

forces in motion

MAURER SÖHNE
forces in motion



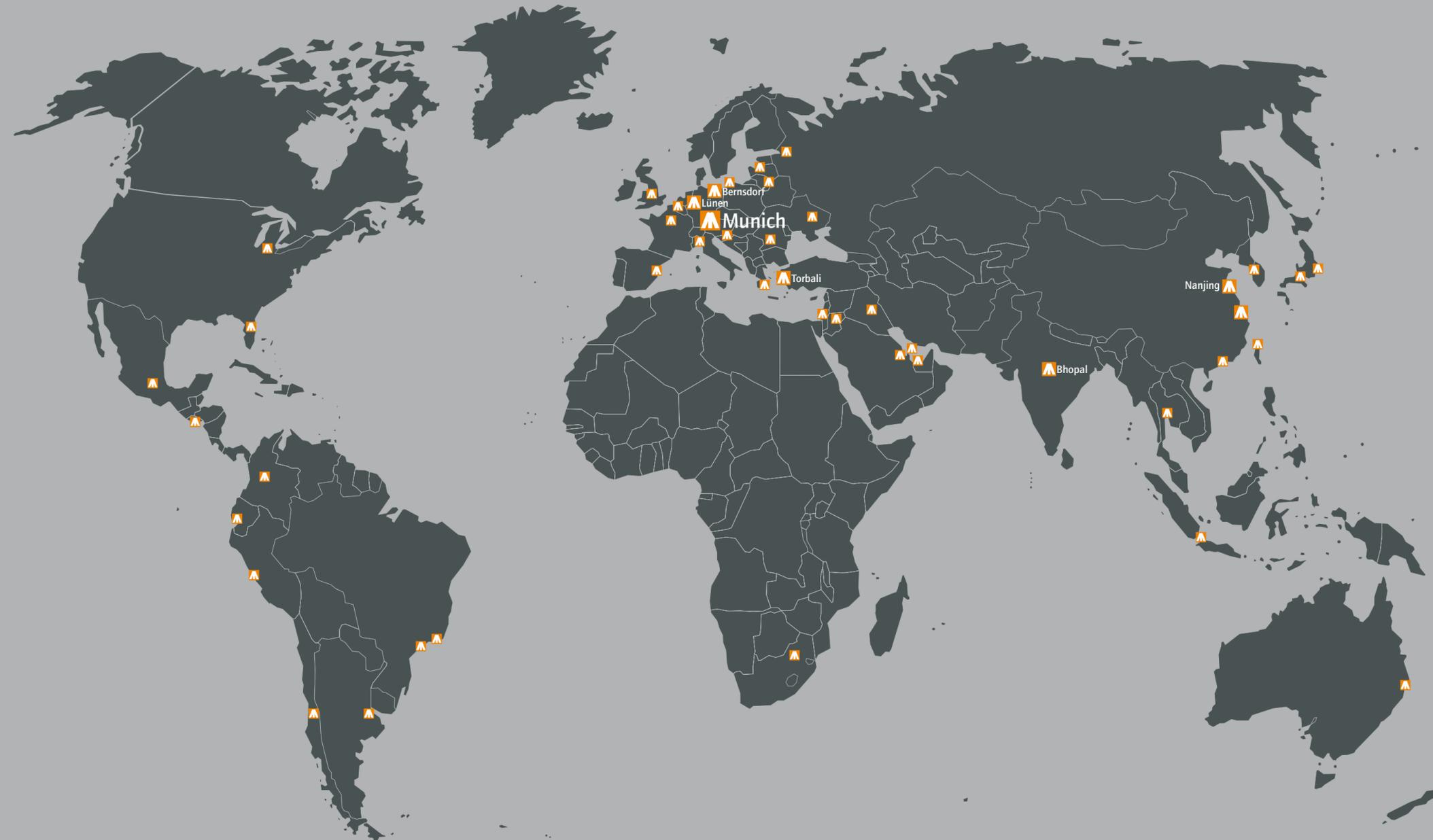
Since 1876



The Sony Center Berlin was created by Helmut Jahn in the late 1990s. The roof construction represents a spectacular engineering work. An expanded pavilion roof made of fabric webs is attached by means of tension anchors to a steel

ring that rests on the surrounding buildings. To safeguard this construction, 7 spherical bearings of different technical design have been installed by Maurer Söhne for transferring compressive and tension forces.

Representatives in more than 60 countries



Headquarters Munich
since 1876, 40,000 m²



Branch office Lünen, near Dortmund
since 1970, 7,500 m²



Branch factory Bernsdorf, near Dresden
since 1991, 12,000 m²



Subsidiary Torbali, near Izmir, Turkey
since 1999, 5,500 m²



Subsidiary Bhopal, India
since 2010, 5,500 m², majority-owned



Subsidiary Luhe, near Nanjing, China
since 2000, 12,000 m²



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For the BMW World in Munich we have engineered, designed and erected the entire steel construction. The large, almost self-supporting roof covering 25,000 m² rests on special MAURER spherical bearings

forces in motion

Maurer Söhne Group – forces in motion

Maurer Söhne GmbH & Co. KG was founded in Munich in 1876. We are a leading company in structural steelwork, mechanical and plant engineering. Three locations in Germany are staffed with about 500 employees. Moreover, we operate production sites in Turkey, China, and India. Our group of companies employs 900 staff members in total and is a global player in more than 60 countries worldwide. Our export share is 70 percent.

For three generations, the enterprise has been a fully family-owned company. Our corporate policy is geared to financial independence, continuity, and longevity. An excellent bank rating proves the successful development of our company, which is based on three basic principles:

Perfection

Making use of combined know-how that has emerged from more than 130 years of experience.

Innovation

Continuously setting new standards in development and quality.

Reliability

Perfectly fulfilling our contractual obligations.

In motion for more than 130 years

During our more than 130 year history, we have developed from a structural steelwork company to a specialist for dynamic applications in structures. The steel constructions at the beginning of the last century were followed by structures that presented new challenges to us starting in the 1950s.

This was also the beginning of our development towards becoming the leading manufacturer of structural protection systems. With our systems, movement in structures are controlled and become manageable.

More than 1,000 km of laid expansion joints and their installation into the largest bridge structures worldwide since 1965 have made us the global market leader in this field. Meanwhile, our structural protection systems include a complete assortment ranging from structural bearings to vibration absorbers to seismic devices and monitoring systems.

Another company division in which we have made our mark emerged from the combination of structural steelwork and movement: the field of track-bound transport systems and amusement rides.

As early as 1976, we delivered several kilometres of high-precision steelwork for a monorail railway, the so-called H-railway. In the 1990s, we took over a steel construction manufacturer doing business in the field of roller coaster construction and made it a company division of Maurer Söhne – this has grown into a major supplier to the leisure park industry.

High innovative power, excellent production and development capacities, comprehensive manufacturing competence, and a strong international orientation enable us to continue following the path we have taken with a degree of dynamism and enables us to further develop our markets based on "forces in motion".

Palace of Justice, Munich. We delivered and erected the complex steel construction of the glass dome in 1956



Maurer product divisions

With consistent core competencies in technology and leadership in markets with motion.

We have a good command of the interplay of forces and movements in structures through in-house developed and produced products. We do business in three product divisions: Structural Protection Systems, Transport & Rides, and Structural Steelwork.

We develop, produce and install consistently customised and innovative solutions in all product groups. In doing so, our experience over decades, the large scope of competences, and the close interlocking between development and production form the basis for creating unrivalled solutions.

Structural Protection Systems

Our products ensure the avoidance of damage in structures resulting from forces in motion.

For this purpose, load transferring components are produced that protect structures against overstress (by motion). Monitoring of forces and movements provides additional safety.

Product groups are:

- Expansion joints
- Structural bearings
- Seismic devices
- Vibration absorbers

Transport & Rides

We make use of forces in motion to create experiences. At our subsidiary, Maurer Rides, we produce a variety of different turn-key structures with complex dynamic characteristics as well as motion-absorbing structures for leisure facilities.

Product groups are:

- Roller coasters
- Amusement Rides
- Passenger transport systems
- Tracks for transport systems

Structural steelwork

This division completes our product range and guarantees our partners and customers flexibility in implementing innovative ideas.

Our core competence is planning and production of:

- Dynamically stressed structures
- Special constructions
- Steel chimney stacks

*Football stadium
"Allianz Arena",
Munich,
96 MAURER
spherical bearings
5,500 kN and a
movable sun and
noise protection
roof covering
34,000 m²*



Structural Protection Systems

Sutong Bridge across the the Yangtze river, China, span 1,088 m with expansion joints MAURER DS 2600, ranking among the largest ever manufactured transition constructions. 200 MAURER cable dampers protect the cables, which are more than 500 m in length, against vibrations.



1. Ponte 25 de Abril, Lisbon, Portugal, swivel joist joints DS E 2480/3960 F with 1,600 mm longitudinal and 150 mm traverse motion in the case of earthquakes + 8 spherical bearings à 16,000 kN ± 800 mm, v = 15 mm/sec sliding path 11,000 m/year

+ 4 stainless steel lift-off bearings

2. Low-noise modular expansion joint type XL 400

3. Pedestrian bridge Pedro Arrupe (Avenida Abandoibarra), Bilbao, Spain, 15 mass dampers 1,581 kg – 2,777 kg

4. TGV-Méditerranée, Avignon, France, 87 pot bearings: 10,000 - 43,300 kN ± 320mm movement, 12 of these bearings having vertical force measurement

5. Serebrianniy Bor, Moscow, Russia, hydraulic dampers 1,900 kN ± 1,300 mm, MSM spherical bearings, swivel joist joints, girder grid joints

6. Harilaos-Trikoupis Bridge (Rion-Antirion), Greece, swivel joist joints DS E 2480/3960 F with 5,010 mm longitudinal and ± 2,600 mm traverse motion in the case of earthquakes

7. Akropolis Museum, Athens, Greece, 94 SIP isolators (MAURER Sliding Isolation Pendulum), 13,990 kN ± 255 mm movement

8. Berlin main station, Germany, 123 spherical bearings with characteristic super-imposed loads up to 25.000 kN with 33 uplift load bearings lift-off forces up to c. - 2.450 kN

9. Neva Bridge, Russia, lift-off spherical bearings (service traction forces) with MSM (MAURER Sliding Material)



Transport & Rides

SkyLoop XT 450 "Abismo", Parque de Reunidos, Madrid, Spain



1. X-Car Coaster with vertical lift and Non-Inversion Loop

2. Spinning Coaster "Salama" with ride figure Halfpipe, Linnanmäki Park, Finland

3. SkyLoop "X-Coaster", Magic Springs, Arkansas, USA

4. X-Car Music, roller coaster car with complete multimedia equipment

(individual choice for music, video, light)

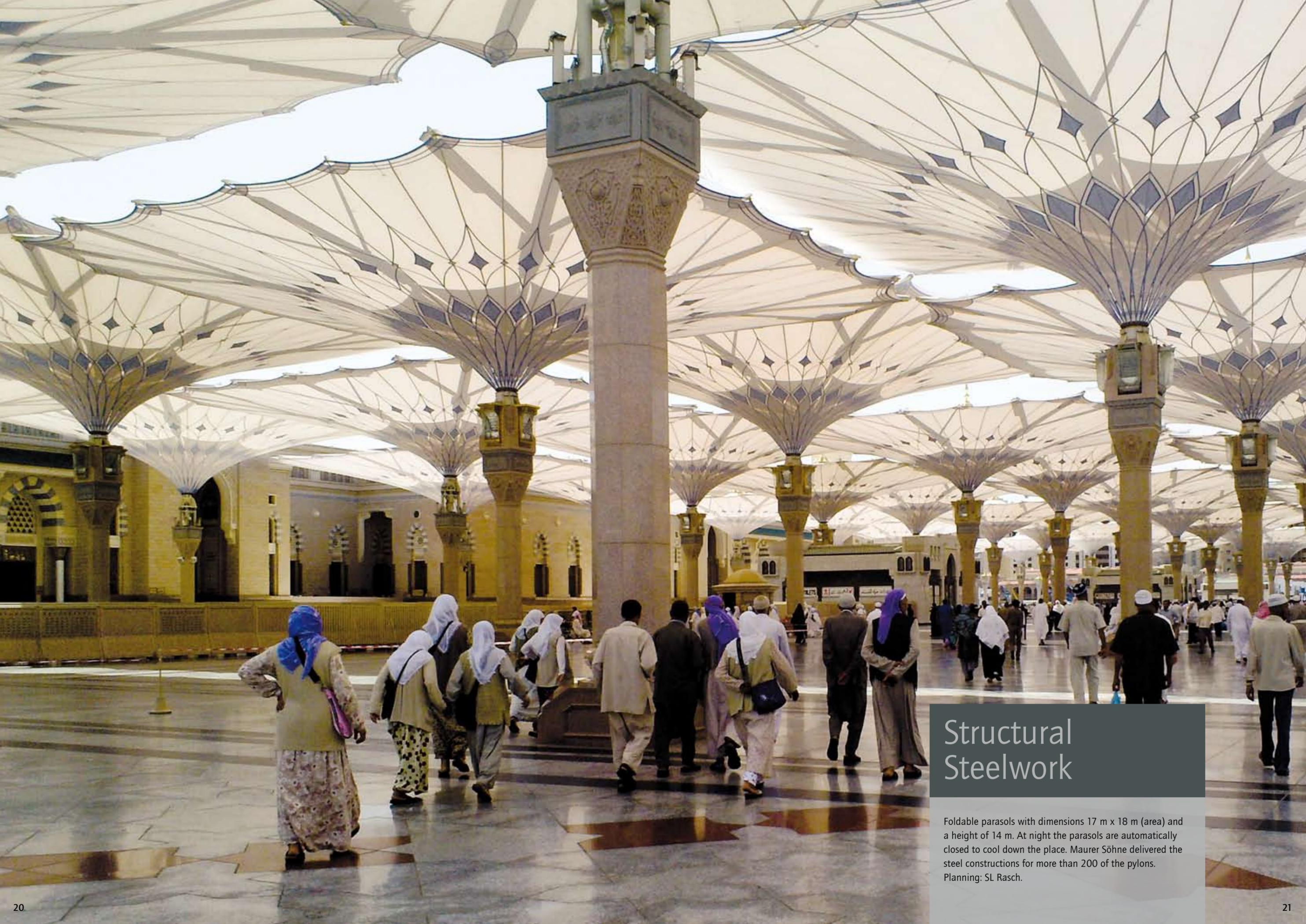
5. Racing Coaster "Fiorano GT Challenge", Ferrari World, Abu Dhabi, UAE

6. Theme-related Spinning Coaster SC 2000+ "Crush's Coaster", Disneyland, Paris

7. X-Car Vertical XV 2000 "G-Force", Iraq

8. Spinning Coaster "Tarantula", Parque de Reunidos, Madrid, Spain

9. X-Car Launch Coaster "Formule X" Familiepark Drievliet, The Netherlands



Structural Steelwork

Foldable parasols with dimensions 17 m x 18 m (area) and a height of 14 m. At night the parasols are automatically closed to cool down the place. Maurer Söhne delivered the steel constructions for more than 200 of the pylons. Planning: SL Rasch.



1. East Winter Garden, Canary Wharf, London



2. Airport Munich, Terminal II, European Steel Design Award



3. Horizon observatory, Halde Hoheward, Ruhr area, two steel arches with a radius of c. 45 m for supporting sky watching

4. Artwork "Golden Ladder" in the Forum Duisburg, height: 65 m, coated with gold leaf



5. Neuland Bridge, Leverkusen, pedestrian bridge with a length of 160 m in double-curved latticed framework

6. Stack equipment with vibration absorbers, Braunschweig

7. Test rig for passenger airplane, Munich, including 54 whiffletrees for accommodation of hydraulic cylinders

7. Test rig for passenger airplane, Munich, including 54 whiffletrees for accommodation of hydraulic cylinders





forces in motion

Powerful production

Welding is a decisive core competence for manufacturing of our products. Our comprehensive range of machinery varying from CNC machines for cutting and mechanical machining of components of various dimensions to special equipment for elastomer processing enable us to achieve a highly vertical range of manufacturing and to make direct use of extensive production know-how.

Specially developed special appliances combined with state-of-the-art laser measuring technology enable high-precision manufacturing of a variety of different structural shapes. We pay special attention to the meticulous application of paints, where we use hot spraying technology for high-quality coating. To achieve a perfect surface, we go far beyond the normal standards for this line of business by sandblasting right before painting. Our products are completed in spacious assembly halls where we execute all functional tests as well as careful final inspection and testing.



Boundless
High-tech

Technology for forces and motion

Focusing on our strong points is the key to our success. Among these is our innovative power making us a technology leader in our markets. It enables us to quickly develop customised solutions in a practice-oriented manner in close cooperation with our customers thus helping to create technological progress.

As a worldwide leading specialist for the interplay of forces and movements in structures we place emphasis on in-house development and manufacturing. We cover supplementary know-how in electronics or elastomer processing in-house or outsource the development to our network of high-performance partners.

Moreover, we cooperate at regular intervals with universities in research projects that are funded by German and European authorities. An impressive number of patents and patent applications results from this intensive cooperation.

A prominent feature of our technically perfect solutions is the fact that they are not only outstanding speaking in terms of technology but also set standards in design. We are particularly proud of international prizes we have been awarded for our product design, like reddot or IDEA.

For each project, we have the ambition to offer the best possible solution. By combining experience, know-how and creativity, we maximize customer benefit and thus often arrive at surprising solutions pointing the way to the future, which we intensively foster in-house.

To us, high-tech means to overcome boundaries and to keep an eye also on developments outside our normal line of business in order to be able to promptly make use of upcoming technology leaps. This is the only way to maintain our position in technology.



Top: Use of high-quality production technology, the picture shows CNC portal milling machine for dimensions up to 2,500 x 3,000 mm

Bottom: Measuring the machine construction components of a drive unit

Cable dampers on the Eilandbrug near Kampen, The Netherlands. Adaptive magneto-rheological dampers adapt the damping parameters autonomously to the force currently required using electronics.

Setting forces in motion in projects

Efficient project management is the basis for customer satisfaction. It is irrelevant to us whether we deliver components for a few thousand euros or whether we undertake a large scale project going into several multiples of ten million euros. You are in the focus and we include you in all processes.

We ensure by intensive communication that our solutions meet your requirements. This way, we avoid creating errors during the planning stage. We keep this close contact with you during order processing as well, this being the only way to quickly incorporate technical changes or changes in the time schedule without creating unnecessary costs.

Our integrated, load-oriented production planning system guarantees the flexibility required for this purpose. With the help of this system the entire order is guided through the production process with very short cycle times taking into account the most recent occurrences.

The larger the project, the more efficient is our network competence having grown over many decades. We quickly include necessary know-how in our project team. This way, we combine for you our high performance project management with a highly qualified team.

Each member of the project team has experience developed from hundreds of projects over time. Experience that we have recorded in a unique knowledge base independent of the individual. For you, this is the guarantee of specialist knowledge in every stage of the project, from planning, manufacturing, transport, erection/assembly, or commissioning to services after order processing like after-sales service, spare parts supply, and retrofitting.

Our top priority always remains on-schedule delivery of the expected quality. Although we cannot completely rule out difficulties, our goal at the end of the project will be at all times: worry-free satisfaction.



Top: Maurer Söhne staff preparing the dispatch of a MAURER swivel joint

Bottom: Erecting of a SkyLoop sliding rail at an altitude of 50 m

*Millau Viaduct,
France,
under construction.
Eiffage CEVM/
Foster + Partners/
D. Jamme*





Precision in space

Movement to highest quality

Our products are subject to the highest demands regarding safety and reliability. A consistent focus on quality and a comprehensive quality management scheme, certified according to ISO 9001, ensure strict compliance with even the most highly sophisticated standards in all fields from engineering to manufacturing to assembly, erection and commissioning.

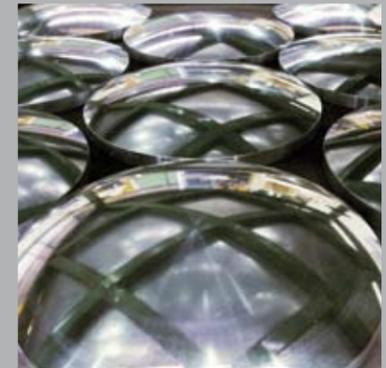
Our definition of quality does not only include careful execution of all tasks incurred but also continuous improvement of our workflows and methods. For example, the development of special appliances and measuring systems enables manufacturing of highly complex tracks in three-dimensional space to a hitherto unrivalled degree of precision, which you can experience during every ride on a roller coaster of our design.

Decades of experience and close cooperation and teamwork between development, engineering, and manufacturing continuously result in new proposals and ideas for optimising our production processes and for making the design of our products more technically mature and more reliable. An efficient complaints management system for both in-house and externally detected quality deviations results in immediate analysis and remediation and in the introduction of sustainable improvement measures.

Thanks to externally monitored manufacturing approval procedures as well as certification according to European product standards and approvals, respectively, we have been authorised to use the CE label for all products being subject to the regulations as stipulated in the European Building Products Guideline. Further international standards like, for example, US-American or Chinese certifications are covered due to direct cooperation with the approval authorities.

We take into account the ever increasing significance of detailed quality documentation in a comprehensive manner. The traceability of every single component in regard to material batch and manufacturing staff involved is ensured by a comprehensive documentation system. Detailed technical product documentation and detailed manuals supply all information needed by customers or approval authorities.

As a supplier of premium products, it is our permanent demand to strive for top performance for our entire range of products and services.



Top: MAURER MSA® sliding alloy bearing surface

Bottom: X-Car commissioning using standard dummies

Non-Inversion Loop, complex, highly twisted ride element

Making a difference together

Those who develop products and are able to work in markets that they are enthusiastic about look forward to every new project, since every project is different and presents new challenges. Thus not only our know-how keeps growing, also our employees continuously further develop their skills. We support them by offering programmes for personnel development and advanced training.

Working together strengthens the team and keeps it closely embedded in the company. This can be seen from the low fluctuation and the job tenure that is above average with our employees. Our high demands on their willingness to perform generates a momentum in the team allowing each individual to develop to the best of his/her potential.

Rapid developments in our markets calls for putting the existing into question and for continuous improvement. We give our employees any room they may need for thinking beyond the day-to-day and for setting things in motion through new ideas.

Thus innovation becomes the mainspring

of our activities and the basis for the continuing development of our company.

Whether during a ride with the most recent roller coaster or on site on an international large-scale construction project: Our products are a real experience. Thanks to our employees being full of enthusiasm for their tasks, they are motivated to optimise customer benefit by devising special solutions and efforts and to make the "impossible come true" during the project.

This is why enthusiastic employees are our best prerequisite for ensuring enthusiastic customers. Our objective is to achieve both. Our product range and our position in the market are the basis, thinking in the long term and striving for perfection are our tools.



Top: Marina Bay Sands Hotel, Singapore: 17 MAURER Spherical Bearings and 1 MAURER Tuned Mass Damper

Bottom: Hoisting-in of a R-Car for starting the commissioning phase of the Launch-Coaster "Fiorano GT Challenge", Abu Dhabi

Spinning Coaster SC 3000 "Tarantula", Madrid.





Acting
responsibly

Sustainability with forces

Our products in the field of structural protection systems increase the lifetime of structures and make outstanding architecture come true, since our expansion joints and bearings protect against harmful dynamic influences with the lowest possible impairment of the structures and the environment. Moreover, our expansion joints reduce noise emissions and our innovative MSM® bearings reduce the cost of building materials and construction effort thanks to their small dimensions.

We also substantiate the high significance of sustainability in product design in the field of Transport & Rides. Here we make a contribution to more environmentally friendly recreational activities and mobility through recovery of braking energy, low-power drive units and noise reduction technologies.

With our non-commercial foundation, Maurer Söhne, we support basic research in the field of technical dynamics by making awarding prizes with significant prize money for the promotion of young talents.

*Tsing Ma Bridge,
Hong Kong.
MAURER products
support sustainable
economic activities,
e.g. through longer
lifetime of structures,
lower consumption
of resources or
reduction of noise
emissions.*

We consider the certification of our environment management system according to ISO 14001 an obligation to reduce the consumption of resources. For example, we have changed over our entire production facility in Munich to community heating and use the hall roofs at all our world wide production sites to generate solar energy.

Low accident rates at our production and assembly facilities prove the success of our efforts to enhance safety at work and staff training. Our next step will be the certification of safety at work according to OHRIS/OHSAS 18001, a further step towards being a company that faces up to its responsibilities at all times.

All measures we take have one objective in common: to further develop our leading edge in all fields. The extension of our integrated management systems gives a good example. It focuses on health management in the social sector, energy management according to ISO 16001 in the ecological sector and risk management in compliance with ISO 31001 in the economic sector.



Top: MAURER noise-reduced driveway expansion joint

Bottom: MAURER MSM®, a patented sliding material for bearings in structures with special performance features

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Since 1876



MAURER SÖHNE
forces in motion

*Forces in motion:
transportable Giant
Wheel with a height
of 60 m, Wheels of
Excellence,
Bussink Design*





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