



Tunnel Segments



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Mobility is the hallmark of our society. The modern man is always on the move, whether for professional or personal reasons, whether by car, train or plane. Greater mobility therefore places increased requirements on more efficient infrastructure, even below the earth.

Underground transport infrastructures are the lifelines of modern cities. This is also the case for transport links between urban areas which are often underground. Tunnels therefore play a key role in providing smooth transport for people and their consumer goods.

In the future, underground solutions will also be the only possible approach for water supply and sewage disposal due to the limited space available in cities. This means that the need for tunnel constructions is likely to increase in this area. These solutions are notably supported by the development of high-quality technologies, such as the use of polymer concretes. Machine tunnelling is perfectly suited for meeting the stringent requirements associated with constructing a modern tunnel thanks to its high mechanisation and automation. The use of high-quality tunnel segments plays a key role here.

The corporate division of precast concrete parts has been a main focus in the Max Bögl Group's range of services since the start of the 1970s. The production of high-precision tunnel segments for tunnel construction began in the mid-1990s and is now an integral part of the product portfolio.

With seven prefabrication plants at sites in Neumarkt i. d. OPf., Gera, Linthe, Liebenau, Hamminkeln, Osterrönfeld and Mühlhausen, Max Bögl has considerable capacity and optimum distribution within Germany. Projects are handled domestically and abroad using mobile production facilities. The corporate group is one of the leading and most innovative representatives in the area of prefabricated construction. Thanks to our use of the latest IT solutions and multi-functional production plants, we are able to economically implement tunnel segments in all dimensions and degrees of difficulty.

The qualification of our engineers and technicians that we have gained over the years as well as logistics that have been thought out down to the last detail mean that we can guarantee our customers top quality and adherence to delivery dates. These requirements allow us to react flexibly to the demands of the market.

Also in the future we want to work in close collaboration with our customers for the good of our projects – true to our motto “Progress is built on ideas”.

Klaus-Jürgen Malcher
Managing Director for prefabrication plants





Modern

Tunnel segment construction





Machine tunnelling with reinforced concrete tunnel segments represents intelligent construction with proven cost and time savings. Shorter construction times, high quality, efficiency and precision are attributes that our developers and partners have treasured for a long time regarding tunnel segments.

Our corporate group has been producing high-quality concrete tunnel segments that have been continuously tried and tested under the toughest demands in road, rail and supply construction projects. The latest multifunctional production plants form the foundation for our high quality standards. Large storage areas allow for economic production utilisation and construction-compliant warehousing.

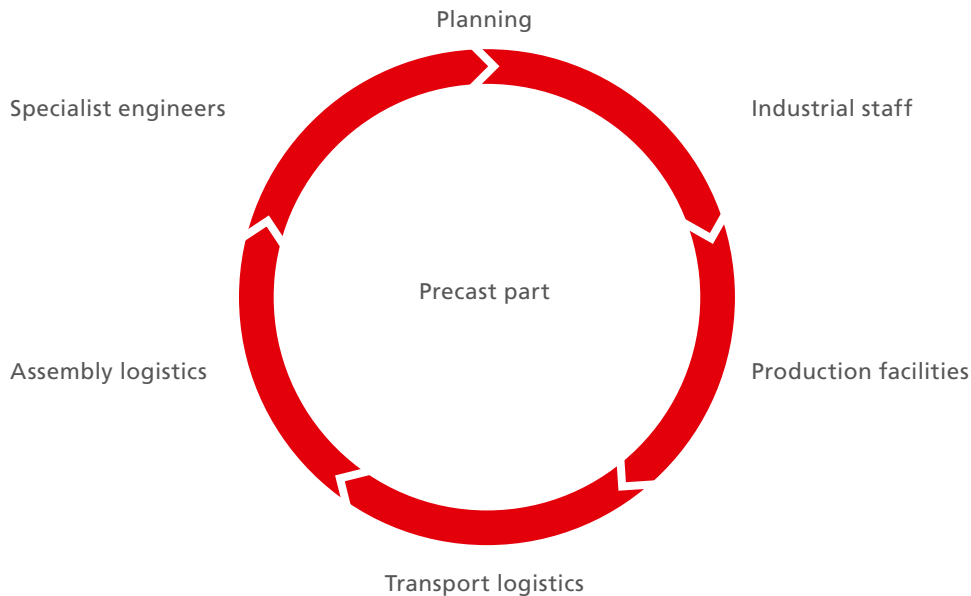
With an experienced team of engineers and technicians, as a powerful partner Max Bögl is always able to respond flexibly to the individual desires of its customers thanks to its general expertise.

Planning

Tunnel segments made of concrete have become indispensable thanks to their short construction times and the associated cost advantages for modern tunnel construction processes. The diversity of tunnelling construction jobs and construction challenges has led to a continuous development in the field of tunnel segments.

As well as the experience and creativity of our employees, the foundation of our success is also our ambition to continuously improve our products, production processes and production plants. Our developers and customers alike therefore benefit from both the corporate group's expertise and the top quality of the products.

Expert, comprehensive advice and conscientious planning are prerequisites for successful production. Our employees develop perfect technical and economic solutions for the respective construction project.







Certifications / quality standard

Max Bögl is synonymous with quality. The extraction of our own resources is therefore an important pillar of our corporate group. The continuous development of the building material concrete requires various tests, checks, inspections and measurements to ensure the high quality standards.

Highly qualified engineers are also researching high-performance construction material and the most advanced manufacturing solutions. The development of new concrete recipes and construction material procedures is also

part of the versatile range of activities provided by our own concrete laboratories such as the monitoring of the concrete quality – from production to installation in the formwork.

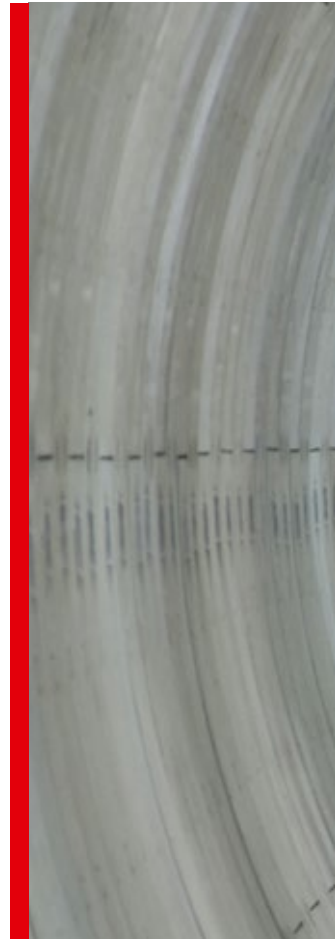
The supply of building materials is also subject to the same quality criteria as our own raw materials and construction materials.

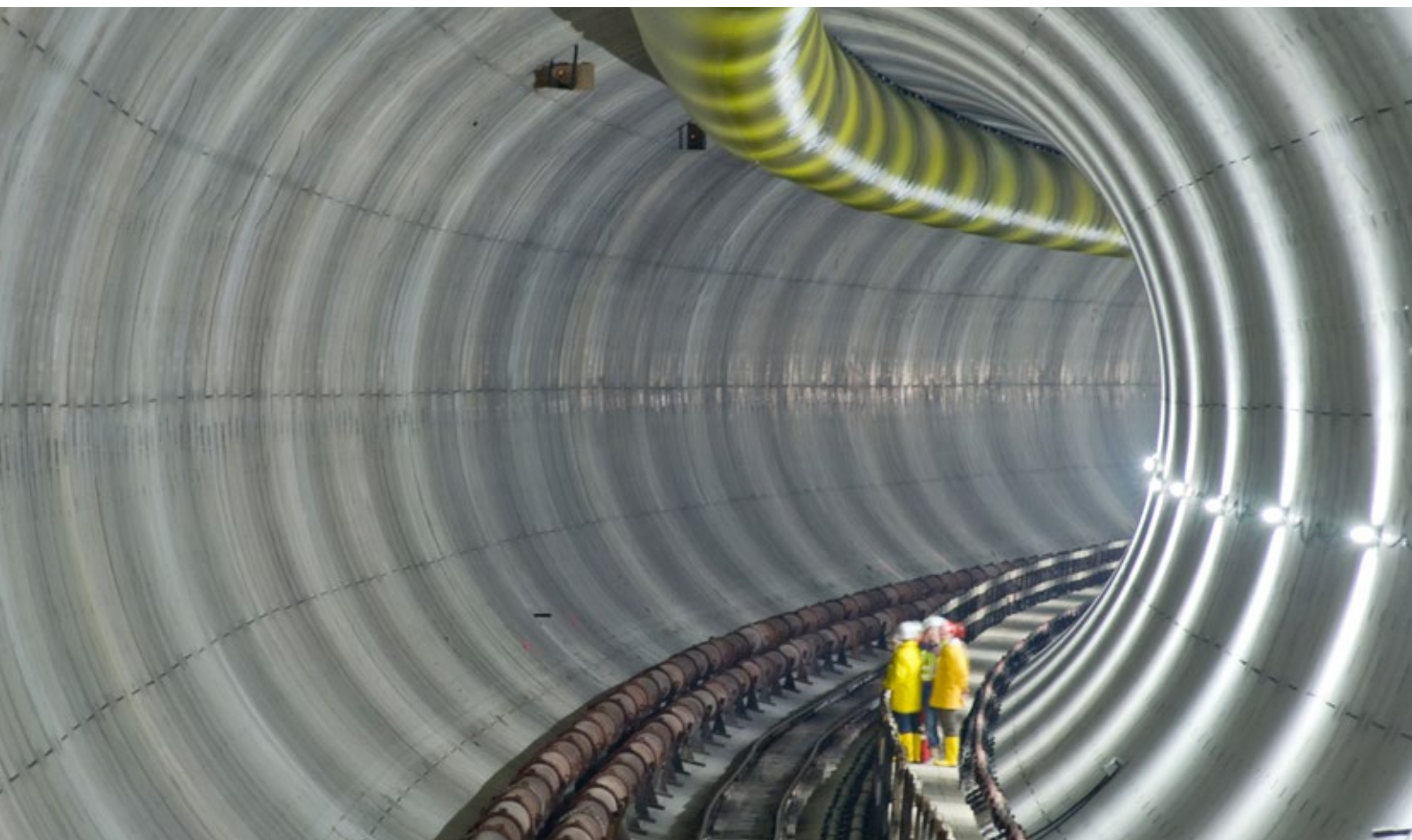
Precision technology

Tunnel construction

Perfection, innovative technologies and optimal production concepts today determine success or failure in the implementation of machine tunnel construction projects. The precision of the final product, the tunnel segment ring, is essential here.

The tunnel segments therefore feature the top precision requirements. With an accuracy of ± 0.3 mm, top-quality production plants, craft skills and engineering services are required on a daily basis in planning and implementation.









Processes

Automated production plants guarantee top precision for the production of the elements. The computer-based CAD and CAM control system ensures consistent quality and coordinates all manufacturing processes.

High requirements:

- precision
- efficiency
- timeliness
- fire protection
- durability
- functionality

Qualified design engineers and structural engineers in their own technical offices ensure practice-oriented and cost-efficient constructions – from advice, structural analysis and production to the final delivery.

The latest communication and data processing systems even allow for short-term changes to be made by customers during the planning stage. As the ultimate aim is always a high-quality construction – for the benefit of the business, the developer, planner and all those involved in the construction process.

Transportation logistics and assembly

We have our own powerful fleet equipped with the latest technology available for transportation. More than 300 trucks and a team of trained professional drivers and

reliable dispatchers ensure that our tunnel segments always make it to the final destination on time and economically even over long distances.





Due to the increasing demands regarding environmental protection and logistics, we organise and use water and rail transportation as well as conventional transport by road.

Continuous investments keep our fleet of vehicles and equipment at the cutting edge of technology.



Max Bögl Group

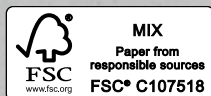
With over 6,500 highly qualified employees at 40 locations worldwide and an annual turnover of over 2 billion euros, Max Bögl is one of the largest construction companies in the German construction industry. Since its foundation in 1929, the company's history has been characterised by innovative strength in research and technology - from tailor-made individual solutions to constructionally and ecologically sustainable overall solutions.

With forward-looking in-house developments on topics of our time, such as renewable energies, urbanisation, mobility and infrastructure, the Max Bögl Group is already realising solutions for the megatrends of our globalised world. Based on many years of experience and competence in high-prec-

sion precast concrete construction, Max Bögl is also positioning itself as an important driving force in the development of innovative products, technologies and construction processes.

The wide range of services and the high level of vertical integration with our own steel construction, our own precast plants, the most modern fleet of vehicles and equipment as well as our own raw materials and building materials guarantee the highest quality. The use of BIM, lean management/ production and standardised project management ensures adherence to schedules and cost-effectiveness from the initial concept idea to the finished building product.

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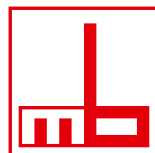


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MAX BÖGL

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