

Smooth operator

Floating floors can maximise travelling comfort and reduce lifecycle costs

There are many transport choices available these days. “The challenge for network operators is to offer appropriate added value for users and to convince people that the choice to take public transport should not focus solely on the cost,” says Thomas Gamsjaeger, product manager at vibration isolation company Getzner Werkstoffe. “Reasons such as reliability, comfort, time savings and safety are crucial here – a massive challenge for rolling stock manufacturers, because profitability sets boundaries.”

Getzner Werkstoffe believes its products can help operators to up their game, especially in terms of comfort and profitability. Its materials, Sylomer and Sylodyn, can be used for floating floors, which are designed to reduce vibrations. This increases travelling comfort for passengers and staff and also increases the service life of the carriage and its components.

“Elastic-mounted carriage floors give rise to a new travelling experience,” says Gamsjaeger. “Passengers relish in this ‘floating comfort’, feeling as if they are travelling over clouds. Shudders that occur because of the wheel/rail contact are less noticeable to passengers and crew and the elastic-mounted floor constructions

reduce vibrations to a minimum. Everything is altogether smoother, as less secondary airborne noise is emitted.”

Ultimately, Gamsjaeger believes floating floors can persuade more people to take the train. “Design enhancements such as these make public transport systems more attractive,” he says. “A higher degree of travelling comfort is something that customers who drive top-of-the-range cars find appealing, so this may encourage them to switch to public transport.”

Profitability and costs

Getzner says carriages with elastic-mounted floors have the edge over others in the long-term, too. “A lower level of structural vibrations will extend the service life of a carriage and its components,” says Gamsjaeger. “The minimal creep properties of the materials and the guaranteed minimal deflections over a long lifespan will increase the amount of time between maintenance, which is of considerable financial benefit for operators.”

The materials are designed to offer excellent damping and reduced creep. “The long-term creep behaviour is a great advantage over similar products,” says Gamsjaeger. “Where there is too much settlement, cracks can form in the joints, allowing liquids to penetrate and leading to carriages requiring premature



LEFT: Getzner's polyurethane foam, which can be used for floating floors

PAST PROJECTS BY GETZNER WERKSTOFFE

Manufacturer	Train type	Region	Application
Alstom	Coradia	Germany	Light rail
Alstom	Coradia X61	Scandinavia	Light rail
BEML/Rotem	Stainless steel metro coaches	India	Metro
Bombardier/Alstom	ET 422	Germany	Light rail
Bombardier	Itino	Germany	Light rail
Bombardier	Zefiro 380	China	Intercity/high speed
Siemens	Desiro	Europe	Light rail
Siemens	Desiro RA Be 514	Sweden	Light rail
Siemens	Inspiro	Russia/Poland	Metro
Siemens	Railjet	Austria	Intercity/high speed
Siemens	ULF	Austria	Trams

maintenance. Getzner polyurethane foams perform better than silicone foams in terms of creep behaviour and noise emission (caused by secondary airborne noise)."

If it proves impossible to isolate an entire carriage floor from vibrations, individual components or areas such as the driver's cab, first-class section or the toilets can be mounted elastically. "A tangible reduction in lifecycle costs especially applies when fitting the floor of the interior," says Gamsjaeger. "Plus, similar isolation prevents self-induced vibrations being carried from the toilets, air-conditioning or control boxes to other areas."

Fire protection

Getzner has designed its polyurethane material to meet flammability rating HL3 according to CEN/TS 45545-2 in its uninstalled state. "Increases in fire protection requirements worldwide meant that the regulatory standards also became more stringent, and this led to a reduction in the amount of plastics used," says Gamsjaeger. "This, and the increasing preference for lightweight construction and more favourable material properties, are the reasons for the growing use of fibre composites." The material's properties also make it suitable for floor constructions with underfloor heating. Classifications and fire testing for relevant ASTM standards are already envisaged, and partnerships with composite manufacturers are being sought.

BELOW: A cross-section of a typical floating floor construction

Getzner says other advantages of its materials include: simple processing; low construction height; light weight; resistance against water, chemicals and oils; long service life; ability to cut to different sizes; ease of cutting, laying and bonding; and the wide range available for various load ranges.

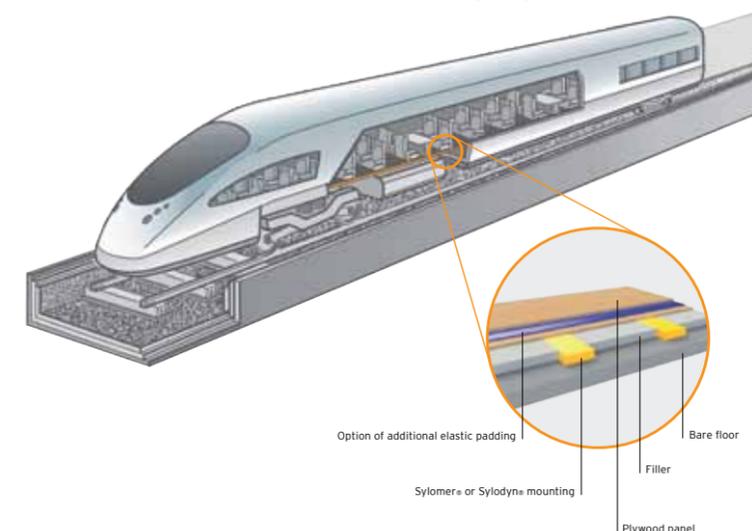
Collaborative work

Getzner Werkstoffe is one of the leading specialists in vibration isolation and has more than 40 years' experience in the rail, construction and industrial sectors. Its solutions are based on Sylomer and Sylodyn materials, both of which are developed and manufactured in Bürs, Austria. As well as its offices in Bürs and in Germany, Getzner has subsidiaries in Japan, China, India and Jordan, and distribution partners in 35 countries. The head office in Bürs is also home to the company's research and development operation. Every day, more than 300 specialists in the fields of physics, acoustics, construction, engineering, plastics engineering, chemistry and production and process engineering work to develop ways of meeting special requirements for vibration isolation.

Getzner advises carriage floor manufacturers on the selection of their materials, which also includes calculating deflection, natural frequency and insulation rates. In addition, Getzner prepares ready-made Sylomer and Sylodyn products on request, and can create, test and produce large quantities of customised substances.

The company is also a major distributor to other suppliers; numerous manufacturers of interior fittings, such as carriage floors, use Sylomer and Sylodyn in their products or floor constructions as vibration-damping components or elastic inserts. "Getzner is therefore able to deliver a finished product with guaranteed properties, making a decisive contribution to the development of an optimal overall solution using tried-and-tested materials," says Gamsjaeger. Indeed, Getzner has fitted out numerous trains to date.

Possible applications include the mounting of carriage floors, cabs, electronic equipment and raw materials such as steel wheels on freight trains. Customers include Alstom, Bombardier, CAF, China Northern and China Southern Rolling Stock and Siemens. ☒



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