MAURER

MAURER || MAG

SAY HI TO THE MUNICH SKY
New landmark for the Bavarian metropolis

MAURER SIP®-ADAPTIVE
Newest-generation Sliding Isolation Pendulum

MAURER LOCATION INDIA
A daughter is growing up

forces in motion

MAURER

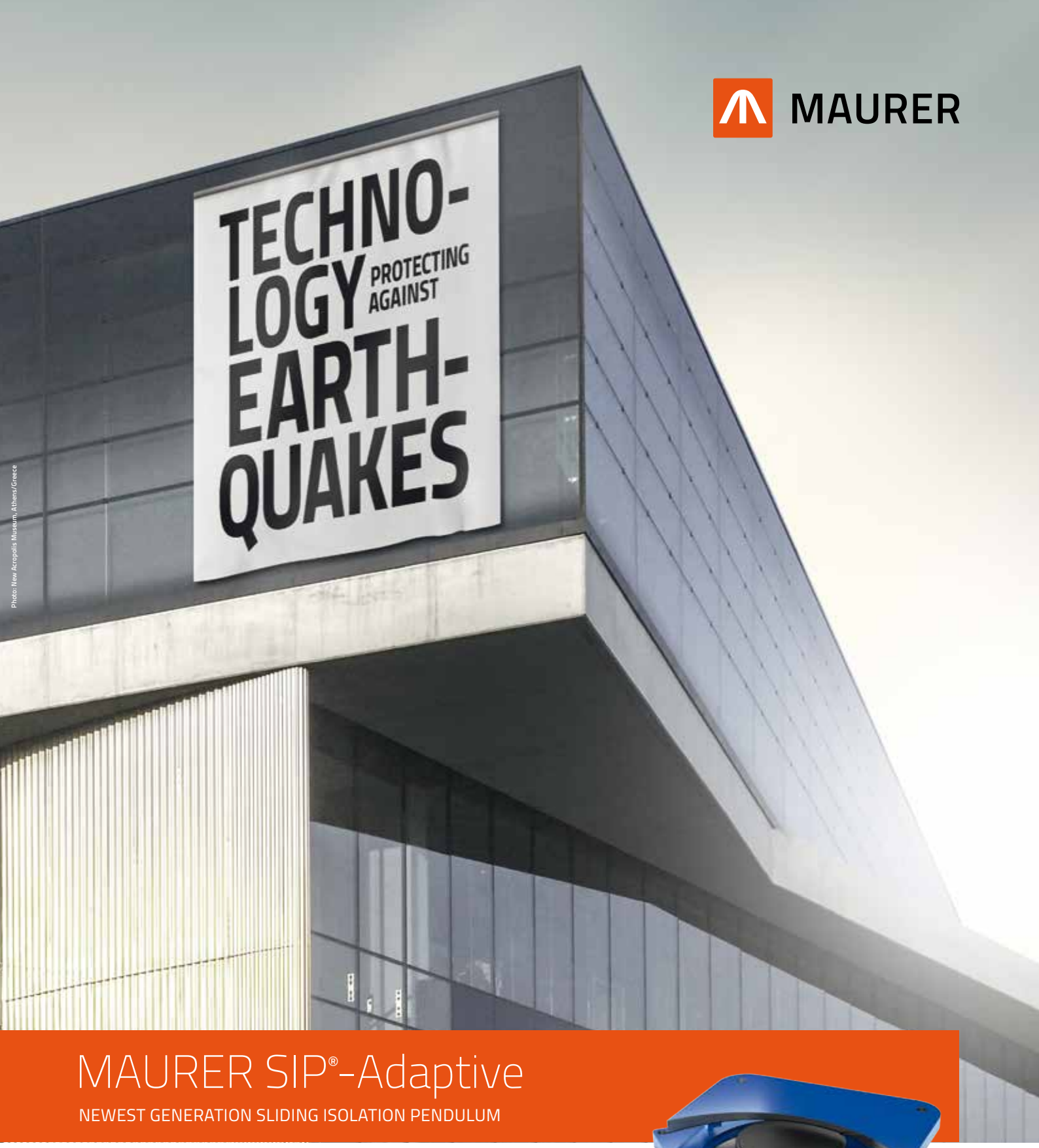

Photo: New Acropolis Museum, Athens/Greece

MAURER SIP®-Adaptive

NEWEST GENERATION SLIDING ISOLATION PENDULUM

Plan with maximum seismic protection:
Reduced starting resistance, reduced structural acceleration, reduced wear:
The 3-in-1-System of MAURER SIP®-Adaptive Sliding Isolation Pendulum protects vulnerable buildings such as hospitals, schools, research institutes, government buildings and museums even better – and longer. The isolator withstands 5 MCEs.

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forces in motion

Dear readers,

We are the recognized market leader in the field of structural protection systems. We manufacture bridge bearings, roadway expansion joints, seismic protection devices, vibration dampers and monitoring systems. The crucial factor speaking in favor of MAURER SE: over 1,000 employees working for us worldwide.

In this magazine, you will get to know some of them, their projects, their tasks and their professional passions. In face-to-face conversations they describe what particular challenges they have to face in their daily work and how these challenges can be mastered in cooperation with customers, partners and technicians on site. Maybe you have already worked together with one or another colleague or know about projects from his/her area of responsibility. MAURER MAG has been created to provide you – in this first edition and many more to follow – with an overview of and insights into the many facets of our work.

With kind regards from Munich,

Dr. Christian Braun

Max Meincke

MAURER || TOPICS

//IMPRINT

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56 HYDRAULIC DAMPERS FOR // THE BUTTERFLY TOWERS OF BUCHAREST

MAURER plans and delivers hydraulic dampers for protection against earthquakes and wind.

Bucharest. Bucharest is about to get a huge butterfly: two slim office towers, the floor plan of which resembles a butterfly. The wing tips are designed as an elastic steel skeleton and thus are particularly vulnerable to earthquakes and wind. MAURER supplied 56 dampers. These are the first hydraulic dampers in structural engineering delivered by the Munich specialists for building protection.

The "Orhideea Towers" owe their official name to the identically named urban district. It is located west of the center of Bucharest, has an outstanding transportation connection with roads, pedestrian bridge and subway and is considered an upcoming business area. The two slim office towers have a buckled floor plan, which – together with the sky bridge connecting them – led to the name "butterfly towers". The towers feature different heights: the northern one 85 m with 17 stories above ground, the southern one 64 m with 13 stories.

The central structure of the towers is made of concrete. The buildings taper off towards the four wing tips, where they mainly consist of a steel structure. This rather soft and elastic type of construction in combination with the shape (BEHF Architects, Vienna) brings about substantial wind-induced vibrations due to strong vortex shedding at the building edges that interferes with the living comfort. Moreover, Bucharest is situated in a seismic area. Without damping of the upper stories, building vibrations of more than 500 mm would occur.

The dampers are installed at the bottom end of the cross braces. They have a length of 750 mm.

Strongest forces acting on the wing tips

This is why the structural engineers from Popp & Asociații have designed diagonally arranged hydraulic dampers at the four front sides. For MAURER, the butterfly towers are the first project for which they supply hydraulic dampers in structural engineering. "We were commissioned because the structural engineers and PORR as the prime contractor were sure that we would be able to deliver the required performance in perfect quality just in time", explains Paul Semrau, project manager at MAURER. "The task is to limit the movement in steel construction at the wing tips, thus preventing cracks in the structure." Project coordination and professional installation were done in cooperation with Retter Group, Mr. Guido Retter.

Dampers are located in the steel skeleton

The steel skeleton at the wing tips accommodates all movements; however, the development of resonant vibrations must be avoided. The total of 56 dampers is activated by too large or too fast movements of the building.

Orhideea Towers, Bucharest

They are located at the end of the diagonal steel braces, two of which spanning across two stories each. These dampers give the structure considerably more stability and safety. In addition, a very slim and cost-effective construction could be realized so that the dampers do not cause additional costs for the total building – in comparison with a considerably more massive type of construction featuring a similar stability.

The construction work for the Orhideea Towers started in October 2015. The dampers were produced, tested and installed in 2017. The total rental area of 37,000 m² has been available since the end of 2018. With this 75-million project, the building contractor, the Austrian company CA Immo, aims at being certified according to LEED Gold and thus sets highest standards in terms of design, technical details, and sustainability.

SEISMIC ISOLATORS FOR // A FARMHOUSE IN THE NETHERLANDS

Earthquake zone Netherlands: the easy-to-handle isolation pendulums can be installed even in inaccessible places and in new buildings.

Munich, Usquert. The large-scale extraction of gas in the area around Groningen results in frequent "artificial" earthquakes triggered by subterranean landslips. Control calculations have shown that measures must be taken to protect many existing buildings in the region against earthquake damage. This is a particular challenge with older buildings. With its SIP®-D-type MSA® Sliding Isolation Pendulums, MAURER offers an effective solution that is receiving a huge response. The bearings isolate the building from the subsurface and are at the same time so light and thus easy-to-handle that they can be used even in difficult locations in existing buildings, for example in a listed farmhouse in Usquert.

Two earthquakes occurred in 2018, with a particularly severe magnitude of 3.4 on 8 January. This does not sound very much, but the earthquakes are a result of natural gas extraction in the Groningen field. The epicenters are not very far from the earth's surface and the tremors are therefore felt particularly acutely. Even earthquakes of a magnitude of 3 cause damage.

Around 150,000 people live in the region to the east of Groningen and earthquakes have already damaged thousands of houses. The whole thing has become a political issue and, following public protests, politicians have ordered the annual output to be curbed. Gas extraction is set to be discontinued by 2030.

Compact MAURER Sliding Isolation Pendulums, perfect for installation in existing buildings

NEW CONSTRUCTION OF THE SCHIERSTEINER BRIDGE // SPHERICAL BEARINGS FOR 6,000 TONS OF STRUCTURAL LOAD AND LARGE ROTATIONS

MAURER delivers latest-generation bearings and roadway expansion joints.

The new Schiersteiner Bridge under construction

Wiesbaden, Mainz. The Schiersteiner Bridge ranks among the most significant new highway bridge constructions in Germany. The challenge is the enormous structural weight causing structural loads of up to 6,000 t and large rotations. As a specialist for structural protection systems, MAURER delivers high-performance spherical bearings and noise-reduced roadway expansion joints.

The Signature Bridge in Delhi in summer 2018

HUGE BEARINGS FOR // THE NEW BEAUTY OF DELHI

Signature Bridge: MAURER supplies MSM® spherical bearings for structural loads of up to 231,000 kN.

Delhi/Wazirabad. It is both a beauty and a political issue: the Signature Bridge across the Yamuna river connecting Delhi to Wazirabad. A visual hallmark and special technical feature is the asymmetric pylon. For this pylon, MAURER has built two MSM® spherical bearings to be installed underneath the pylon footings.

Accommodating 231,000 kN of structural load, these are the largest CE-marked bearings ever built. A further special feature is the pendulum bearings accommodating the tensile force of the backstay cables

The new bridge in the north of Delhi features a total length of 675 m, a width of 35 m and a main span of 251 m. With four traffic lanes in each direction, it will relieve the traffic load of the Wazirabad Bridge situated further to the north.

The Signature Bridge was planned in 2004. Already now it is considered a particularly beautiful bridge.

NEWS

MAURER

SPONSORSHIP AWARD // STIFTUNG MAURER SÖHNE

Stiftung Maurer Söhne awarded a prize to two graduates of Munich Technical University.

Munich. On July 6, 2018, the Munich foundation "Stiftung Maurer Söhne" granted two advancement awards to Michael Vogl and Felix Schneider for their outstanding master theses in the field of structural dynamics and structural mechanics. Every year, the foundation awards excellent scientific theses in the area of technical dynamics.

Michael Vogl, Dr.-Ing. Christiane Butz (MAURER ENGINEERING GMBH), Felix Schneider

Bangkok's new elevated railroad under construction

4,700 RAILROAD BRIDGE BEARINGS FOR // THE NEW RED LINE IN BANGKOK

MAURER is pioneering with durable and maintenance-free bearings in the tropical climate of Thailand.

Bangkok. Bangkok is expanding its local transportation network: the completely new "Red Line" is designed as an elevated railroad. MAURER delivered 4,712 spherical bearings equipped with the sliding materials MSM® and MSA®. In Thailand, durable and maintenance-free bearings of this quality are used for the first time.

Professor Peter Pfeffer (VDI), Dr. Christian Braun (MAURER SE), Max Meinke (MAURER SE), Dr. Jan Göpfert (VDI)

TRADITION AND INNOVATION // UNITE MAURER SE AND VDI

MAURER SE receives certificate for supporting member of the VDI regional association Munich, Upper and Lower Bavaria.

Munich. The Munich VDI board members Professor Peter Pfeffer and Dr. Jan Göpfert handed over the certificate for supporting member to the managing directors of MAURER SE, Dr. Christian Braun and Max Meincke. For 60 years, MAURER has been a member of VDI. Mutual values such as tradition, quality, and innovative zest for action lead to a lively and extensive exchange of views and ideas.

The certificate award ceremony was accompanied by company and association presentations and a plant tour. One thing the VDI regional association Munich, Upper and Lower Bavaria and MAURER have in common is their almost identical age: 141 and 142 years, respectively. This long-standing tradition is a strong bond – although everyone is aware that you must not rest on tradition – it always has to be the basis for consistently good quality.

Moreover, tradition is the background for successful innovation. MAURER has developed from a workshop into a niche specialist which is very much sought after on the international level. The VDI regional association Munich shows particular commitment for young talent in engineering with 20 workgroups organizing 330 events per year with a special focus on internationality. Very much in demand are current topics that shine a professionally profound light on the entire scope of technical developments.

The dialog partners develop joint ideas on topics such as seismic protection and vibration damping of high-rises, all of them being as spectacular as technically innovative. Specific implementations in the network are in the process of planning.

The Bogibeel Bridge across the Brahmaputra, at the bottom of the Himalaya. The photo was taken during construction in 2017.

SPHERICAL BEARINGS FROM MUNICH FOR // THE 5 KM LONG BOGIBEEL BRIDGE IN INDIA

Brahmaputra bridge: bearings transmit a load of 2,800 t in the smallest of spaces

Munich, Bogibeel. In 2002, construction work for the largest combined railroad/road bridge in India started. The Bogibeel Bridge owes its name to a secluded village in the tri-border region of India, Myanmar, and China, where the Brahmaputra leaves the Himalaya. MAURER supplied 164 spherical bearings to be placed between the bridge deck and the piers. MAURER was awarded the contract because they succeeded in designing bearings capable of transmitting the extreme structural loads of 2,800 t, yet fitting into the confined space on the piers. The Bogibeel order is the largest contract awarded so far for bearings to be installed in an Indian railroad bridge which is considered to be the second longest of its kind in Asia. The Brahmaputra is infamous for its mass of water and floods a five km wide region near Bogibeel in the monsoon season. The annual severe monsoon flooding also accounted for the long construction period. The bridge featuring a length of 4.94 km consists of 41 single-span beams, 39 of which with a length of approx. 125 m each. The railroad tracks are located at the bottom of the bridge, the two-lane road at the top.

Confined space

Below the bridge deck, four MSM® bearings rest on each of the 41 pier caps. The bearings per area are arranged in a "classic" way: one fixed bearing, one guided sliding bearing in longitudinal direction, one guided-sliding bearing in transversal direction, and the fourth one free-sliding. Thus the spherical bearings transmit vertical loads and allow for rotations and movement while keeping the bridge deck in position.

"The particular challenge was to dimension the bearings in such a manner that they fit onto the small pier caps," explains Dipl.-Ing. Peter Günther, project manager at MAURER. "Space was limited both in terms of height and surface area, since the construction of the piers and the steel support structure was already too far advanced to create additional space when we received the order." There were controversial debates about the maximum permissible dimensions in the run-up of order placement. "The advantages we offered were the use of the MSM® sliding material and our know-how in the dimensioning of bearings", reports Günther.

The bearings underneath the Bogibeel Bridge transmit a load of 2,800 t in the smallest of spaces.

Among other things, MSM® distinguishes by being capable of accommodating pressures that exceed the pressure allowed for customary sliding materials by 100%. This enables designing the bearings approx. 30% smaller, and, in this case, also more lightweight.

The bearings smoothly and optimally adjust to all load and structural conditions. Thanks to the durability of the selected material a service life of at least 50 years can be expected.

Load tests in Shanghai

In early summer 2016, 12 bearings were tested in Shanghai. The installation of the bearings started mid-2017. On December 25, 2018, Prime Minister Narendra Modi inaugurated the Bogibeel Bridge. The bridge near the Chinese border is of strategic importance to India and had already been referred to as one of several important infrastructure measures in the Assam Treaty of 1985.

Northeast Frontier Railway acted as building contractor, Hindustan Construction Company (HCC) as construction company, and DSD Brückenbau GmbH as consultant.

140-YEAR-OLD // PRESENTS ITSELF WITH SE

Conversion of MAURER AG into MAURER SE – gorgeous celebration at Frankfurter Ring.

Judith Klein, responsible for Marketing & Communication, moderates the event.

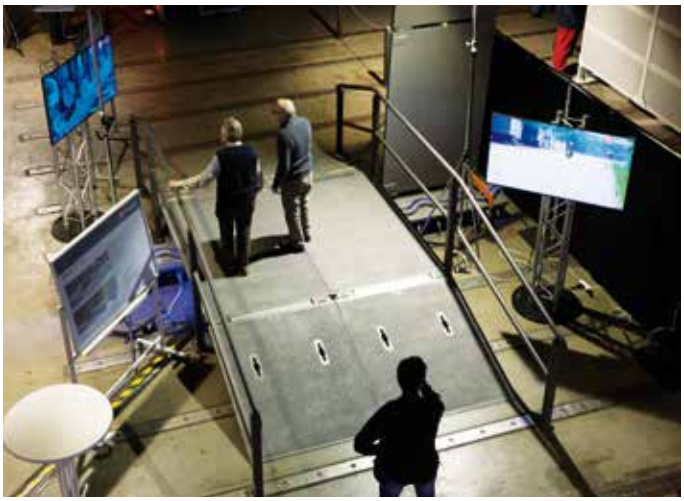
Munich. The party was extraordinary: MAURER SE forged the bridge from Power Percussion to Christmas market stalls and celebrated itself. MAURER, the tradition-steeped machinery, plant engineering and steel construction company from Munich looks back on a history of 140 years. Just in time for the anniversary, MAURER AG was converted into MAURER SE. The change of the legal form is a consistent step in the corporate strategy after the conversion into an incorporated company two years ago. MAURER keeps on heading towards internationalization. Managing directors of the rebranded MAURER SE are Dr. Christian Braun and Max Meincke. The company will continue to be in the ownership of the Beutler and Grill families with Jörg Beutler acting as chairman of the supervisory board.

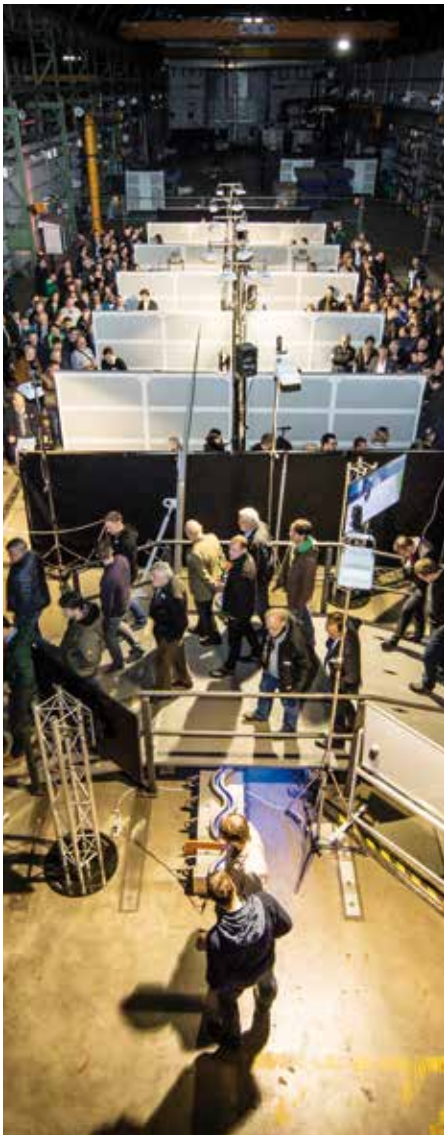
»We celebrate like we work.«

GORGEOUS PARTY BY OUR OWN EFFORTS

The anniversary was celebrated in corporate style: on the company premises at Frankfurter Ring in a production hall and a party tent, without flamboyancy but with dynamics, joy of living, and quality in detail.

Dr. Christian Braun, in a leading position with the company for more than three decades, is visibly glad about the opportunity to celebrate the anniversary with approx. 500 employees.





Even long-standing employees are still impressed by the size and quality of design of our products.

Pre-Christmas mood on the MAURER Christmas market

That started with the innovative speaker's desk made of stainless steel, designed and manufactured at MAURER's in-house training center. Keynote speaker was Undersecretary Professor Karl Goj, head of bridge and tunnel construction in the Highest Building Authority within the Bavarian State Ministry of the Interior, for Building and Transport. Expert information was provided by the course set up by the development department in hall 1. The colleagues from Lünen, Bernsdorf, the Netherlands, Austria, Switzerland, France, Spain, and Brazil travelled to Munich to attend the big celebration. The course presented technical highlights from the fields of seismic bearings, vibration dampers and expansion joints as well as new products such as vibration isolation that are to ensure the future success of MAURER SE.

»Frolicsome joint celebration...«

Johannes Warth, Germany's best known no-name motivator, acted as a motivation artist with visions for the future.

Additional artists made the event a great celebration – on the small scale and on the big stage: Power Percussion, Luigi, Magic Viktoria, Betty Bauchladen, and DJane Ingrid. And of course nobody had to stay hungry – MAURER provided sustenance from cakes to goulash soup at night on the Christmas market in the yard.

Power Percussion really make the party rock, Stefan Wildfeuer from Munich, Drum Crew

DJane Ingrid on the decks.

Tasty delicacies from the team of the Café Münchner Freiheit

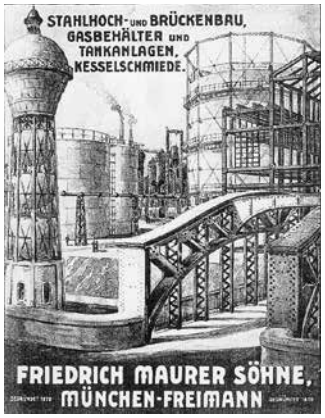
>> 1876

Early on, Munich exerted a strong pull on people, also on the metal craftsman **Friedrich Maurer** who opens a **small workshop as a metal spinner** in the rear building of Fraunhoferstraße 18.

This craftsman's trade mainly deals with **metal forming and other processing of** metal sheets of all kinds. First and foremost, MAURER manufactures lighting fixtures, bowls and tableware made of precious and non-precious metals. In the course of 20 years, a **metalware factory** evolves from this workshop.

>> 1899

After the death of the founder in 1899, his sons Friedrich and Georg continue business under a new name: **FRIEDRICH MAURER SÖHNE**.



>> 1925

In 1925, the company **moves** to its today's location **in the north of Munich**. From there, also **"iron structures"** are offered. These are **hall and roof constructions, crane tracks and bridges**.

>> 1931

A **large-scale order on scrapping of railroad engines** leads to a business **encounter** between **Georg Maurer and Johannes Beutler**. Despite the economic crisis, Beutler **acquires** the **"iron factory" FRIEDRICH MAURER SÖHNE** and continues business under the same name.

>> 1934

Johannes Beutler purchases the adjacent piece of land of the former Bergmann works thus enabling a **considerable expansion of the factory**. In the following years, the company starts with **structural engineering on a large scale**.

>> 1936

The first **gas separators** for oil drilling are produced and partly exported as far afield as **the USA**.

>> 1937

The expansion of the **air transportation sector** causes a considerable **boost**. Everywhere, hangars spring up like mushrooms.

>> 1939

Due to **governmental stipulations**, several munitions are included in the production program.

The **Second World War** brings about a temporary **highlight in the company's history** with over 1,000 employees and large orders, particularly for large halls, scaffoldings and platforms for the aluminum industry.

>> 1944

Toward the **end of the war**, most of the **commercial buildings** are **destroyed** in air strikes.

>> 1945

The years from 1945 to 1954 are characterized by **dismantling, improvisation and reconstruction**.

>> 1951

After **Johannes Beutler's death** in 1951, his **widow Margarete Beutler** continues the business as a limited partnership.

His **brother Ernst Beutler** manages the company until 1958.

>> 1954

Numerous **pylons, pillars and anchoring portals** are delivered for the **expansion of the power supply** (Bayernwerke).

>> 1958

From 1958 to 1963, the company is involved in several **prominent steel structures** in the **Munich area**, e.g. the **reconstruction of the main station, the Palace of Justice** and **the National Theater**.

In addition, **steel bridges, steel stacks** and other products from **receptacle and sheet** manufacturing are produced.

>> 1962

From 1962 to 1976, the company delivers a whole range of **cantilever scaffoldings** (centerings) for concrete bridge construction, thus making **a substantial development contribution** to this particular line of production.

>> 1964

In 1964, **Dipl.-Ing. Hans Beutler**, a **son of Johannes Beutler**, joins the company and takes over the **management** in 1971.

>> 1965

A new specialty is tackled: **watertight roadway joint constructions**.

From 1965 to 1976, the company establishes its reputation through **patent acquisitions and in-house further developments** of roadway expansion joints ("MAURER joint") and **becomes the leading manufacturer**.

>> 1970

In 1970, a **subsidiary in Dortmund-Hörde** is founded, thereafter several representations **abroad in Europe**.

>> 1973

In 1973, the **manufacturing of bridge bearings** commences. By acquiring **Fritz Kreutz KG**, a **complete, fully developed product range for bridge equipment** can be presented in a short time.

>> 1996

Beginning of production of **seismic protection devices.**

>> 1999

Subsidiaries in **Turkey and China**

>> 2001

Terminal 2 Munich Airport, steel structure

>> 2004 until 2006

Steel construction and roofing at **BMW World** Munich**.**

>> 2005

Introduction of **semi-active cable vibration absorbers** (e.g. Sutong Bridge).

>> 2006

Europe-wide approval of MSM® (ETA – European Technical Approval).

>> 2011

Development of **MAURER Modular Bridging System** for construction sites

>> 2012

Foundation of the **subsidiary in Brazil**.

>> 2014

Change of company's name from Maurer Söhne GmbH & Co. KG to **MAURER AG**.

1966 1975 1996 2004 2010 2014 **2019**

>> 1984

Introduction of the **swivel joist joint**.

>> 1991

Foundation of the **Bernsdorf works**.

>> 1993

Rollercoaster Wild Mouse, Munich

>> 2003

Development of MSM® (MAURER Sliding Material). Pedestrian bridge **Neuland Bridge**, Leverkusen / Germany, **steel structure for the bridge construction**.

>> 2004

Development of low-noise expansion joints (with rhomboid or sinus-shaped plates)

Subsidiaries in **Russia and France**.

Development of the **Sliding Isolation Pendulum Bearing** (seismic isolation of buildings e.g. New Acropolis Museum in Athens)

>> 2010

Introduction of **MSA®** (MAURER Sliding Alloy) for **highest corrosion protection** and **approval in Germany**.

Subsidiary **MAURER India / Sanfield Ltd.**

Development of **MAURER Wave Expansion Joint XW1**.

>> 2016

Change of company's name from MAURER AG to **MAURER SE.**

Today, the company is owned by the **third generation** of the **Beutler family.**

>> 2019

Hi-Sky observation wheel in the "Werksviertel", center of Munich

SAY HI // TO THE MUNICH SKY

As of Sunday, April 14, 2019, Munich has a new tourist attraction.

Assembly of the Hi-Sky Munich, February 2019

In the Munich "Werksviertel", the world's largest transportable Ferris wheel spins its rounds and invites the citizens and visitors of Munich to search for the vastness right in the city center.

It is almost 80 meters high, can offer exceptional views to more than 1,000 passengers per hour and is not only the largest Ferris wheel in Germany but the largest transportable Ferris wheel worldwide according to the Guinness Book of Records

It is open 365 days per year, one ride lasts approx. 30 minutes, upon request – depending on the booked arrangement – with a weisswurst breakfast, a meeting, or even a marriage ceremony.

However, before an engaged couple read their vows, first the persons in charge from the municipality, the owner of the "Werksviertel", the operator of this new tourist attraction and, of course, MAURER SE had to say "yes" to one another – although, for now, just temporarily.

For at least two years, the Hi-Sky will be located in the "Werksviertel Mitte" of Munich, in the immediate vicinity of the Munich east station, at the very place where later on the newly planned concert hall of the Bavarian Broadcasting will be built.

On the almost 9-hectare area, about 1,150 apartments will be built in the years to come. Moreover, approx. 7,000 jobs will be created.

Over 340 apartments will be available in public housing. A four-track elementary school for approx. 400 pupils and several day-care centers are part of the social infrastructure of the new quarter, which is designed to optimally unite working, dwelling, and living.

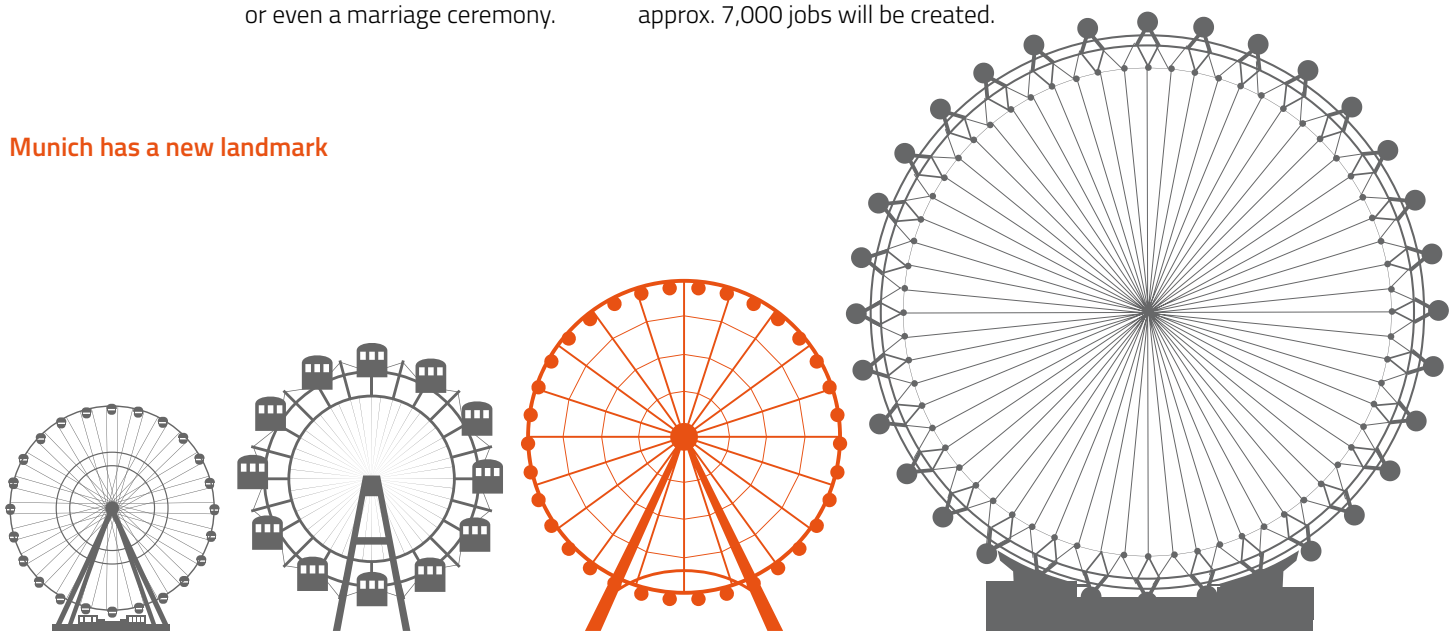
Munich's new attraction is run by the Motorworld Group, which represents a whole range of worlds of experience for people with a passion in mobility. Besides MOTORWORLD® Parks near Stuttgart, in the Rhineland, the Ruhr region, and soon in Munich and on Mallorca, the group hosts old-timer exhibitions such as MOTORWORLD Classics Berlin and MOTORWORLD Classics Lake Constance in Friedrichshafen.

This means accumulated know-how to make the Hi-Sky Munich a true crowd puller with exceptional catering, merchandising and gorgeous experience packages.

The Bussink R80XL, the hugest Ferris wheel in Germany

Which leads us to the centerpiece of this new attraction, the Bussink R80XL, representing the ideal technology for the Hi-Sky Munich.

Munich has a new landmark



Oktoberfest Munich
50 m

Ferris wheel in Vienna
65 m

Hi-Sky Munich
78 m

London Eye
135 m

The Dutch designer Ron A. Bussink developed the observation wheel. It has a diameter of 74 meters and a total height of 78 meters. The observation wheel is equipped with more than 27 Zeppelin cabins, each providing space for 16 passengers. Depending on the spinning velocity, 1,700 persons can enjoy a ride within one hour.

The air-conditioned gondola can be accessed safely and comfortably via an elevated platform. The entire waiting area is roofed with a transparent construction thus protecting the visitors against inclement weather. Access control is fully automated with the electronic ticket system SKIDATA.

This observation wheel, however, is not the only spectacular ride from MAURER. Another transportable Ferris wheel is located in Puebla, Mexico, the Rip-Ride-Rockit roller-coaster thrills visitors at the Universal Studios in Orlando, as does the Fiorano GT Challenge in Abu Dhabi and the "Freischütz" in the Bavarian Park, to name just a few highlights.

Running smoothly right from the assembly

The assembly of the Hi-Sky started two months before its maiden ride, mid-February 2019. This is a period of time in Munich during which the onset of winter might severely compromise any planning.

Up to twelve fitters were working on the huge steel structure. For raising the masts, a 800-ton crane was needed. After this decisive stage had been reached, the assembly of the spokewheel and the installation of the cabins were the next steps.

The Ferris wheel features a total of 27, each fully glassed-in and air-conditioned. At halftime, mid-March, 19 out of 27 spokes traversed the Ferris wheel – and, starting with the sixth week, one gondola per spoke was installed. Now, after its maiden ride, Munich's new landmark spins its rounds daily from 10 a.m. to 10 p.m. at a leisurely pace of less than one kilometer per hour.

And, who knows, maybe the fascination will persist – then it is likely that another place in Munich will be found for the world's largest transportable observation wheel.

▶ TECHNICAL DATA

HEIGHT:	approx. 78.0 m
WHEEL DIAMETER:	approx. 74.0 m
HEIGHT TO MAIN AXIS:	approx. 40.0 m
PLATFORM DIMENSIONS:	Depth approx. 29.3 m | Width approx. 41.5 m
CAPACITY:	up to 1,700 passengers per hour
NUMBER OF CABINS:	27 Zeppelin cabins for up to 16 passengers 54 Ethos cabins for up to 8 passengers
ROUNDS PER HOUR:	variable from two to four rounds per hour
DRIVE SYSTEM:	8 SIEMENS AC motors with redundant PLC control
POWER CONNECTION:	3 AC/N/PE; 400/230 V, 50/60 Hz
WEIGHT OF COMPONENTS:	Constructions approx.750 t Ballast weight approx. 750 t

- ✓ **TÜV-TESTED**
- ✓ **AUTOMATIC CONTROL**
- ✓ **TRANSPORTATION IN ISO CONTAINERS**
- ✓ **SAFETY DEVICES**
- ✓ **LOW MAINTENANCE**

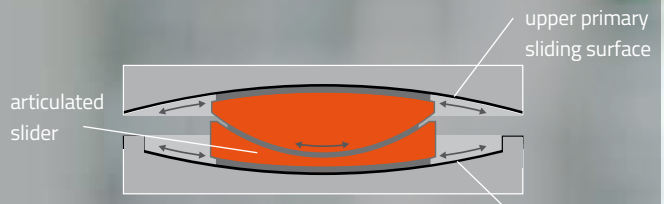
Photos: Hi-Sky

27 Zeppelin cabins, fully air-conditioned, for up to 16 passengers, spin their rounds above Munich

MAURER SIP®-ADAPTIVE //NEWEST-GENERATION SLIDING ISOLATION PENDULUMS

The seismic isolator MAURER SIP®-Adaptive is a Sliding Isolation Pendulum featuring two primary sliding surfaces with an articulated slider in between. It bears the dead load of the structure and ensures re-centering of the structure through the pendulum principle. The radii and friction coefficients of the two primary sliding surfaces determine the isolation and damping of the structure. MAURER MAG talked to Hans Distl and Felix Weber, the two development engineers in charge of the product.

>> Schematic of MAURER SIP®-Adaptive



What is so special with the MAURER SIP®-Adaptive?

Hans Distl: The special feature is the considerably enhanced structural protection in case of low to middle-magnitude earthquakes, since the system has not exclusively been designed for high-magnitude earthquakes.

Felix Weber: MAURER SIP®-Adaptive acts as an isolator which effectively isolates the structure from the ground at a low excitation level. Up to now, sliding isolation pendulums have been designed for a certain operating point. In case of low-magnitude earthquakes they are not triggered at all, and in case of high-magnitude earthquakes their performance is not really good either.

HD: Two things are required: Firstly, an effective design method is needed to determine the different properties of the MAURER SIP®-Adaptive, and secondly, the solution must be well thought-out to ensure adaptivity to the magnitude of the earthquake – this leading to the designation MAURER SIP®-Adaptive. It was a special merit of Felix that he has done lots of basic research through computer-based simulations.

DR. MECH.-ENG. FELIX WEBER //MAURER SWITZERLAND

- Born in Zurich, attended secondary school in Zurich, grew up in the countryside
- Junior high school with GCE A-levels, thereafter studies in mechanical engineering at the Swiss Federal Institute of Technology
- Assistance in the project "3-liter car" while writing his thesis
- EMPA, senior scientist
- With MAURER SWITZERLAND GmbH since 2015
- Faszinated by seismic isolation, vibration damping and vibration compensation
- Motto: "Do things properly, doing it on the quick will - eventually - catch up on you."

FW: And that was complemented by Dr. Braun's reliable intuition. Together we have computed every-thing possible and then selected what would work.

HD: That's right, it was not a one-man show, but teamwork – and an example for how innovation-oriented MAURER is set up right from the management.

Are there similar products on the market?

HD: The desire to not only consider the high-magnitude earthquake but also those with a lower magnitude which happen more often, is not new.

However, deploying sliding isolation pendulums in the solution requires the combination of different, partly contradictory property profiles. The MAURER SIP®-Adaptive was the first product with which MAURER succeeded in developing a systematic optimization strategy and in integrating this strategy in a sliding isolation pendulum. The result is a considerable enhancement versus previous approaches.

What is the benefit for the customer?

FW: Generally, you have to distinguish between building structures and bridges. In building structures, the level of comfort from lowest to highest seismic excitation is much better.

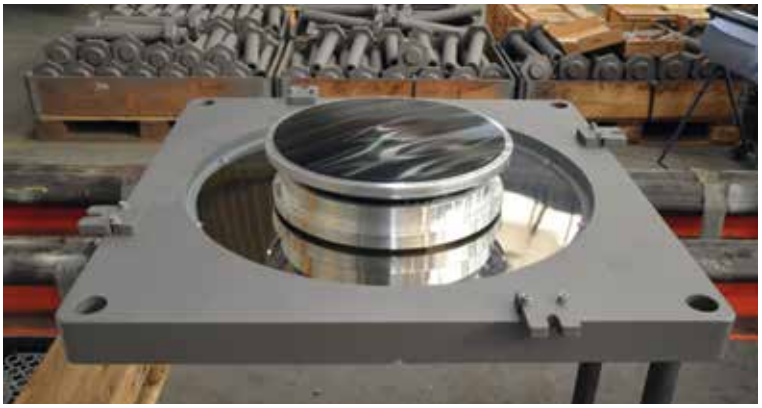
With bridges, the most significant advantages are the reduction of shear forces on the piers and the very good rotation capability of the MAURER SIP®-Adaptive.

HD: When deploying the MAURER SIP®-Adaptive in bridges, the main advantage results from the lubricated sliding surface which ensures that temperature-induced movements of the bridge deck generate very low friction forces, thereby reducing considerably the load on the piers compared to customary sliding isolation pendulums. The friction is as low as with a standard bridge bearing, leading to less wear and a higher service life. In addition, the MAURER SIP®-Adaptive is dimensioned as small as a MAURER SIP®-D but has a real rotational joint so that rotations of the bridge girder can be accommodated without restraint.

So we can justifiably say that of all sliding isolation pendulums the MAURER SIP®-Adaptive is the best isolator for bridges.

Are tests carried out, and, if so, where?

HD: Tests play a very important role in our development work. We distinguish between structural component and structural element tests. With the first one, the entire product is subjected to a test, while with the second one,



Lower sliding surface with articulated slider


Exterior view of the new Acropolis Museum in Athens

partial aspects or elements are tested. With the MAURER SIP®-Adaptive, the structural component test means testing the whole bearing, for example, with seismic load. A structural element test would mean testing the friction behavior of sliding elements used in the MAURER SIP®-Adaptive at simplified test specimens.

Structural element tests are often carried out in-house. For this purpose, we have a static test press and a dynamic test rig in our laboratory. Structural component tests are mostly carried out at external testing institutes, the reason for this being that our products are designed for structures which are subjected to high loads and movement, particularly in case of seismic load.

Sometimes it is quite difficult to find sufficient testing capacities for these requirements.

Therefore, our partners are large testing centers such as EUCENTRE in Italy and SRMD at the UCSD in the USA. Further important partners are the University of the Federal Armed Forces in Neubiberg and the Ruhr University in Bochum.

How does the development department keep abreast on market needs for new products?

FW: Our sales department, exclusively staffed with engineers, takes a key role in this respect. This ensures the background needed for identifying and assessing technical trends. Furthermore, our sales department constantly brings customer requirements to our attention.

HD: It starts right with our management. Dr. Braun is a proven expert, he knows the market and the technology and contributes successful product ideas to our development work.

Further sources to identify and help shape market trends at an early stage are the participation in public research projects and a good networking with the universities and institutions.

With all that highly sophisticated work: are there things to laugh at in your daily routine?

HD: Cooking in the development department. Often you can literally smell the varied mixture of nations in the hallway: is our colleague Daniele just cooking Pasta Aglio Olio or our colleague Toshi a kimshi?

The development department designs products for the whole world. Are there country-specific differences that are taken into consideration?

HD: Yes, there are always differences. For instance, in Asia a product, for example, a roadway expansion joint, may get broken


MAURER SIP®-Adaptive, new Acropolis Museum in Athens

DIPL.-ING. HANS DISTL //RESEARCH AND DEVELOPMENT DIVISION MANAGER

- Grown up in Garmisch-Partenkirchen
- Certificate of Secondary Education, vocational training as a machine fitter and then, via second-chance education, high-school diploma and studies in mechanical engineering at TU Munich
- 1996 joining MAURER as a development engineer for the product groups of bearings, expansion joints and the field of amusement rides
- Since 1998 mainly active in the fields of vibration damping and seismic protection
- Participation in several EU research projects and manifold development work
- Since 2014 new organization of the development department and head of development
- Motto: "Movement and cyclical changes are basic principles of our lives."

after two years – they want to conduct trade and sell new products. There is no need for a product featuring a service life of 10 years. Normally, you will rather meet opponents of over-engineering. Nonetheless, a product should always have some reserves left.

FW: Country-specific differences do exist. We respond to them while maintaining the basic principles of our design work. These adjustments are often solved by the engineering department itself without including the development department.

Quite recently, we have considered developing own solutions for local markets that are specifically adapted to local conditions.

That becomes necessary, if the requirements imposed on the product differ so significantly from our established solutions that otherwise we won't reach the market.

In your opinion: what are the topics that will be crucial/pointing the way ahead in product development in the future?

HD: Topics that matter to us in Central Europe such as sustainability, climate change, increasing traffic density, and others are differently perceived and assessed in different markets. We are challenged with advocating sustainable products and doing a lot of persuading.

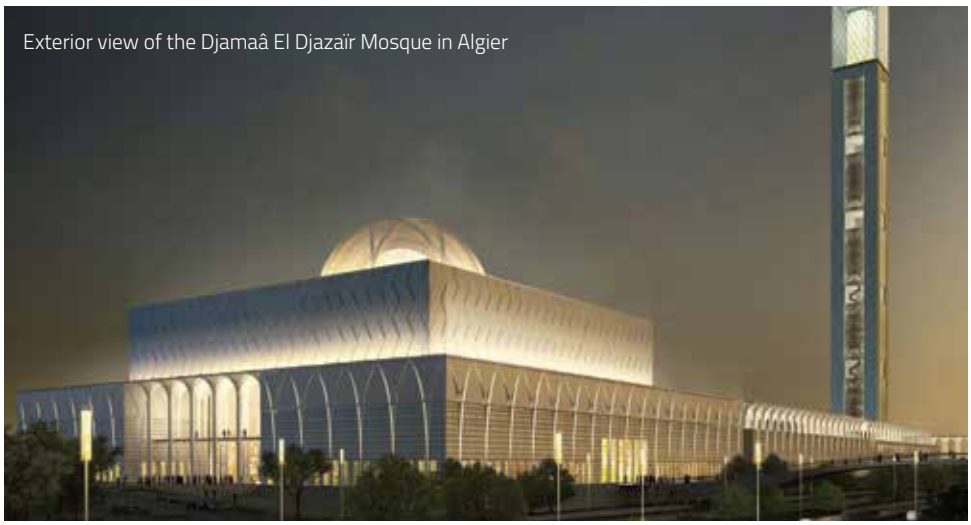
We will not succeed with that immediately. This is why an adjustment of the products to local markets has to be done with sound judgement on the part of the development department.

This requires expanding the international communication and a stronger involvement of MAURER subsidiaries in product development.

FW: In our opinion, the following trends will matter in the future:

>> EXCERPTS FROM CERTIFICATES AND EUROPEAN TECHNICAL APPROVALS

European Technical Approval ETA-06/0131 DIBt
EC Certificate of Conformity MPA Stuttgart 0672-CPR-0706
EC Certificate of Conformity MPA Stuttgart 0672-CPR-0360
EC Certificate of Conformity MPA Stuttgart 0672-CPR-0632


Exterior view of the Djamaâ El Djazaïr Mosque in Algier

1. The agglomeration of cities. To us, that means: maintenance-friendliness, quick exchangeability with preferably only few road closures in view of the increasing traffic density and notoriously overloaded arterial roads. And, of course, products for high-rise technology.

The trend goes increasingly towards megacities with ever higher buildings, for which we already have very efficient vibration dampers in our portfolio, which we will further expand. After all, seismic protection will gain even more importance, especially in the megacities in order to avoid damage to the expensive infrastructure.

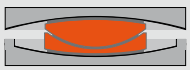
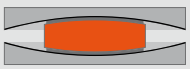
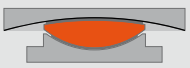
2. The digitalization of our products. In this way, we give our customers the opportunity to include our products in their state-of-the-art infrastructure concept from planning to maintenance and to get meaningful information regarding the structure.

Here, we build upon the pilot project of the federal government on the "Digital Highway". And, of course:

3. In-depth product advice. This is and will remain our niche.

However, basically it applies what Karl Valentin once said: "The problem with the future is that it's not a thing of the past."


MAURER SIP®-DR, Djamaâ El Djazaïr Mosque in Algier

		Sliding Isolation Pendulum WITH re-centering			Sliding Isolator WITHOUT re-centering
		SIP®-Adaptive	SIP®-Double	SIP®	SI
					
Seismic behavior	low magnitude, frequently occurring	+ + + +	+ +	+ +	+ +
	DBE	+ + + +	+ + +	+ + +	+ +
	MCE	+ + + +	+ +	+ +	+
Manufactured size		+ + +	+ + +	+ +	+ +
Rotation		+ + + + ≤ 0.04 rad	+ ≤ 0.003 rad	+ + + + ≤ 0.04 rad	+ + + + ≤ 0.08 rad
Shear resistance		+ + + +	+ +	+ +	+ + +
Relative movements		+ + +	+ +	+ +	+
Re-centering		+ + + +	+ + + +	+ + + +	+
Overall evaluation		+ + + +	+ + +	+ + +	+ +

BEECKERWERTH RHINE BRIDGE

//TRUST ONE IN ITS THIRTIES

How to more than double the service life of a bridge with least possible effort.

The Beeckerwerth Bridge is part of the "Emscherschnellweg" of the A 42 federal highway. It crosses the River Rhine between the Duisburg districts Beeckerwerth and Baerl. The bridge has a total length of 1,030 m, three traffic lanes in each direction and – after almost 30 years – desperately needs a thorough reconstruction.

The bridge was built between July 1986 and October 1990 with total building costs amounting to 134 million Deutschmarks. It has surely paid off, and now the exchange of the roadway expansion joints – with concurrent high traffic load – is inevitable.

read more >

The two steel pylons of the cable-stayed bridge have a height of 66.7 m and are located in the center axis of the bridge. On each side, three harp-shaped cable groups are anchored in the pylons.

HOLGER REDECKER //BRANCH MANAGER NORTHERN EUROPE & MANAGING DIRECTOR MAURER HOLLAND B.V.

Holger Redecker, our branch manager for Northern Europe in Dortmund and managing director of MAURER Holland B.V., joined the company almost 25 years ago.

He holds a diploma in civil engineering and has successfully developed the site in Dortmund into real greatness. The outstanding working climate he shaped and the competence grown over years are ideal prerequisites for all staff members in Western Germany to tackle any task with a professional attitude and high motivation.

Especially the excavation of the old roadway expansion joints was hard work. After a service life of a good 30 years, the concrete had to be shot-blasted with very high pressure before the new MAURER Expansion Joints XLS 600 and XLS 900 could be installed.

Responsible for this project was the MAURER subsidiary Dortmund in Lünen and thus its manager, Holger Redecker, together with Christian Schürmann, the technical branch manager.

We visited Holger Redecker on the construction site and asked him some questions.

Hi Mr. Redecker. Well, that looks good here.

HR: Yes, lack of space and lots of work (laughs).

Are you making good progress?

HR: Actually, we are almost done here. Just the expansion joint on this traffic lane and we have mastered the most difficult part. Then again, the bridge can be crossed on six traffic lanes and the roadway expansion joints are better than ever before.

Delivery of the expansion joint

Is that true?

The new expansion joints are noise-reduced. When crossing the roadway expansion joints, you will not recognize any difference to the road surface.

HR: It sure is. The new expansion joints are noise-reduced – so effectively that you won't recognize any difference between asphalt and roadway expansion joint when crossing the bridge.

Now it will be quiet again on this important bridge for a good 40 years.

How long have you been with MAURER now?

HR: Permanently employed since 1996.

But you didn't always hold your present position, did you?

HR: I started as a sales engineer in the field of reconstruction; thereafter I was sales manager and deputy branch manager.

At present, I'm branch manager Northern Europe and managing director of MAURER Holland B.V.

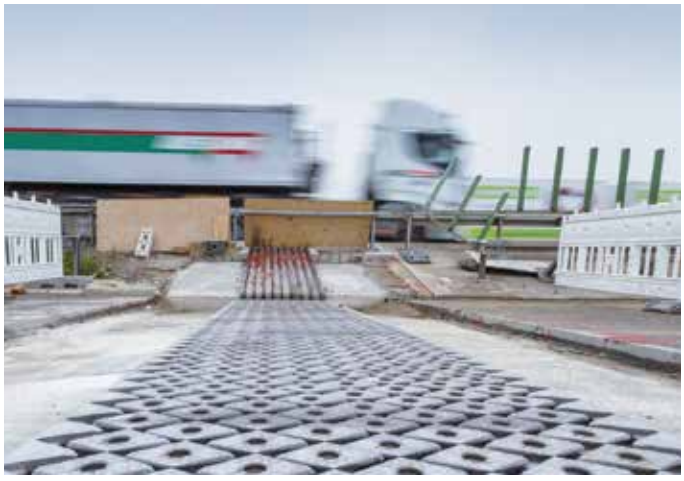
What is the fascination of your profession still today?

HR: The variation and multiplicity, bridge construction as the supreme discipline of an engineer, and – for a salesman an indispensable basic prerequisite – the contact with people.

TIM TÜRICH //CONSTRUCTION MANAGER

Tim Türich, our construction manager for bearings and roadway expansion joints, is interested in everything around technology in his private life as well. However, in this case preferably together with his sons. We asked him what makes the Rhine Bridge Baerl project so special from his point of view. He answered:

"We are the prime contractor. This includes the entire traffic guidance in both directions of travel on the A 42 highway. During the construction work, the total traffic is narrowed down from three traffic lanes to two in each direction and shifted to one half of the bridge – traffic guidance 4.0. In this way, one side of the bridge can be completely closed. The roadway expansion joints per direction of travel can thus be built in in one piece with a length of up to 24 m. The parts were delivered via special transport from Munich and the lifting into position was carried out with a 100-ton crane."



Installation hardly finished – yet ready for operation: the MAURER Expansion Joints. On the right: Holger Redecker and Helmut Felser: our guys on the construction site.

STEFANIE KIRCHHOFF //ORDER PROCESSING

Stefanie Kirchhoff has been with MAURER since February 1, 2011 – and she is a fan of Borussia Dortmund.

After having been assigned to the company headquarters in Munich for two and a half months right at the beginning, she is now responsible for the order processing in the reconstruction area in Lünen. What she likes best is working on her own, planning and accompanying projects, and, of course, the contact to the customers.

Asked to describe what MAURER means to her, she mentions first and foremost the good working climate, the colleagues dealing with one another with respect, and all staff working hand in hand – especially when it gets hard sometimes.

What are the greatest challenges your subsidiary has to face?

HR: Basically the same that apply to all of us: to stand our ground in competition every year anew.

How important is the field of reconstruction in your subsidiary and your region?

HR: Reconstruction is our specialty, the experience we have gained makes it our strongest point. In our sales region, reconstructions are our unique selling proposition.

From your point of view: where is the development headed, can MAURER stay an important player in the long term with new products and services?

HR: I think, and on this one I agree with Christian Schürmann, our technical branch manager, that especially the reconstruction is a great opportunity for MAURER. Due to its complexity, this field opens up a wide area of activity.

Dramatisch schön – die Beeckerwerther Brücke

Installation of an MMBS with least possible impairment of the moving traffic

MAURER MMBS

The MAURER Modular Bridging System (MMBS) enables crossing of the construction site and fast switching between traffic and construction site.

The roadway expansion joint is prefabricated at MAURER and installed following the box-in-box principle.

This saves time-consuming intrusions in the bridge structure and severe disturbances of the moving traffic.

Package solutions are very attractive for our customers, especially for building owners. New construction will increasingly decline, maintenance seems to be the topic of the future.

How come the MAURER MMBS product became established so successfully in your subsidiary?

HR: We offer an "all-round carefree package" including high consideration of the interests of the road users. Worriers are not wanted in the MMBS concept.

Is it easy for you to find new employees that stay with the company in the long term?

HR: Well, finding new employees gets increasingly difficult. Those who do not care in time will come away empty-handed.

Once an employee has joined the company, the probability of establishing a strong bond between him/her and us is very high thanks to our attractive working climate in Lünen.

HELMUT FELSER //HEAD OF THE ASSEMBLY TEAM

In the near future, Helmut Felser will celebrate his 20-year anniversary with MAURER. Together with his team, he is in charge of new installation or exchange of roadway expansion joints and their reconstruction.

To him, MAURER is a textbook example of how to ensure longer service life and sustainability by employing innovative technology. In his leisure time, the bike riding enthusiast loves to be outdoors, which includes barbecues with his friends.

1970 Dortmund becomes the location for a new subsidiary

2001 Moving into the new buildings in Lünen. Architect: Klaus Beutler. A modern architecture that ensures a good working climate.

50 **employees** 18 of which are fitters

2020 MAURER celebrates its 50-year anniversary in Dortmund

Out of 32 employees **13** are **women**

2021 MAURER celebrates its **20-year anniversary** in Lünen

The "Intelligent Bridge", an overpass structure of the A 3 at the highway junction Nuremberg

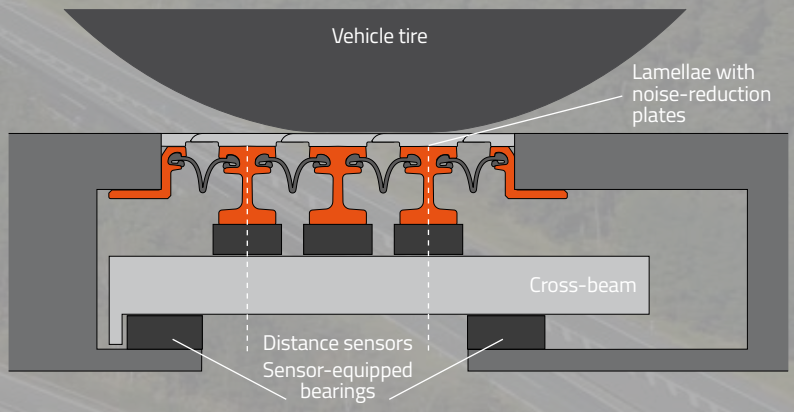
THE FUTURE BUILT IN –
//THE "INTELLIGENT BRIDGE"

Key part of the pilot project "Digital Test Field Highway".
How resilient is the bridge and how long will it be fully functional?

This question comes up with each new construction and each reconstruction of a bridge. Within the scope of the project „Intelligent Bridge in the Digital Test Field Highway" of the Federal Ministry of Transport and Digital Infrastructure (BMVI), carried out by the Federal Highway Research Institute (BASt), our engineers have created the technical basis for a more efficient and more economical maintenance management of the bridge infrastructure.

Those who want to plan and build for the future need valid data on real use. With the measuring and evaluation systems by MAURER, real-time monitoring becomes more and more feasible.

>> Intelligent Bridge



DR.-ING. CHRISTIANE BUTZ //RESEARCH AND DEVELOPMENT DEPUTY DIVISION MANAGER

- Studies of civil engineering and doctorate in structural steelwork at RWTH Aachen
- Since 2007 with MAURER GROUP, today with MAURER ENGINEERING GmbH
- R&D Manager for technical approvals of expansion joints, European assessments, monitoring
- Participation in international committees to establish guidelines and standards
- Motto: "Everyone has a unique brand of craziness", well, I'm from Cologne.

MAURER MAG met for an interview with the project manager, Dr.-Ing. Christiane Butz, and the development engineer Dr.-Ing. Daniel Rill.

What goal do you pursue with the project?

Christiane Butz: The project serves for data collection to be used in need-oriented maintenance management. Up to now, the structure is monitored within the scope of bridge monitoring without having sound knowledge of the impact of traffic. With our built-in components, we want to capture these impacts, in particular those of heavy-duty traffic, and, of course, the response of the structure.

Simple extrapolation would not be sufficient?

Daniel Rill: : Regarding traffic there are assumptions, which, however, are not always true for the individual structure. Traffic counts are made, although you can't see from the outside if a truck is empty or loaded, with what it is loaded, and its speed. Our intelligent monitoring system shows what's really going on.

Which data and loads are recorded?

DR: The "Intelligent Bridge" delivers a whole lot of data. For starters, there are sensors at the bearings that measure displacement, rotation, and structural load. From these data we can calculate the load on and the condition of the bridge.

At the expansion joint we particularly measure the gap width and the axle loads of crossing vehicles. In this way, we determine the speed, the type, and, of course, the total weight of the vehicles.

What happens to the data? Who evaluates them? Who collects them?

CB: We evaluate the data; that is part of our scope of performance. They are collected on a server which is located in a control cabinet at the bridge. The operator permanently accesses the evaluations and displays them on a web page.

»Traffic counts are made, although you can't see from the outside whether a truck is empty or loaded, with what it is loaded and its speed.«

A press release says that this system enables a more accurate and more economical maintenance management of the bridge infrastructure. What exactly is meant by this?

Spherical sliding bearing KGA with displacement measuring

DR: Well, in the future, maintenance and inspections can be organized on a need-oriented basis. Merely preventive measures would be obsolete to a high degree, while a faster and more targeted response is possible in case of need.

Does that mean one could, and should, equip all bridges that way?

CB: Theoretically yes, since our expansion joints and sliding bearings are installed in bridges anyway and we can capture the data in real-time.

However, equipping every bridge intelligently? That would be too expensive and too much effort. You would rather implement that in bridges already showing damages or at trouble spots of traffic, where you capture impacts at one traffic point and derive from these data that successive bridges will be subjected to similar loads.

Will this type of monitoring and maintenance be the way to go in the future?

DR: Yes, and let's think beyond the context of the project: the topic weigh-in-motion (= measure traffic loads while traffic is moving) is quite a large field. For instance, some countries think of an approach to determine toll payments depending on the weight. So far, additional systems are used for this purpose.

CB: Right, and we have now integrated the monitoring in standard components. That is new.

Who, besides the operators, could be a customer?

DR: The current condition of the structure is very interesting for public-private partnerships and investors.

Normally, the structure is handed over after a certain lifetime in contractually defined condition. In such a case, need-oriented maintenance management during the contract term is a matter of highest priority.

CB: You can even provide evidence that loads crossing the bridge did not cause damages.

It is not only about detecting damages, you may also prove that no damages have occurred by documenting the impact.

DR.-ING. DANIEL RILL //RESEARCH AND DEVELOPMENT ENGINEER

- Studies of mechanical engineering and doctorate in metal forming at TU Munich
- Since 2014 with the MAURER GROUP, today with MAURER ENGINEERING GmbH
- With MAURER ENGINEERING in charge of product and component development for roadway expansion joints and elastomeric components as well as the administration of intellectual property rights (patents and trademarks)
- Motto: "I'm trying not to worry about problems I don't have yet."

Instrumented bearing at axis 40. **On the right:** view into the box girder of the bridge, in the foreground sensor cables

A DAUGHTER IS GROWING UP
//MAURER INDIA

The location in Bhopal for the Indian subcontinent has long since targeted the global market.

Less than 10 years ago, MAURER in Munich was sure to have found the right partner for a substantial commitment in India. Mahesh Rajwani, born 1960, had developed Sanfield (India) Limited into a respectable company of the Indian structural engineering sector within 15 years.

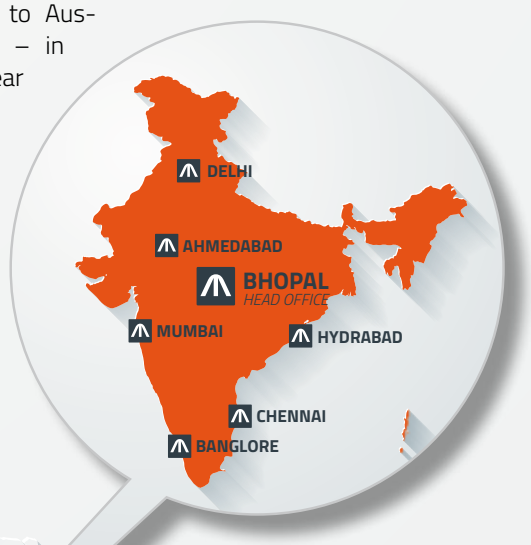
Together with his executive team, a well-trained staff and his knowledge of the different requirements presented by the various regional and local conditions in India, MAURER got off to a flying start. In Bhopal, Madhya Pradesh, Mahesh Rajwani converted production to the manufacture of MAURER expansion joints and structural bearings.

The location in Bhopal has proven to be a strategic advantage since the foundation. Bhopal has good transportation connections to New Delhi, the political capital, and Mumbai, the business center of India. Representations in the most important regions guarantee that MAURER in Bhopal is right on the spot even in the most remote corners of the subcontinent.

MAURER India is proud of being an exclusive design engineering company and a manufacturer and installation specialist for a broad range of specialized products such as structural bearings, expansion joints, seismic protection systems, prestress systems, and expansion joints for buildings. This enables MAURER India to take over maintenance and renovation of bridges as well.

The company has long since lived up to its ambition to offer everything from one source – from design engineering, construction, manufacture, testing, materials supply and installation through to the required quality assurance and guarantees for all product sectors. And all this as the first Indian company that has been certified according to ISO und CE.

Hence, it does not come as a surprise that what was once planned as a vision now increasingly becomes a reality. In cooperation with MAURER Munich, MAURER India is a notable exporter of structural top-class solutions to its neighboring countries Bangladesh, Bhutan, Nepal, the Middle East and Southeast-Asian countries such as Indonesia, Malaysia, and Thailand, in the Far East to Hong Kong, and to Australia. And – in the near future – surely also to Europe.



CONTACT

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a subsidiary of MAURER SE

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Industrial estate, Govindpura
Bhopal - 462 023
India

Phone: +91 755 4233535
Fax: +91 755 2602663,
4270730

sanfield@sanfieldindia.in
sanfieldindia@gmail.com

www.sanfieldindia.in

- >> Export markets in **Europe, the Middle East, the Far East** and **Asia-Pacific** have been opened up.
- >> **First** company in India that is certified according to **ISO 9001:2015** and has implemented strict quality controls in design engineering and manufacture thus achieving certification of quality and performance in the field of roadway expansion joints and bearings.
- >> Over **300,000 meters** of **expansion joints** and **75,000 bearing units** for bridges, highways and expressways both domestic and abroad.
- >> **CE certification** for the manufacture of MSM® spherical bearings and pot/pot-PTFE bearings.
- >> **Fully equipped testing facilities**, where finished bearings with a vertical load of up to 16,000 kN and a horizontal load of 2,000 kN can be tested in simultaneous application.

30 – 40 % DOMESTIC MARKET SHARE

approx. 15.000 m² OF PRODUCTION SPACE

CENTRAL PRODUCTION FACILITY IN **BHOPAL** AS WELL AS REPRESENTATIONS AND DISTRIBUTORS IN ALL INDIAN METROPOLISES

751.275 M INR (19.6 M US$) FOR F. Y. 2017/18

PRODUCTION CAPACITY:

15 – 20 % EXPORT SHARE AND RISING

STRUCTURAL BEARINGS:
>> approx. 1,000 bearings per month
(average load capacity: 250 MN, weight approx. 200 t)

ELASTOMERIC BEARINGS:
>> approx. 875 bearings per month
(average size 400 x 300 x 42 mm, volume approx. 4.5 m³)

EXPANSION JOINTS:
>> approx. 5,000 meters of sealing profiles and 500 meters of modular expansion joints per month

Mahesh Rajwani holds a diploma in civil engineering and, since 1982, has been active in the field of expansion joints, structural protection, and monitoring systems. After having gained professional experience for more than 10 years in different countries, he returned to his homeland in 1994, where he founded Sanfield (India) Limited. In 2010, Sanfield (India) Limited became a subsidiary of MAURER SE, Munich, Germany.

What is the biggest difference between Indian and German companies?

Mahesh Rajwani: "We have a hierarchic system and Indian companies are mainly operated by founders from the family. Indian entrepreneurs tend to stay in business until the end of their lives. In India, it's the norm that the children of the company founders take over the company. However, meanwhile Indian entrepreneurs recognize the necessity and advantages of professional managers. And these need a special talent for they work in a complex and often inconsistent environment with a great deal of bureaucracy."

MAURER India, Bhopal Indien

During the past two years, you have made large investments. What precisely has changed in the company and for what reasons?

"The company is growing and investments are the fuel for this growth. We have doubled our productivity and introduced a CE certification and an in-house production control according to EN 1090."

How will MAURER India develop during the next five years?


Mahesh Rajwani, born 1960

"In view of the current pace of development, the company surely has very good prospects. The export business to South-east-Asian countries, for which MAURER India could be the central manufacturing unit, will presumably reach four billion Indian Rupees (INR). 79 million INR were provided for the modernization of existing plants and facilities, office buildings, and so on. A further 110 million INR will be invested in a new production facility at a nearby location."

ROSA RIPA //ENGINEERING DEPARTMENT

A Neapolitan in Bavaria.
In the first place, Rosa Ripa is a Neapolitan, in the second place an Italian, and, since mid-2013, she has been a Bavarian. In our engineering department, the civil engineer with a focus on seismic protection devices examines MAURER products and adjusts them to the required performance parameters.

Hi Ms. Ripa, have you always been that great with the German language?

Rosa Ripa: : "No, I learned it here. When I started with MAURER, I spoke Italian and English."

What qualification do you have?

"I'm a civil engineer and have specialized in seismic protection devices."

Here with MAURER?

"No, that was during my studies in Naples and Berkeley, California."

Did you get in touch with MAURER there?

"The first time in Naples, in a lecture. My professor presented European projects, one of which had been realized with MAURER solutions."

What exactly are you doing with MAURER now?

"I'm working in the engineering department. We work on and optimize different MAURER products like, for example, seismic protection devices, bridge bearings, but also vibration dampers and hydraulic dampers in terms of statics, construction, and economic efficiency. Product support up to manufacturing is highly interesting for me. We also organize tests in cooperation with the testing department in the laboratory or on the construction site, for instance, on bridges with vibration problems. We are not only closely cooperating with other departments but with our customers as well."

»Product support up to manufacturing is highly interesting for me.«

When saying you optimize, does that mean that you adjust every MAURER device to the specific application?

"Yes, we design and manufacture customized products which means we work out a design based on the data provided by the customer. For instance, we measure frequencies directly at the bridge in order to adjust the design of the vibration dampers. We attach the devices to the bridge structure and do repeated testing to be able to see the difference with and without the device. Especially with modern pedestrian bridges which are mostly very lightweight, we ensure a considerable reduction of the vibrations. There are some bridges where it was interesting to stand on them with active and inactive MAURER dampers."

What do you do when not working?

"My husband and I love to go on an excursion."

Oh, in this case you surely got in touch with the German cooking?

"Yes, ... the Bavarian specialties are all very tasty, but enjoying them every day? No, ... ha-ha, that is too much!"

Did you already try weisswurst?

"No, not yet ... when they are served, it's too early for me."*

* In Bavaria, it is a tradition to eat weisswurst already in the morning.

DANIEL JAREMKO //ASSEMBLY

From Fulda to La Réunion.
Half the world is a construction site – and Daniel Jaremko is always on the spot.

Hi Mr. Jaremko, nice to meet you in Munich for a change.

Daniel Jaremko: "Right (laughs). This is quite an exceptional case."

What does your normal working day as a fitter look like?

"There is no such thing. To name an example, this week: on Monday, trip to the construction site in Heilbronn, 450 km, on Tuesday installation of a large expansion joint; that's going to last longer because of cold weather, since the expansion joint has to be preset. On Thursday to the next construction site near Fulda, adjustment of structural bearings, on Friday afternoon heading home, approx. 320 km. A "relaxed" week in Germany."

But you are not only underway in Germany.

"That's right, I often travel abroad."

Where have you been so far?

"To Algeria on the construction site of the great mosque, in Turkey on the Izmit Bay Bridge, in Africa, Russia, and China. A great experience was the viaduct of Millau in France. My very first construction site abroad was the installation of a bridge bearing."

How long have you been working for MAURER now?

"I've been working with MAURER as a fitter since 2000, I am a trained machinery and plant fitter. Before that I worked as a welder and plant welding specialist – which today may be called European welding specialist."

»There is a good work/ leisure time ratio.«

Are there certain products that you specifically love to install?

"Yes, definitely: Bearings, dampers and large expansion joints are the products I like best."

What skills do you need when working for MAURER as a fitter, what are the professional prerequisites and the soft skills needed?

"Besides vocational training in metal processing: welding skills and, of course, willingness to travel, flexibility, motivation, and organizational skills. You are often alone without any exchange with the design engineers on site. In case of technical problems I can count on the support of our engineering department here in Munich. Basically, you have to be able to get it together with others – both abroad and in Germany."

Is it easy to reconcile your work with your private life, your family?

"If the family doesn't join in, it gets quite difficult – since construction sites can hardly be planned in advance. The assignments for the next week often come in on Friday afternoon. MAURER is great with compensatory time off; we can accumulate approx. 300 overtime hours and then take time off on a daily basis, when the workload is not that high. There is a good work/leisure time ratio. I wouldn't want a normal fitter's job where I have to travel from Sunday evening to Friday evening. And, when I'm at home, I indulge my loved ones a bit more."

Is that your dream job?

"I'm still searching for that one (laughs). Close enough! The flexibility, the changing construction sites and travelling are fun. The equipment provided by MAURER is really good, no reason to complain about it."

What would you wish for?

"Nice, large projects abroad, for example, on the island of La Réunion – that would be great."

WE CAN // DO IT

MAURER SE trains not only young men but also women in trade and technical occupations.

Guys are interested in technology – that's considered a normal thing. The fact that an increasing number of women also realize their full potential at the welding device or at the lathe is a success that is also attributable to the vocational training at MAURER SE.

At present there are three women out of a total of 34 trainees that wish to become a construction mechanic or a cutting machine operator.

We get dual vocational training, which means 60% in our training workshop and 40% in vocational school. We acquire many additional skills during the three and a half years, for example, CNC technology and welding courses.

We pass through different manufacturing areas and thus learn professional handling of different work materials, tools and machines. The regular rotation to other departments/fields of work enables each and every one of us to discover his/her particular strengths and special interests.

We welcome our new trainees and their families to the annual training start with a barbecue in the training center. Eating and drinking together gives us the opportunity to get to know each other, to intensify conversations and to get first insights into the future ahead of us.

We love spending our breaks in our trainee garden we have created by ourselves. This was, of course, an educational project in which we visualized our ideas in planning and drawings, manufactured the garden lounge suite and arranged the plants in the garden in teamwork.

In order to foster the team spirit among all trainees, our instructor organizes an annual subject-related excursion. One of our last excursions was a trip to Voestalpine in Austria, where we were invited to attend a comprehensive guided factory tour. Another excursion took us to LIEBHERR in Ehingen, where we got insights in technical manufacturing processes.

Our excursions are always filled with expert information but with fun and entertaining bus rides as well.

Some of us were even given the opportunity to travel to Russia. We had invited young Russian metalworkers to Munich for a floorball tournament and a city quiz, which was followed by a return invitation to Russia.

Several teams from Munich, Tyumen and St. Petersburg were competing. It was a tremendous week with sightseeing in the cities and culinary discoveries.

Jasmin Saller

» We pass through different manufacturing areas and thus learn professional handling of different work materials, tools and machines. «

Jasmin Saller, 2nd-year trainee

Why we chose MAURER
– Niklas (17 years old, second trainee year) and Valentin (21 years old, third trainee year).

Why a trade and technical traineeship?

Niklas: "You can see the results of your work."

Valentin: "It is amazingly rich in variety and, in my opinion, metal is a fascinating material."

Why with MAURER SE?

Niklas: : "MAURER is a large international company with fascinating projects and outstanding perspectives for my future."

Valentin: "I love to work on large workpieces. After we have passed our final exam, we have a guarantee of getting a permanent employment. And the good working climate makes it really fun to work here."

Working student Michael Breit and our trainee Luis Ditt

What do you like best with your profession?

Niklas:"You never work on your own but in a team."

Valentin: "I face new challenges time and again – it simply never gets boring."

» You never work on your own but in a team. «

Luis Dildt, 2nd year of traineeship

34 TRAINEES AGED 16–25

IN-HOUSE **TRAINING CENTER** WITH **WORKSHOP**

DURATION OF TRAINING
3.5 YEARS

10 %
WOMEN

GIRLS'DAY-AKADEMIE

The lack of women in our line of business gave us the idea of participating in the Girls'Day. Every year, we offer a project within the scope of the Girls'Day Academy. Young women join us for an internship during which they discover the MAURER world and manufacture their own workpieces with our assistance.

MAURER // EVENT CALENDAR

In the coming months, we will participate in the following conferences:

IABSE
New York, U.S.A

// **Sept. 19–21, 2019**

DACH
Innsbruck, Austria

// **Sept. 26–27, 2019**

5TH ICEES
Metu, Ankara, Turkey

// **Oct. 8–11, 2019**

EVENT CALENDAR

LE PONT
Toulouse, France
// **Oct. 15–16, 2019**

VFIB
Cologne, Germany
// **Nov. 14, 2019**

VDI SYMPOSIUM
Bonn, Germany
// **Nov. 26–27, 2019**

LEIPZIG BRIDGE CONSTRUCTION SYMPOSIUM
Leipzig, Germany
// **Feb. 11–12, 2020**

30TH DRESDEN BRIDGE CONSTRUCTION SYMPOSIUM
Dresden, Germany
// **March 9–10, 2020**

34TH WORLD NUCLEAR CONFERENCE
Paris, France
// **June 23–25, 2020**

We wish all colleagues being on duty for us lots of success, good conversations and a safe journey.

MAURER

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