

Case Study

Long-Term Test of Rail Pads on a Heavy Traffic Route, Brazil (BR)



» More elasticity for a heavy traffic route where axle loads exceed 33 metric tons

» High-strength rail pads made of Sylodyn® significantly reduce wear

» Rail pads withstand the extreme loads



getzner
engineering a quiet future

Increased availability of a heavily used route

The project

The considerably higher loads placed on the superstructure of heavy traffic routes often cause serious damage to individual components. MRS Logística S.A., Getzner's customer in Brazil, has experienced this at first hand. Getzner was commissioned to develop a solution to reduce the track's maintenance costs.

MRS Logística S.A. has been operating a heavy traffic route for transporting iron ore, container goods and coal from the interior of the country to the east coast since 1996. The 1,674 kilometre route crosses the three federal states of Rio de Janeiro, Minas Gerais and São Paulo, and is constantly

subjected to extremely heavy loads. Each train on the line is approximately two kilometres in length and has an average axle load of 33 metric tons.

Wear and closures incur costs

Due to the high loads and lack of elasticity of the track, rail and tension clamp fractures are increasingly common; other superstructure components are also subjected to increased levels of wear. This results in high maintenance costs and repeated periods of closure, which in turn imposes significant costs on the operator and detrimentally affects the availability of the track.

Getzner was therefore commissioned to develop a solution that increased the availability of the line while minimising maintenance costs - and without interfering too much in the superstructure system.



The route is used to transport container goods and coal to the east coast



Sylodyn® rail pads



The trains on the heavy traffic route are approximately two kilometres in length



Installed rail pad

➤➤ This is the first ever long-term test of Getzner rail pads on a heavy traffic route. The results are simply astonishing!

The Getzner solution

More elasticity, fewer closures

The main reason for the high degree of wear to all the superstructure components is a lack of elasticity. That is why in October 2011, MRS Logística S.A. - working under the guidance of Getzner specialists - installed high-strength Sylodyn® rail pads on steel and timber sleepers on a section of the heavy traffic route in Ferrovia do Aço (near Bom Jardim de Minas). Joao Marcos, project manager at Getzner, explains: "The ballast on the test track in Brazil has been destroyed or extremely compressed, with the result that there is no elasticity at all in the entire superstructure. Our rail pads compensate for this lack of elasticity."

Getzner rail pads can be installed or retrofitted quickly and easily. They are placed directly under the rail base; the installation process is quick and does not require a long closure period.

Significantly less wear

The results were impressive. In a period of 6 years, there was not a single rail breakage across the entire test track. "Although we have absolute faith in our products, this was the first real test in the field of our high-strength Sylodyn® rail pads on a heavy traffic route where axle loads exceed 33 metric tons. The results speak for themselves. Even after being subjected to a load of 1250 million metric tons - equivalent to a 20-year service life of a busy route on the German railway network - signs

of wear on the superstructure components were significantly reduced," summarises Joao Marcos. One of the reasons for this is the measured area of contact between the rail pad and the rail when a train passes over. At 95%, this value is very high - resulting in a better load distribution and less wear.

Proven durability

In Autumn 2017, some of the rail pads were removed to check their condition. "We needed to get a feel for the loading that the material had been subjected to for six years. Both a visual inspection and the results of elastic property measurements in the laboratory demonstrated that our rail pads showed no signs of wear whatsoever. This means that characteristics such as dynamic stiffness are still the same as specified during installation," says Joao Marcos.

These positive results suggest that the rail pads will continue to be in service for many years to come. Joao Marcos is clearly pleased: "The operator, MRS, has now installed many Getzner base-plate pads in the railway network."

Feedback

What does the client have to say about the project?

"Modifying the stiffness enables the maintenance costs for a section of track to be considerably reduced. Getzner offers various solutions to this end. On the MRS track, the Getzner materials provide the superstructure with the required level of elasticity. In addition, it is clear that the rail pads do an exceptional job of withstanding the extremely high loads."



Antonio Merheb,
Rail Specialist at MRS
Logística S.A.

Advantages for customers

- Significantly less wear
- Less maintenance work and lower costs
- Increased availability and profitability

Facts and figures



Current MRS Logistica S.A. railway network

Operator:	MRS Logistica S.A.
Track length (over which the material was installed):	100 metres including reference sections
Material:	High-strength Sylodyn® rail pads
Loading throughout the entire test period (6 years):	1250 million metric tons
Implementation:	Since October 2011
Getzner Project Manager:	Joao Marcos

Getzner Werkstoffe GmbH

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