

TSB – Transport System Bögl Moving metropolises – rethinking local transport

Low-emission, reliable, attractive, rapidly expandable local public and freight transport – what was once a mere vision of the future is now becoming reality with the Transport System Bögl (TSB). With the newly developed maglev train, the Max Bögl Group has set an important building block for the mobility transition. The TSB is low-emission, generates virtually no noise and can also be implemented in densely populated cities thanks to its flexible and modular design. A forward-looking addition to existing systems for multimodal passenger and freight transport.

“The possible applications of the TSB have been investigated by the Federal Ministry of Digital Affairs and Transport (BMDV) in 2021 in the form of an independent study, certifying that the TSB represents an attractive alternative to conventional trams and underground and suburban railways in almost all applications”, explains Stefan Bögl, CEO of Max Bögl. Bögl adds: “In addition to passenger transport, we were also able to demonstrate the use of freight transport in the Port of Hamburg successfully last year.”

The train is fully automated, generates almost no noise, CO₂ or fine dust emissions and offers a demand-oriented solution with flexible cycle times. These advantages were also certified by the experts for Transport System Bögl (TSB) in the feasibility study conducted by the Federal Ministry of Digital Affairs and Transport in December 2021. “Due to the magnetic levitation technology we employ, there is no friction between the vehicle and the rail, neither when in motion nor when braking. This makes the system extremely quiet and wear-resistant”, explains Dr. Bert Zamzow, Head of TSB at Max Bögl: “Its aesthetics and flexibility also speak for application in cities. We do not require an overhead line and can implement the system with a slim, translucent track, which we can install at an elevation, at ground level or in tunnel constructions, depending on the situation.”

The test track at the company’s headquarters in Sengenthal is 850 metres long and offers all functions relevant in practice, including a maintenance centre and a set of points. The TSB has already made more than 150,000 trial runs here. Max Bögl constructed another demonstration line in Chengdu, China. There, the local transport system runs on a 3.5-kilometre route and already reached a speed of 169 km/h in the past year. In China too, the focus is on application in local transport. Marketing is being carried out by a local partner with whom Max Bögl concluded a licence agreement in 2018. Part of this agreement was the construction of the demonstration line, which was prefabricated with a modular design at Max Bögl’s headquarters in Sengenthal and transported to the Chinese metropolis by rail in over 650 containers.

The developers and engineers of the Max Bögl Group have been working on the Transport System Bögl since 2010 with the aim of offering a future-oriented local transport solution both for urban areas and for connecting rural areas to city centres. The development was financed from the Group’s own funds. The operating range is between one and 50 kilometres, with a maximum speed of up to 150 kilometres per hour. Depending on demand, the vehicle length for passenger transport may range from two sections (24 m long) to six sections (72 m long) and can thus transport up to 762 passengers per trip. With a minimum cycle time of 80 seconds, the TSB can thus move over 35,000 passengers per hour and direction.

Press contact

Andreas Rau
Product Manager
Transport System Bögl

Tel. +49 9181 – 909-15433
arau@max-boegl.de
Twitter: @maxboeglgroup

Max Bögl
P.O. Box (Postfach) 11 20
92301 Neumarkt i. d. OPf.

Industrial prefabrication for minimal construction times

The track consists of industrially prefabricated concrete elements manufactured in a state-of-the-art construction factory. Thanks to the fully flexible formwork, small curve radii of up to 45 metres and gradients of up to 10 per cent can be manufactured in the shell section. The subsequent machine finishing process achieves an accuracy within a tenth of a millimetre, which guarantees the high level of travel comfort. With its flexible routing parameters, the TSB can be integrated into almost all traffic corridors, and gradients in the terrain can largely be managed with recourse to tunnel structures. The track is standardised and produced in an efficient industrial process. The elevated construction allows for quick installation on site. This results not only in a much shorter construction time, but also in a considerable reduction in land consumption. Ground-level or underground routing is also possible. Unlike other maglev systems, such as the Transrapid, the TSB uses a “short stator linear drive”, thanks to which only passive components are installed in the track. All active components of the levitation and propulsion technology are integrated in the vehicle itself. This makes the infrastructure much simpler and more cost-effective. In a comparison of systems, the BMDV study showed that the investment costs of the TSB are at the level of a tram and far below those of underground and suburban railways. Moreover, the system’s low-wear operation yields economic advantages over its life cycle in the form of lower operating and maintenance costs.

“A decisive advantage of our system is the short time required for its implementation: thanks to the modular design, we only need a total of two years from project start to execution. Our customers also benefit from the fact that we supply everything from a single source and take responsibility for the functionality of the entire system”, explains Bert Zamzow.

Goods can also be transported efficiently and with low emissions

The TSB is currently running on the two lines in Sengenthal and Chengdu. A further demonstration line for freight transport was built and put into operation in the port of Hamburg in 2021 within just 4 months. The technology can be used for the low-emission, demand-based transport of both goods and passengers. The aim is not to replace conventional rail transport with long train units travelling long distances, but rather to provide a sustainable alternative to trucks in individual container transport. The TSB Cargo allows the fully automated, low-emission transport of containers on space-saving elevated lines. This enables capacities of 180 containers per hour, relieving road infrastructures in cities, ports and large logistics hubs. In addition to fine distribution between port terminals, the focus is also on connecting off-dock depots in the hinterland in order to make the last mile deliveries for truck transport even more efficient, allowing them to be received even before reaching the ports. The possible applications of TSB Cargo are currently being investigated in a study being conducted together with the Hamburg Port Authority.

Due to the temporary application for the ITS World Congress, the line was dismantled again at the end of 2021 and the components integrated into the test track in Sengenthal for further testing.

Current project planning

The BMDV study examined a possible application of the TSB at Munich Airport as internal ring traffic between multi-storey car parks, office buildings and terminals. Further project ideas for the TSB in passenger and freight transport also exist for use in North Rhine-Westphalia, Berlin and Schleswig-Holstein. “Our transport system is an economically viable and climate-friendly complement to

Press contact

Andreas Rau
Product Manager
Transport System Bögl

Tel. +49 9181 – 909-15433
arau@max-boegl.de
Twitter: @maxboeglgroup

Max Bögl
P.O. Box (Postfach) 11 20
92301 Neumarkt i. d. OPf.

conventional public transport and freight transport. We want to prove this as soon as possible with a pilot project in Germany”, explains Bert Zamzow.

You can find more information about Transport System Bögl at: www.transportsystemboegl.com

Summary:

Rethinking local transport

The growth of metropolises comes at the price of high building density as well as traffic, noise and air pollution. The Transport System Bögl is a new type of local transport system that, thanks to its magnetic levitation technology, is quiet, flexible, space-saving, low-emission and reliable. The prefabrication of the track using eco-friendly Bögl concrete allows the necessary infrastructure to be constructed quickly, economically, sustainably and from a single source.

About the Max Bögl Group

With about 6,500 highly qualified employees at 40 locations worldwide and an annual turnover of over €2 billion, Max Bögl is one of the largest construction companies in the German construction industry. Since its foundation in 1929, the company’s history has been shaped by innovative strength in research and technology – from customised individual solutions to overall solutions that are both structurally and ecologically sustainable.

Even today, the group of companies is employing forward-looking in-house developments that address issues of our time, such as renewable energies, urbanisation, mobility, and infrastructure, to implement solutions for the megatrends of our globalised world. With its many years of experience and competence in high-precision precast concrete construction to draw on, Max Bögl is also positioning itself as an important driving force in the development of innovative products, technologies and construction processes.

The company’s wide range of services and high level of value creation with its own steel construction and precast plants, state-of-the-art vehicles and equipment, as well as its own raw materials and building materials guarantee the highest quality. The use of BIM, lean management/production and standardised project management ensures schedule adherence and cost-effectiveness from the initial concept idea to the finished construction product.

www.max-boegl.de



Press contact

Andreas Rau
Product Manager
Transport System Bögl

Tel. +49 9181 – 909-15433
arau@max-boegl.de
Twitter: @maxboeglgroup

Max Bögl
P.O. Box (Postfach) 11 20
92301 Neumarkt i. d. OPf.