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Peene Bridge Wolgast (Germany)

Project description

The Peene Bridge Wolgast is a combined road and rail bascule bridge over the Peene River in Wolgast. It connects the island of Usedom with Wolgast Castle Island, which is connected to the mainland of Western Pomerania via the “Schlossgraben” Bridge and a railroad bridge.

The Peene Bridge is crossed by the federal road 111 and the railroad line Züssow-Wolgast Hafen with its extension to Świnoujście Centrum.

The leaf of the bridge is 19 m wide and 42 m long. The elevated levers equipped with counterweights control the bridge’s mechanism and are visible from distance due to their height and dimensions. With the leaf open, the bridge’s navigation channel is 30 m wide.

mageba scope

A total of 24 bearings were designed, manufactured, delivered, partially installed and finally approved by mageba (at that time still under the name “Sollinger Hütte”) to support the superstructures on the piers and abutments.

Among the bearings installed are four horizontal force bearings, four longitudinal guide bearings and 16 spherical bearings allowing movement in all directions.

In 2022, a refurbishment project was carried out on the expansion joints.

The existing, worn-out joints were replaced by modern singel gap joints featuring noise-reducing sinus plates as well as TENSA®MAT mat joints supplied by mageba.

In the course of this refurbishment, we also replaced the finger plates at the tip of the leaves.

Highlights & Facts

mageba products:

Type:	Horizontal force bearings Guide bearings Spherical bearings TENSA®MAT T160 mat joint TENSA®GRIP RS-LS 100 „ULTRA“ single gap joint
Installation:	1996 / 2022

Structure:

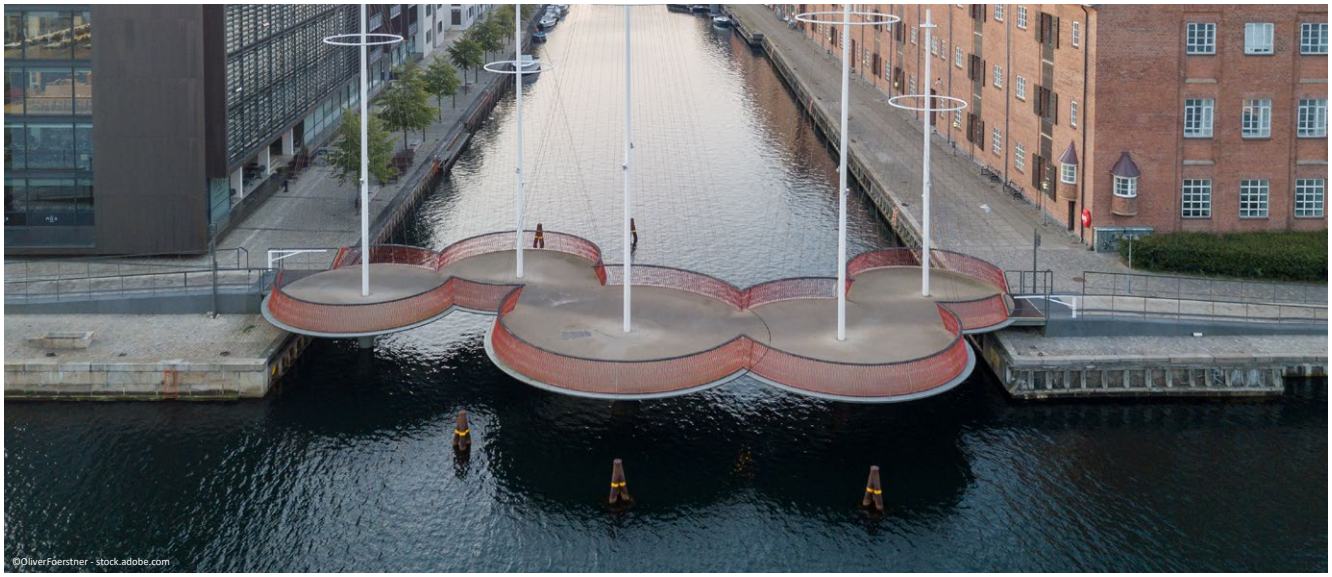
City:	Wolgast
Country:	Germany
Type:	Bascule bridge / Rolling lift bridge
Completion:	1997
Length:	256 m
Owner:	Federal Republic of Germany
Contractor:	Land Mecklenburg-Vorpommern
Architect:	Oskar Lehmann

The Peene Bridge is a road and railroad bascule bridge over the Peene River in Wolgast

Installed horizontal force bearing

New mat expansion joint as installed

Cirkelbroen (Denmark)



Project description

Cirkelbroen is an architecturally significant pedestrian bridge in the heart of Copenhagen city centre, opened in summer 2015.

The bridge spans approximately 40 meters over the Christianshavn Canal to connect the Applebys Plads and Christiansbro District of the city, also assisting in creating a continuous walkway along the Copenhagen Harbour.

Cirkelbroen is a steel pedestrian bridge formed of five circular platforms that span the canal. The bridge is able to rotate approximately 90 degrees around the central platform, in order to grant boats access to the Christianshavn Canal. The rotating length of the bridge is approximately 25 m long.

Beneath the central platform, the existing bearing had become damaged due to the opening and closing of the bridge – mageba was contacted to develop a solution for replacement.

mageba scope

mageba was commissioned to develop a bespoke solution for replacement of the bearing beneath the central platform, at the pivot point.

Damage to the existing bearing appeared to be due to steel-on-steel contact at the interface of rotation.

This new RESTON®SPHERICAL type KF1.8 bearing would require a vertical sliding surface, around which the bridge could rotate.

mageba was able to develop a bespoke solution, incorporating a vertical ROBO®SLIDE ring, and re-produce to the outer dimensions of the original bearing one-to-one in order that exchange could be made using the existing hole pattern.

Highlights & facts

mageba products:

Type:	RESTON®SPHERICAL type KF 1.8 bearing
Feature:	ROBO®SLIDE sliding material
Installation:	2021

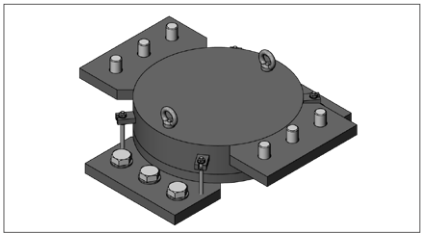
Structure:

Country:	Copenhagen
City:	Denmark
Type:	Steel pedestrian bridge
Length:	40 m
Completion:	2015
Owner:	City of Copenhagen
Contractor:	SH Group A/S
Architect:	Olafur Eliasson

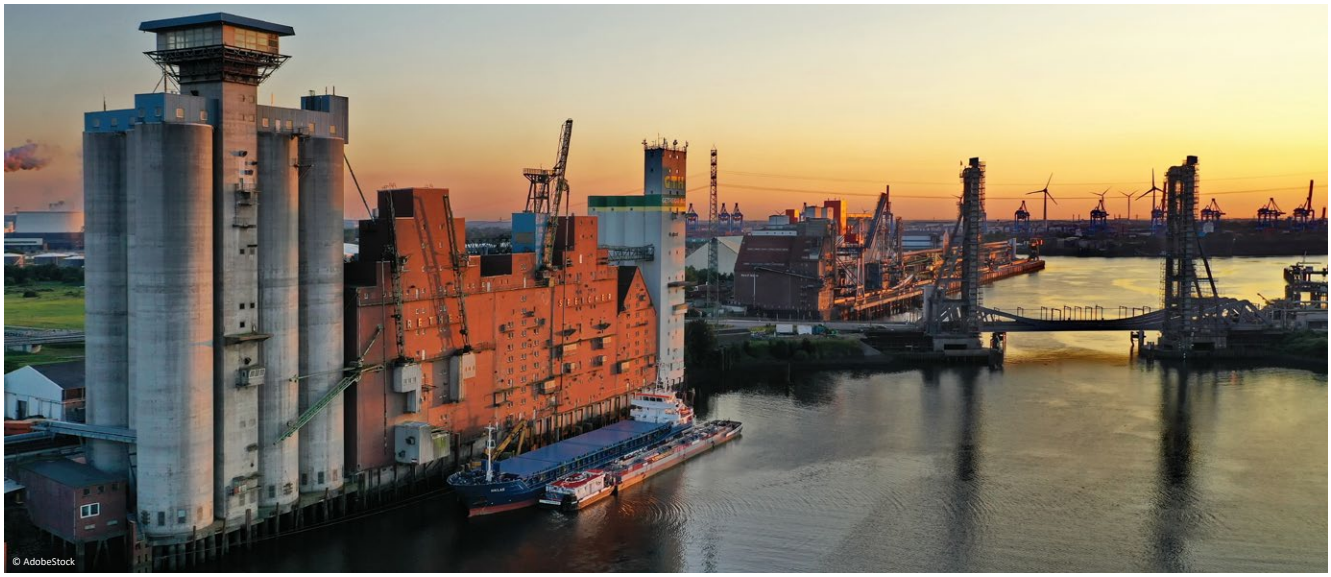
The Cirklelbroen is a pedestrian bridge in the heart of Copenhagen City Centre

New mageba RESTON®SPHERICAL bearing after installation, alongside the bridge hydraulics

Rotation caused during bridge opening is facilitated by the RESTON®SPHERICAL bearing



Rethe Bascule Bridge (Germany)



Project description

The Rethe bascule bridge is a combined rail and road bridge in the port of Hamburg. It crosses the Rethe at its mouth into the Reiherstieg and connects Hohe Schaar with Neuhof. This bascule bridge replaced the old Rethe lift bridge in 1934, which was directly adjacent to the east and was dismantled in 2018.

The Rethe bascule bridge has a span of 104 meters and opens a navigation channel unlimited in height, and 64 meters wide. The two bascule bridges (14 m width for road, 10 m width for rail), are independent hydraulically operated double-leaf bridges.

mageba scope

The newly built Rethe Bridge in the Port of Hamburg uses specially designed bearings.

The Rethe Bridge is designed as a double-leaf bascule bridge with a leaf length of approx. 52 m each. At the tip of each leaf, the two decks are designed with a „finger“ connection, to „lock“ the deck in place such that moments and shear forces are transmitted under traffic. To realize this function, sliding bearings with a special inlet geometry (separate for vertical and horizontal loads) were provided.

The sliding material, a highly stressable modified UHMWPE, was specially installed, since the upper part of the bearing (with the sliding material) is separated from the sliding track during the folding process.

Highlights & Facts

mageba products:

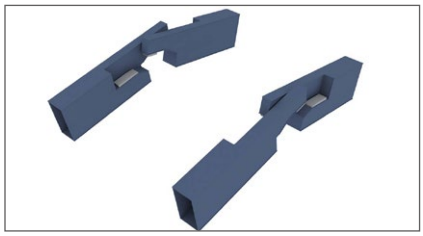
Type:	Vertical (8) and horizontal (4) force bearings
Installation:	2017

Structure:

City:	Hamburg
Country:	Germany
Type:	Bascule bridge / Rolling lift bridge
Completion:	2017
Length:	144 m
Owner:	HPA – Hamburg Port Authority
Contractor:	HPA
Design:	Ingenieurbüro Grassl GmbH Beratende Ingenieure Bauwesen

New Rethe Bridge in the Port of Hamburg

Schematic view of the finger lock



Support points of the finger lock

Baakenhafen Bridge (Germany)

Project description

The Baakenhafen Bridge is a 170 m long, 21 m wide and 2,300 t trapezoidal steel frame bridge with V columns. It is the largest bridge in HafenCity, which also marks the beginning of the development of eastern HafenCity.

The structure was designed by London architects, Wilkinson Eyre together with engineers BuroHappold (Berlin). Three lanes are dedicated to road traffic, whilst cyclists can also easily cross the bridge on both sides of the roadway.

The middle section of the bridge is movable, in order to enable large ships to travel through Baakenhafen.

In 2014, the bridge was nominated for the German Bridge Construction Award.

mageba scope

mageba supplied the following products for this landmark bridge:

- 4 LASTO®BLOCK elastomeric bearings of the types fixed, guided-sliding and free-sliding
- 4 RESTON®SPHERICAL bearings, with high-quality ROBO®SLIDE sliding material, of the types fixed, guided-sliding and free-sliding
- 26 m of TENSA®MAT type T80 mat joint
- 53 m of TENSA®MAT type T160 mat joint

Highlights & Facts

mageba Products:

Type:	LASTO®BLOCK elastomeric bearings RESTON®SPHERICAL bearings TENSA®MAT T80 and T160 mat joints
Installation:	2013

Structure:

City:	Hamburg
Country:	Germany
Type:	Trapezoidal steel frame bridge with V columns
Completion:	2013
Length:	170 m
Owner:	HafenCity Hamburg GmbH
Architect:	Wilkinson Eyre BuroHappold Ingenieurbüro GmbH

The Baakenhafen Bridge is situated in Hamburg, Germany

The mat joints are shaped to fit the given vertical and horizontal bends of the Baakenhafen Bridge

The bridge's V-beam is supported by elastomeric and spherical bearings

Jann-Berghaus Bridge (Germany)

Project description

The Jann Berghaus Bridge is one of the largest bascule bridges in Central Europe, with its total length of 464 m and movable section measuring 63 m. When open, 45 meters of the deck are extended upwards, while 15 meters protrude beneath deck level.

The bridge crosses the Ems River near Leer (East Friesland) between the districts of Leerort and Bingum, next to the Ems Tunnel (A 31), which is the only permanent crossing in the lower section of the Ems and makes it an important connection between East Friesland and the Netherlands.

The bridge was named after Jann Janssen Berghaus (1870–1954), the district president of Aurich (1922–1932) and later the president of East Friesland (1945–1954).

In its current version, the Jann Berghaus Bridge has existed since the beginning of 2010.

mageba scope

During the renovation of the bridge in 2009/2010 the joints on the movable part of the structure were replaced.

mageba's TENSA®FINGER RSFD 260 cantilever finger joints with a movement capacity of up to 150 mm were installed at the tip of the leaf.

This type of finger joint consists of solid steel edge profiles which are connected to the supporting structure with steel anchors in a way that is both strong and fatigue-resistant.

Highlights & facts

mageba products:

Type:	TENSA®FINGER RSFD expansion joints
Installation:	2010

Structure:

City:	Leer
Country:	Germany
Type:	Bascule bridge
Completion:	1995
Main span:	63 m
Length:	464 m
Owner:	Wasserschifffahrtamt Ostfriesland
Contractor:	Schäfer Bauten

The Jann-Berghaus Bridge is situated in Leer, Germany

Approach to the Jann-Berghaus Bridge

An installed cantilever finger joint

Lifting Bridge Cassarate (Switzerland)

Project description

Due to recurring flood situations of the Cassarate River, which runs through Lugano to its mouth in Lake Lugano, a new lift bridge was built in the village that bears the river's name.

In case of flooding, the Cassarate Fula bridge can be raised by up to 1.6 meters. The required hydraulics and the bridge centering system are located in a shaft under the bridge. Once the road is closed off, the bridge can be raised using the control system. The load-holding and lowering brake valves are located directly on the cylinders, thus providing the mechanical safety. The bridge can stop at any height without the risk of accidental lowering.

mageba scope

To allow bridge movements of up to 30 mm, mageba supplied two sliding plate expansion joints in lengths of 13 m and 24 m. The joints are attached to the substructure of the bridge and build the transition between road and bridge in normal condition. In the event of high water, the bridge will be lifted together with a part the joint structures.

Additionally, mageba supplied special deformation bearings allowing movements in any direction with movement limitation, based on the LASTO®BLOCK type NBa elastomeric bearings. On its upper part the elastomer block is fixed to the bridge deck and can be raised from the substructure when the bridge is lifted.

Highlights & Facts

mageba products:

Type:	LASTO®BLOCK elastomeric bearings type NBa
	Sliding plate expansion joint
Installation:	2010

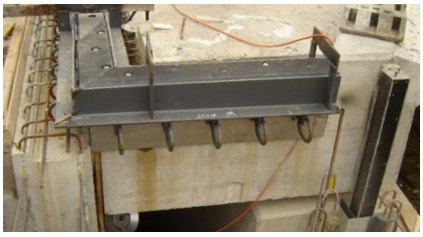
Structure:

City:	Lugano
Country:	Switzerland
Type:	Lifting bridge
Completion:	2010
Length:	20 m
Owner:	City of Lugano
Contractor:	Geo Edil SA, Lugano
Engineer:	Passera & Associati, Lugano

The road bridge with lifting function is located in Cassarate in the canton of Ticino

The specially designed elastomeric bearings and the lifting device with 4 hydraulic pistons

The sliding plate construction is fixed to the bridge substructure



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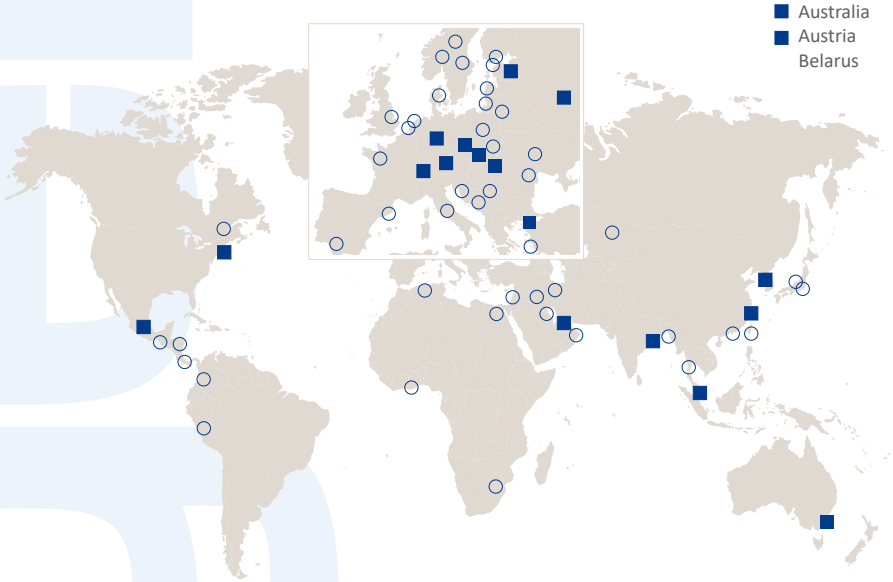

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