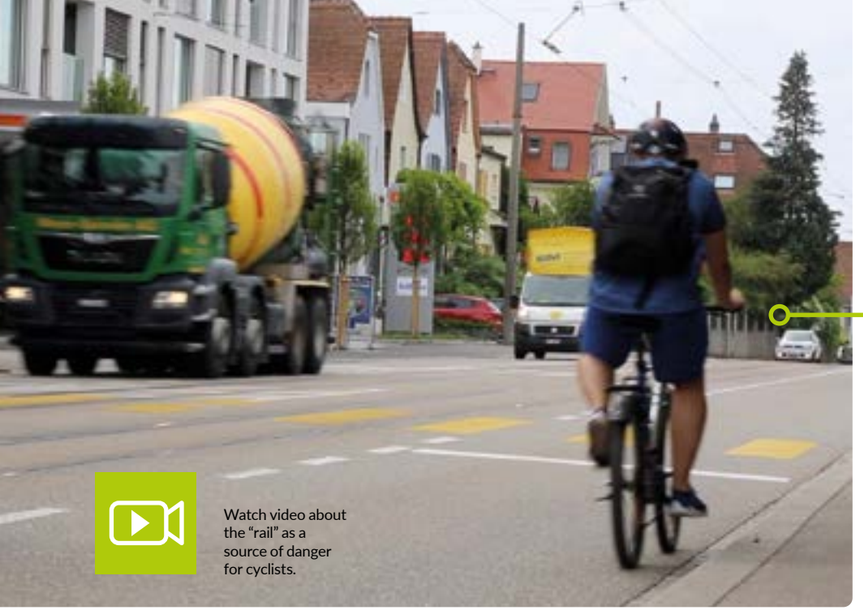
SEAL
ABLE
pioneers in profiles

SEALABLE VELOGLEIS

New development for bicycle safe rails



Watch video about the “rail” as a source of danger for cyclists.

SEAL ABLE

pioneers in profiles

Based on our Elastomer profile, we have developed a solution for rails that makes cycling safe, prevents accidents and city planner enthusiastic.

VELO MEETS RAIL
THE RAIL BECOMES SAFE FOR CYCLISTS

The University of Tennessee-Knoxville investigated accidents on a busy four-lane railroad road in Knoxville within two months of 2014. There were 13247 cyclist and 53 accidents, which corresponds to a rate of 0.4%. Around 50,000 vehicles drive around the Ernst-Reuter-Platz in Berlin (which regularly takes a top position in the list of accident hotspots). There are 334 accidents per year, which in turn corresponds to an accident probability of approx. 0.0018% or one accident per 55,000 journeys. This means that even a car accident hotspot is approx. 220 times safer than crossing tram tracks for cyclists.

Our „VeloGleis“ is a metal construction system with an extruded elastomer profile in its core. This profile fills the open groove.

The bike-safe track offers cyclists protection by preventing the bike from sliding in the groove of the rail. In addition, thanks to its surface properties, the profile reduces the risk of skidding in wet weather conditions and also offers pedestrians barrier-free access when crossing the rails.

We have taken this fact as motivation to develop our new patented “VeloGleis”. After several development projects, including one with the VBZ in Zurich, we have put together all of our findings, with help of FEM simulation and the participation of external partners, such as the company Künstler Bahntechnik GmbH, and created this currently unique system in the world.

3D view of the patented SEALABLE VeloGleis box construction system one-sided option.

WE ARE INNOVATION.

Together with you, we develop ideas up to product maturity and support you throughout the entire product life cycle.

WE ARE EXPERTS.

You benefit from established resources, structures, and know-how through a trusting customer relationship.

WE ARE REGIONAL-GLOBAL.

Regional roots combined with a world-wide network of long-term partners offer you reliable service on-site.

Watch video about solve the basic problem.

THE BASIC PROBLEM

If bicycles and trams intersect, serious accidents occur when bicycle tires get into the grooves of tram rails. Experienced cyclists know that they should never cross the grooves at an acute angle. At the last moment when they still have to watch out for the surrounding traffic, these cyclists are not immune to a fall either. In the 2020 accident statistics of the VBZ Zurich, a total of 39 out of 613 accidents occurred with the involvement of bicycle at the acute-angled track crossing. For E-bicycle s the count is 11 out of 158 accidents. The number of unreported cases is significantly higher.

Sealing the groove with materials, such as rubber or elastic filling compounds, has always failed, due to the fact that these materials have multiple influences to withstand. The available space changes enormously over the life cycle of the wheel and rail - overfilling and the associated destruction of the material is inevitable. On the other hand, the higher outside circumferential speed of the wheel is responsible for the fact that the filling material is cut and shifted in the longitudinal direction. Furthermore, crossings or bends in particular are a hotspot for two-wheeler accidents and are simple to avoid.

THE SOLUTION: THE VELOGLEIS FROM SEALABLE

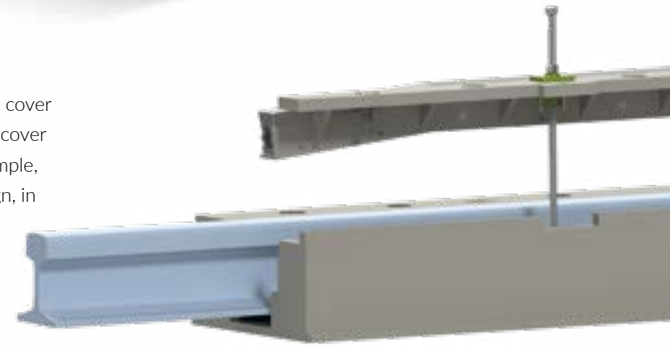
The VeloGleis is a specially designed metal construction system with an additional elastomer profile. This profile fills the open groove to enable safe driving and crossing for bicycles, strollers, or wheelchairs. A rail vehicle with wheels flange can continue to drive on the rail system without any problems. The wheel flange presses the filler profile into the groove chamber when it is driven over. The hollow profile channels and the groove chamber have sufficient free volume to accommodate the indented rubber material of the profile.
After being driven over by the wheel flange, the profile returns to its original shape due to its rubber-elastic properties and closes the rail groove again. The restoring force of the filling profile was chosen in such a way that it cannot be pushed down by bicycles or pedestrians on it.

A special rubber compound, which is resistant to mechanical loads and weather influences, ensures that the profile is highly wear resistant. Shifting of the profile by rail vehicle wheel flanges rolling over the system is prevented through fastening screws.
The metal construction system has an easy-to-use lifting device, which can be used for maintenance, cleaning of the system, changing the profile or even re-profiling of the rails without the use of heavy construction equipment, even during planned shutdown breaks. When using the double-sided system, it is also possible to replace the entire rail without any construction work. The construction of the system was deliberately designed so that as few special components as possible were used. Standard rail profiles as well as standard fastenings such as ribbed plates with SKL springs are used. All necessary attachments or connections, whether it is drainage or axle counters, are integrated at the highest level. The stray current isolation is done by fastening by isolators as well as with the proven RCS® system, which is also possible to combine with the VeloGleis.

Watch video about how the VeloGleis works.

COVER

The standard version of the “VeloGleis” is supplied with a metal cover with a checker plate look. The color, material and design of this cover can be individually adapted to customer requirements. For example, with a coating in a signal color or inconspicuous in asphalt design, in order to fit perfectly into the existing rail system.



LIFT CONSTRUCTION FOR EASY MAINTENANCE & CLEANING

Watch video about the lift construction.

01 | INSERT THE THREADED ROD

Loosen the screw connections of the cover to the box. Carefully insert the spindle rod equipped with lock and jack into the guided sleeve on the inside. Important: screw in advance several cover joints together.

02 | FIX THE THREADED ROD ON THE LID

Insert the jack and locking device in the recesses provided for this purpose. Fix with a 90 ° turn. The lift construction for lifting the lid is now ready.

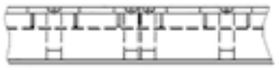
03 | LIFT UP THE COVER CONSTRUCTION

Then the cover is lifted up step by step up to the end position (approx. 200 mm above the top edge of the box). Important: Secure the lid from tipping and turning over.

ENDLESS TRACK

The rigid components of the VeloGleis such as the box construction are limited to a length of 18 to 24 m, due to transport and logistics limitations. Since longer track sections are sometimes necessary for different installation situations, a solution was created for all parts to be connected. Every element, regardless of whether it is a cover or box construction, already has a device to screw the individual sections together at the contact points. This means that there are no edges or steps on the surface. The rubber profile itself can be produced endlessly and therefore has no joint.

COVER JOINT

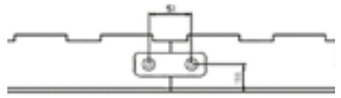


Side view

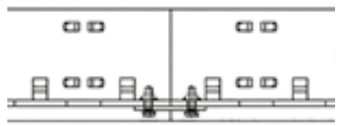
Top view

The cover has a prefabricated screw connection at the joint avoiding any step at the contact point for easy driving without obstacles.

BOX JOINT HALF-BOX



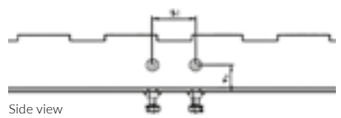
Side view



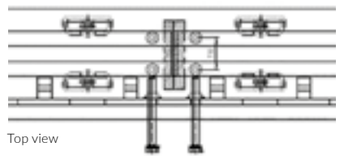
Top view

The half boxes are connected on the side of the box joint using a sheet metal and fixed with two counter screws.

RAIL JOINT HALF-BOX



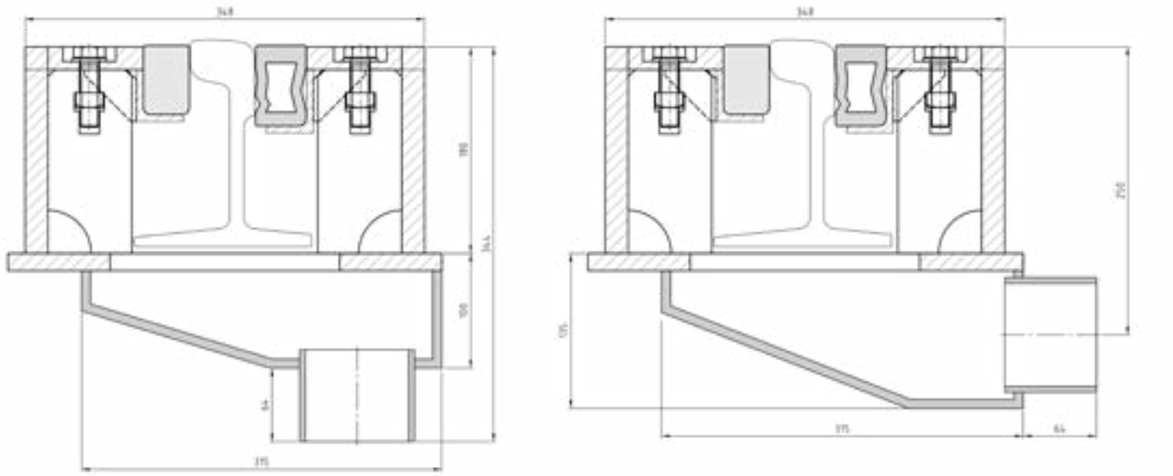
Side view



Top view

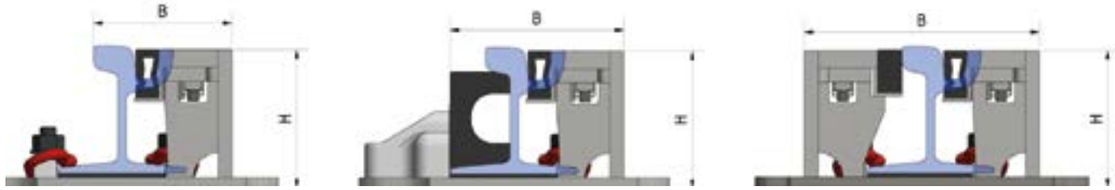
For easy welding connection to the adjacent rail adjustment and alignment screws are available in the horizontal and vertical direction in the half-box. This enables the rail to be brought into the correct position.

DRAINAGE



Drainage is necessary to prevent harmful water accumulation. Their task is to absorb and guide the water that flows into the track as quickly as possible. With the box construction of the VeloGleise, both horizontal and vertical drainage is possible, and the positioning can be freely selected in order to connect precisely to the existing sewage system. By using flushing openings, the system can be cleaned very quickly and easily. The openings are freely accessible without raising the cover.

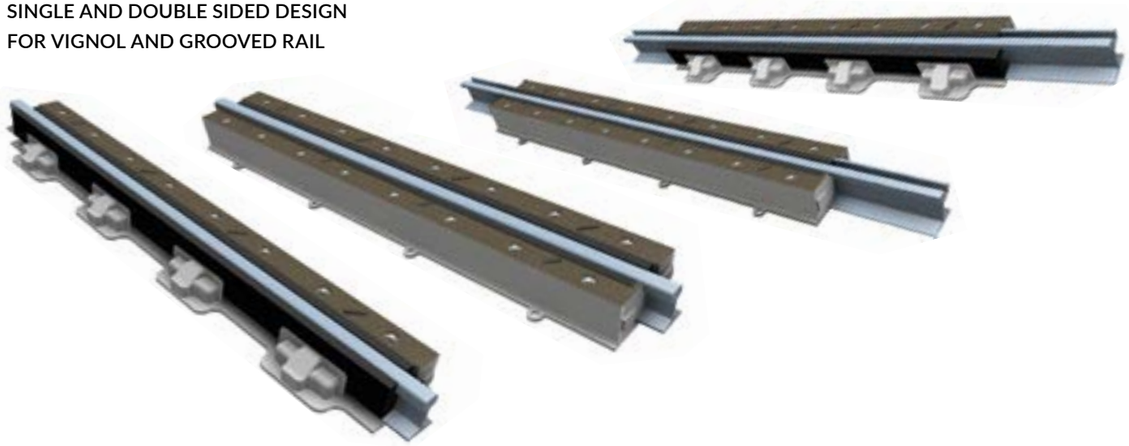
AVAILABLE SYSTEMS



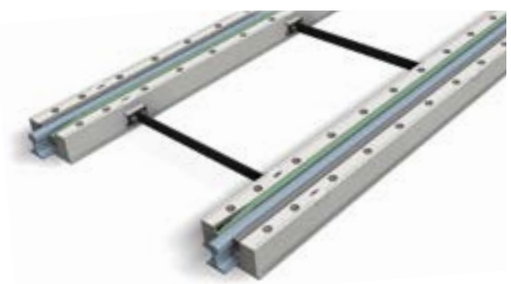
Thanks to its special construction, the VeloGleis is extremely flexible and can be adapted to all types of railways and common rail profiles worldwide, regardless of the overall length. Whether vignol rails or grooved rails, tie rod fastenings or sleeper tracks, narrow rail curves, crossings, and switches - there is a one-sided or two-sided version of our system for every possibility.

RAIL TYPE	ALL DESIGNS HEIGHT H (mm)	SINGLE SIDE COVERING WIDTH B (mm)	SINGLE SIDE KFE WIDTH B (mm)	DOUBLE SIDED BOX WIDTH B (mm)
49E1	180	215	255	355
54E4	185	215	255	355
60E1/60E2	203	220	260	355
59R1/59R2 60R1/60R2	195	195	240	335
51R1/53R1	145	195	240	335
57R1	197	210	250	350
67R1	195	215	250	355

SINGLE AND DOUBLE SIDED DESIGN FOR VIGNOL AND GROOVED RAIL



TRACK WITH SLEEPERS



TRACK WITH GUIDING RODS

VELOGLEIS ADVANTAGES AT A GLANCE

SAFETY AND FUNCTION

1

The rail system forms a completely closed surface for bicycles or pedestrians.

It offers additional space in the event that unwanted foreign objects (e.g., stones) have to be displaced.

After more than 850,000 rail crossings, our test track shows no damage in function and safety.

COST-SAVING THANKS TO STANDARD COMPONENTS

2

Normal rolled profiles can be used as rails in the VeloGleis.

The standard fastenings (ribbed plate & SKL) can also be used.

DESIGN

3

There are no rigid components in the conventional track channel.

The fastening of the Elastomer profile is outside the work area.

Drainage of the system is standard.

INSTALLATION SITUATION

4

Suitability for installation in smallest curves

Suitability for installation in points (branch track)

Suitability for installation in pull-out systems

UPKEEP AND MAINTENANCE

5

The system enables rails to be changed easily without complex construction work.

Mechanical flushing or cleaning of the system is possible through flushing openings.

Repairs to the rail by simply re-profiling / welding are possible.

APPROVALS

6

Elastomer according to DIN EN ISO 5470-2 (abrasion behavior)

Box construction according to DIN EN 1433, load class D400

Evidence of tracking, derailment report

Stray current insulation according to DIN EN 50162

Watch video about advantages of the VeloGleis.

CERTIFICATIONS

After all theoretical tests, simulations, and countless prototypes, the Basler Verkehrs-Betriebe (BVB) and the Pro-Velo Association in 2019 examined the bike-friendly track in detail with focus on safety, installation, maintenance, and costs. The submitted safety evidence and first real experiences show that the bike-friendly track also works safely and reliably for tram operation. At this point in time, the following evidence was already available:

Road traffic / box construction

- ✓ Box construction according to DIN EN 1433, load classes D400 / E600
- ✓ Stray current insulation according to DIN EN 50162 (According to customer requirements)
- ✓ Strength calculation according to DIN EN 124 - 1/3
- ✓ Examination of the grip coefficient according to DIN EN 124 - 1 (cover)

Rail traffic / Safety

- ✓ Safety against derailment of rail vehicles
- ✓ Consideration of the lane guidance

Environmental influences / wear

- ✓ Water absorption capacity
- ✓ Water resistance
- ✓ Freeze-thaw resistance
- ✓ Resistance to aging
- ✓ Weather resistance
- ✓ Resistance to lubricants
- ✓ Chemical resistance

There are more ideas in the pipeline for the future: How to integrate software for wear determination, detection of the state of the elastomer profile (depressed or relaxed) and offering a service „Velosicher“ implementing maintenance and care.

The interest in a functioning solution, especially for more demanding installation situations, is very high worldwide. Soon, the task is to process further approval procedures in even more countries to make the use of the VeloGleis even easier for all users.

SUMMARY AND OUTLOOK

Local public transport and individual bicycle traffic have been increasing in urban areas around the world for years. Forecasts predict an intensification of this development, especially against the background of increasing environmental pollution and discussed driving bans for internal combustion engines in city centers.

Inevitably, there will be isolated and parallel overlaps between rail and bicycle or pedestrian traffic. To reduce the associated dangers, practical solutions such as our bicycle-safe track system are required by accident researchers, traffic experts and interest groups.

The well-known problem of cyclists crossing rails, especially at acute angles, now has a solution - not just fictional, but reality. The VeloGleis is an opportunity for even more creative urban planning. The integration of two-wheeled traffic into a future urban environment, in which public transport and bicycles can act equally and safely next to each other and complement each other. Noise protection is another property of the system that should not be underestimated.
If there is such a solution on the market from now on, it is to be expected that it may even be made mandatory for hazard hotspots.
Thanks to the innovative VeloGleis, dangerous accidents at railroad tracks will hopefully soon be a thing of the past.

Watch video about Innovation Award and conclusion.

PARTNER

The implementation of the “VeloGleis” idea was only possible for us as a manufacturer of sealing systems, with Künstler Bahntechnik as a competent partner in the field of switch and track construction. The Künstler Bahntechnik GmbH with its many years of experience was able to bring ideas, competence and the high safety and quality demands into the cooperation. So we were able to meet the requirements of this innovation together and design a future-oriented solution over the years.

KÜNSTLER BAHNTECHNIK GmbH

With its headquarters in Hamm, Künstler Bahntechnik GmbH is not only active in the field of rail traffic and railway technology, but also in mechanical engineering.
The steel construction department offers solutions for many areas of application in steel and plant construction. For example, components are designed, calculated, and manufactured according to customer specifications.

More information about our partner at:
https://www.kuenstler-bahntechnik.de

Watch video about Künstler Bahntechnik.

INNOVATION AWARD 2018
Winner in the category Tradition & Future

THE VELOGLEIS WINS PRIZES

With the VeloGleis, we received the Thuringia Innovation Award in the category Tradition & Future in 2018. Up until now there have been neither financially nor technically feasible solutions for the permanent accident-proof filling of grooved rails in city centers, curved areas and switches that also enable rail vehicles with wheels flanges to drive on.

Compared to known rail fillers, with which the grooves are temporarily closed (e.g. for the duration of events such as bike races), our development can be installed permanently because it enables the passage of railway vehicles and then fills the groove again and makes it accident-proof.

With the extruded rubber profile as the heart of our bicycle safe system, we are continuing an old industrial tradition of rubber processing at the Waltershausen site. Where bicycle tubes were produced in earlier decades, we now extrude special profiles that enable safe cycling, especially in cities and metropolitan areas.

Unfortunately, we cannot continue the globally valued brand KOWALIT (KOmbinat WALtershausen In Thuringia) for tubular tires from Waltershausen, with which world championship titles were once won. But rubber products from Waltershausen should once again stand for safe cycling.

REFERENCE PROJECTS BASEL

In a first test phase, the system was put through its paces with a test track on the site of a construction company in Füllinsdorf / BL. The VCS and Pro Velo invited cyclists from Basel and the surrounding area to use the bike-friendly track riding with normal bicycles, e-bikes, recumbent bicycles, folding bicycles and with children's trailers and tested it under a wide variety of conditions - for example, when turning left, when cyclists have to pass a rail twice, with longitudinally parked cars in front of the cape stop, when wet or with leaves on the roadway.

The feedback from the test drivers on the VeloGleis was consistently positive - regardless of their own driving ability and the two-wheeler they were using on the test track. The track system proved to be easy to drive on even when wet and with leaves on the roadway and was perceived as safer when crossing the rails than tracks without rubber infill.

After an extensive assessment of the system by the specialist engineers at Basler & Hofmann AG, the Office for Mobility decided to build a test track under operating conditions. In spring 2021, the BVB-Basel commissioned the system at the Bruderholz stop. A demanding project around the renewal of tram line 15 in which the Bombardier Flexity 6/4 vehicles pass the stop every 7 ½ minutes. Based on previous counts, it is assumed that there will be around 1080 motorized vehicles (including bicycles) passing through in 24 hours. The stop is also part of a basic Velo route.

The approximately 125 m VeloGleis were approved for operational testing by the Federal Office of Transport in Switzerland (BAV) as part of the ongoing PGV. SEALABLE also uses the pilot in Basel to obtain general approval of the system in Switzerland.

REFERENCE PROJECT COLOGNE

Another ambitious project was realized with KVB in Cologne in 2020. The exit from a depot crosses a cycle path several times. Particularly noteworthy is the narrow curve in the area of a transition. The separate lane guidance consideration for safety against derailment also showed the unsurpassed possibilities with the VeloGleis to resolve even the most demanding conditions for the cyclists. Thanks to the many years of expertise of the Künstler employees, a construction solution that was safe and satisfactory for all parties was quickly found for the very narrow radius of 32 m.

REFERENCE PROJECT DÜSSELDORF

A large detergent manufacturer from the Ruhr area is relying on another advantage of the VeloGleis. The VeloGleis system is very easily adjusted, the system can be cleaned very quickly and easily. In the installation situations in the factory, there is a very high level of exposure to sand and other granular materials. These materials are drained into the VeloGleis by rain and other surface water and can be removed with simple cleaning work as part of the maintenance. All previously used solutions ultimately failed due to the amount of material trickling out of the freight wagons, which then led to the jamming of the groove lock.

More than fifty years of market experience provide the foundation for our range of high quality sealing solutions to meet every challenge in your project.

WE ARE EXPERTS IN THE FIELD OF PROFILES AND SEALING.

It all began more than 200 years ago with the production of fire hoses. Combined with product diversification, our expertise in elastomer profiles and know-how in processing various types of rubber have grown over the past 50 years.

Through various stations and ownership relationships starting with PHOENIX AG, ContiTech AG, later PHOENIX Dichtungstechnik GmbH and finally DÄTWYLER Sealing Technologies Deutschland GmbH, our organization developed into an internationally operating company. In 2018 we received the Thuringian Innovation Award in the "Tradition & Future" category for our product "Bicycle safe track", we also have 43 patents.

With the management buy-out in May 2020, SEALABLE Solutions GmbH now operates as a Thuringian company with a global network.

Our premise is not only global sales; above all, trusting and close contact with our customers and partners is our top priority. This means that our partnerships are sustainable and often include an entire product life cycle.

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