

Structural Protection Systems



MAURER SÖHNE
forces in motion



Since 1876



Structural Protection Systems



Structural Steelwork



Amusement Rides

Maurer Söhne GmbH & Co. KG, founded in Munich in 1876, is one of the leading companies in the field of structural steel engineering, mechanical and plant engineering. There are three German locations with approx. 500 employees and affiliates or agencies, which are spread in more than 50 countries all over the world. Our export rate reaches 70 percent.

The company separates into three independent product lines.

Innovation by experience

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Success of the enterprise is based on two pillars: Tradition and innovation.

- **Tradition** – Maurer Söhne displays more than 130 years of experience, demanding technical know-how, and a competence arising from continuity.
- **Innovation** – the keynote of Maurer Söhne: only those continuously setting new benchmarks in product development and quality will win excellent employees and keep close to the market.

In other words: The work force at Maurer Söhne consists of the metalworker as well as of the design engineer or the commercial project manager. And Maurer Söhne is always one step ahead.

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Bound by quality

Quality of Maurer Söhne is at top level:

- Quality management system certified acc. to DIN ISO 9001
- Environmental management system certified acc. to DIN ISO 14001
- Certificate for execution and constructor's qualification of steel structures acc. to DIN 18800-7, class E
- Member of the quality association „Gütegemeinschaft Konstruktiver Stahlbau e.v.“
- Certified manufacturer of CE-marked products

The customer is always right

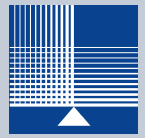
A high level of process optimized performance allows a customer-oriented handling in the sense of economic efficiency, loyalty to contract and schedule effectiveness.

Maurer Söhne Foundation

Beyond the day-to-day operations science and research have a special rating. The „Maurer Söhne Foundation“, a nonprofit foundation under private law, supports research and promotes awards in the field of technical dynamics.



Assembly of a spherical bearing for loads up to 131,000 kN in the historical hall 1 of Maurer Söhne



Maurer Söhne is global market leader in the sector of structural protection systems, to which belong five product ranges.

Expansion joints

Structural bearings

Seismic devices

Vibration absorber

Monitoring

Forces in action

MAURER structural protection means to avoid damages caused by structural movements by using suitable devices. Risk is caused by

- location (earthquake),
- climate (wind, rain, storm, temperature changes),
- service (traffic, load) or
- the structure of the building itself (height, length, slim architecture)

And not very rarely these endangering potentials affect each other.

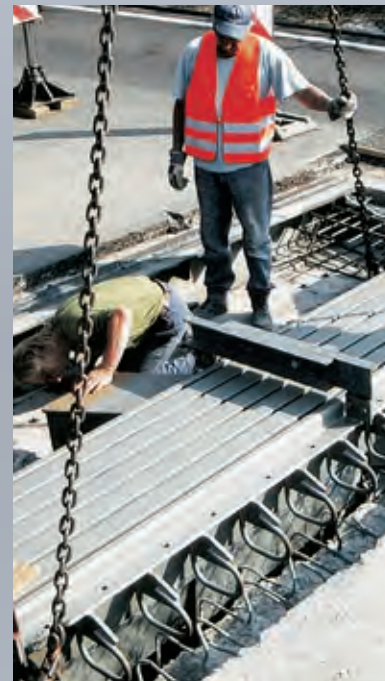
Technological pacemaker

Maurer Söhne disposes of comprehensive and unequalled competences to develop, manufacture, install and supervise effective protection devices also for complex structural movements. For now four decades our company has been technological market leader and decisively enhances structural protection by innovations.

- **Know-how**
Individual, mostly patent-protected developments for special demands, if required provided with all imperative tests and constructional regulations as well as technical approvals.
- **Research**
Constantly various international research projects together with universities and industrial partners, partly sponsored by the EC, frequently under the direction of Maurer Söhne (e.g. EC project „SPACE“).
- **Associations**
Member in voting professional associations, e.g. VHFL (Vereinigung der Hersteller von Fahrbahnübergängen und (Brücken)Lagern = Association of manufactures for expansion joints and bridge bearings), ASSISI (Anti-Seismic Systems International Society) or DGEB (Deutsche Gesellschaft für Erdbebeningenieurwesen und Baudynamik e.V. = registered German Corporation for seismic engineering and structural dynamics).
- **Standardization**
Internationally participating in standardization of structural protection systems by cooperation in respective technical committees and expert groups, e.g. CEN, EOTA, DIN, DIBt.

Service competence

Customers can always rely on our comprehensive competence. Maurer Söhne manufactures, supplies and installs high-quality products and in addition offers consultation, dynamical structural analysis, component tests and inspections.



Installation of a MAURER expansion joint by qualified staff of Maurer Söhne



Expansion Joints



Harilaos-Trikoupis-Bridge (Rion-Antirion), Greece

World's largest swivel-joint expansion joint with up to 5 m longitudinal and also lateral movement capacity in case of seismic events. A fuse box (predetermined breaking device) protects the structure during earthquake and maintains the serviceability of the structure at least for emergency vehicles.

Noise protection of modular expansion joints by means of rhombic steel plates



MAURER products

■ Modular expansion joints

Watertight lamella joints of type girder grid, swivel joint and XL are made according to the demand of road bridges.

■ Single seal expansion joints

Watertight expansion joints with various strip seals and anchorage systems for road, rail and structural engineering.

■ Optional extras

Additional devices for various demands, e.g. noise protection for modular expansion joints, fuse box for serviceability and protection of the structure in case of seismic events, readjusting devices or stainless hybrid edge profiles.

For many decades MAURER expansion joints have been the brand name for this product range. The quality of waterproof and maintenance-free MAURER expansion joints, which are made of company-owned special components, sets standards as to function and durability. Intense research and development as well as numerous technical approvals (e.g. general approval acc. to TL/TP FÜ) verify the outstanding position.

Maurer Söhne has installed more than 1,000,000 m of expansion joints. Our constructions with movements of up to 2000 mm and above are installed in the world's largest bridge constructions. Due to permanent optimization Maurer Söhne is also leading in standard and niche products.

MAURER modular expansion joint for approx. 1 m movement

Structural bearings



MAURER MSM® spherical bearing with patented sliding material, superior to previous materials. Approved according to ETA 06/0131 (European Technical Approval).

Maurer Söhne manufactures all types of structural bearings, all technically approved for loads up to 20,000 tons. High precision during manufacture, full factory production control, high-standard third party supervision and close cooperation with national institutes for material testing guarantee quality and durability.

According to the stipulations of the European Construction Products Directive, Maurer Söhne is authorized to use the CE-mark for all its corresponding products.



Monitoring system for permanent online control of bearing deformations at the Tejo Bridge "25th April" in Lisbon, Portugal

MAURER products

- **MSM® Sliding bearings**
Sliding bearing with patented and unrivalled durable sliding material.
- **Spherical bearings**
Technically most demanding and versatile structural bearing with lowest deformation resistance, and because of the optimized manufacturing process economically nearly unbeatable.
- **Pot bearings**
With special and self-composed elastomeric disc, inclusive patented PTFE/carbon seal of extended durability.
- **Elastomeric bearings**
With exact control of restoring forces and damping behaviour based on elastomers, manufactured according to multitude compositions.
- **Special bearings**
e.g. up-lift resistant bearings, restrained and guided bearings, roller bearings with build-up welding as well as bearings with load measuring capability.

**Millau Viaduct,
France**
MSM® spherical bearings, incremental launching devices simultaneously controlled by electronics, and MAURER swivel-joint expansion joints to build the world's highest cable-stayed bridge.

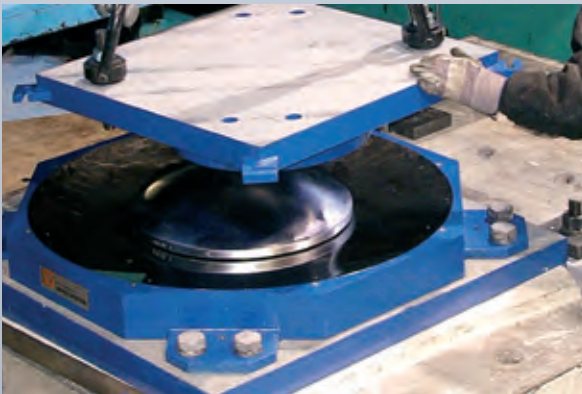


Seismic Devices



New Acropolis Museum in Athens, Greece

Structural isolation by means of 96 sliding isolation pendula, tested at the worldwide unique shake table of the seismic test lab of the University of California in San Diego/ U.S.A. and at the University of German Armed Forces at Munich.



Assembly of a MAURER sliding isolation pendulum

The importance of seismic devices in civil engineering increased significantly during the last 20 years. The technical opportunities of structural bearings and vibration absorbers are applied and complemented by special seismic devices.

MAURER seismic devices do not only protect bridges, building constructions or liquid gas tanks against overstress during seismic action, but they are especially durable under usual service conditions. They dissipate energy and/or isolate the structure.

MAURER products cover manifold proprietary developments, the serviceability of which were tested by various seismic tests at reputed institutes, e.g. the testing laboratory of the Universities of San Diego or Berkeley.



Dynamic shear test at self-produced and especially composed MAURER elastomeric isolators, produced for an uranium enrichment plant in France

MAURER products

- **Rigid connection devices**
Devices with predetermined break-away force and temporary restraints of different types, e.g. shock transmission units with load limiter, to modify the horizontal supporting conditions in seismic events.
- **Displacement dependent devices**
Elastomeric devices with different damping characteristics and steel hysteretic devices for energy dissipation dependent on deformation.
- **Velocity dependent devices**
Hydraulic dampers and semi-active dampers for adaptive horizontal support and energy dissipation.
- **Isolators**
Sliding isolation pendula, lead rubber bearings and high damping rubber bearings to isolate the buildings from its ground and for energy dissipation.

Vibration absorbers

MAURER vibration absorbers protect structures against damaging vibrations, regardless whether they are induced by persons, traffic, machinery, wind, rain or earthquake. They are individually designed for each project.

MAURER vibration absorbers protect all kinds of bridges, the slim footbridge as well as the world's largest cable-stayed bridge. They dampen vibrations of steel stacks, high rise buildings, sports stadiums and even works of art.

MAURER TMD as spring/mass system to dampen vertical vibrations of a footbridge



MAURER products

■ Tuned Mass Dampers

Spring/mass system resp. pendulum system, mainly to dampen person-induced vibrations.

■ Cable dampers

High-damping elastomers or hydraulic dampers, mainly to dampen rain/wind induced vibrations.

■ Friction damper

Friction pendulum dampers, mainly used with towerlike structures, e. g. steel stacks.

■ Semi-active dampers

Adaptive hydraulic dampers for above mentioned use to dampen various kinds of vibrations, measuring device for damper regulations also applicable for monitoring purposes.



Active principle of a MAURER friction pendulum damper as a multi-disc system with pendulum mass to dampen wind-induced vibrations of steel stacks



Sutong Bridge, China

Dampening the world's longest stay cables (up to 541 m) with magneto-rheological cable dampers and swivel-joint expansion joints accommodating service movements of up to 2.60 m

Maurer Söhne worldwide



Maurer Söhne Munich



Maurer Söhne China



Maurer Söhne Turkey

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