger  
Completion: Autumn 2011  
Sleeper manufacturer: RAIL.ONE GmbH  
Construction company: Eiffage Rail GmbH

### Data and facts regarding 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

### Rail references (Extract)

- Brynsbacken (NO)
- Metro Seoul (KR)
- Metro Amsterdam, Eastern Line (NL)
- Bruchsal Tunnel (DE)
- Matstetten-Rothrist (CH)
- Umegaoka-Odakyu Electric Railway (JP)
- Britomart Station (NZ)
- Northern approach line to the Brenner Base Tunnel (AT)