GETRAC®

The ballastless track system on asphalt
The pulse of the times

The key requirements placed on mainline rail arteries for the 21st century are for fast, safe, and cost-effective tracks. When it comes to the service life of these systems, operators are increasingly shifting their attention to total life-cycle costs. The most advanced technologies are essential in order to create not only maintenance-friendly, but also highly available track systems. RAIL.ONE responds to these challenges. With optimal system solutions for track systems for railways and urban traffic, and through its ongoing improvement of ballastless track systems, RAIL.ONE also effectively meets these challenges.

During the 1990s the technology of ballastless track systems underwent breathtaking development. Decades of stagnation in track technology gave way to numerous new rail track structures, many of which featured ballastless structures.

The use of asphalt as track-supporting layer soon came to play a key role in this development: logically, since only the material properties of asphalt allow ongoing improvement of track geometry over the track operation time. The GETRAC® system fully exploits this benefit, especially effective as it is for rail tracks. GETRAC® implements high levels of productivity in track-system installation as well as very short overall construction times – which in turn has favourable effects on the duration of traffic interruption and on track availability. As a result, the GETRAC® system offers an optimal cost/benefit ratio.

In 2004, the German Federal Bureau of Railways (EBA) provided official approvals, without speed limitation, for various track innovations in the form of GETRAC® model variations. This approval accordingly signifies clearance of GETRAC® for high-speed track applications as well.

The GESUR® systems are cost-effective, owing to high productivity in track installation and their very short construction times.

The way to connect the sleepers with the asphalt layer: recesses for the anchor blocks.
GETRAC® A1

GETRAC® A1 – with prestressed concrete sleepers
GETRAC® A1 is a non-ballasted track system with direct support of the track panel on an asphalt supporting layer. This configuration guarantees safe and permanent positioning of the track. This mode of construction accordingly satisfies all requirements for application in railway and urban-traffic situations. It can also be installed on an extremely cost-effective basis.

The GETRAC® A1 ballastless track system is characterised by solid track support that retains its high levels of quality and safety throughout the entire life cycle. These benefits became possible by development of a new technology for anchoring prestressed-concrete sleepers to an asphalt layer. The prestressed-concrete sleepers are installed onto the asphalt supporting layer and are permanently and elastically attached to this layer by means of so-called anchor blocks made of special high-strength concrete. The anchor blocks are designed such that the longitudinal and lateral forces from the traffic loads are transferred into the asphalt supporting layer without any displacement of the sleepers.

Fast and simple installation
As a result of decades of experience gained in the emplacement of asphalt layers in traditional road construction, installation of asphalt track-supporting layers with conventional road-building machinery is fully unproblematic for GETRAC® technology. Installation of the asphalt layers takes place in several layers by an automatically controlled, high-performance asphalt-laying machine guided by control cables. A ballast layer, or hydraulically bonded layer, serves as support for the asphalt layer above. The top layer consists of fine asphaltic concrete, the tolerance for unevenness is only ± 2 mm.

Installation of the track panels likewise takes place with conventional civil-construction equipment. GETRAC® also allows sleepers to be laid individually – or by means of prefabricated track sections, in order to reduce construction time. These options guarantee fast availability of the track system.
Alternative system cross-sections for the GETRAC® A1 ballastless track:

System cross-section without HBL ($E_{V2} \geq 120 \text{ mm}^2$)

System cross-section without HBL ($E_{V2} \geq 150 \text{ mm}^2$)

System cross-section with HBL ($E_{V2} \geq 120 \text{ mm}^2$)
Alternative system cross-sections for the GETRAC® A3 ballastless track:

- **System cross-section without HBL** ($E_{v2} \geq 120 \, \text{N/mm}^2$)
- **System cross-section without HBL** ($E_{v2} \geq 150 \, \text{N/mm}^2$)
- **System cross-section with HBL** ($E_{v2} \geq 120 \, \text{N/mm}^2$)

**Major advantages of the GETRAC® ballastless track system:**

- Stable and durable track geometry due to use the elastically sheathed anchor blocks to fix the sleepers in the asphalt layer.
GETRAC® A3

The latest and best-performance product from the GETRAC® family is optimal for ballastless track on embankments, in tunnels, and for high-speed applications.

**GETRAC® A3 with wide concrete sleepers**

The GETRAC® A3 is a track system with direct support of the special wide concrete-sleepers on a multi-layer asphalt base. The secure and permanent position of the track on the asphalt layer is granted by the secure bond of the individual asphalt layers to each other, and by the safe bearing of the pre-stressed concrete sleepers to the asphalt top layer. Anchor blocks contribute to elastic fastening of the wide concrete sleepers to the asphalt layer.

The great bearing surface of the wide concrete sleepers distributes the vertical loads on the asphalt layer in an optimal way and their heavy weight compensates for the uplifting forces affecting the track.

In addition to the long-term savings in maintenance, the GETRAC® A3 system is cost-effective owing to great productivity in laying the track.

Cross-section of the GETRAC® A3 ballastless track system in a tunnel

- Use of conventional civil-construction equipment, as for laying streets and tracks
- Pre-assembly of the anchor blocks and the rail fastening devices in the factory
- Great degree of mechanization and only few steps of work in laying the track panel
- Long life cycle with low installation costs
- Short installation times
- Possibility of cant up to 180 mm
- Great track stability and durability
- Unrestrained drainage of water from the track
- Fast availability of the track in case of repair
- General approval granted by the German Federal Bureau of Railways (EBA)