



The team of people from the **KOGA Bau Ltd.**, company has been for many years engaged in the field of pipe drain systems of the bridge objects. We know the advantages and disadvantages of different pipe materials, methods of use for individual objects, hanging systems and other object connected accessories. **We use only first-class materials which are chosen mainly by quality and not the lowest price**, which guarantees satisfaction with our services during implementation, warranty period and total lifetime of a bridge. Our work is defined by precision, quality, reliability and attention to the detail.

We are a long-term solution without compromises, not the cheap and short-term replacements. **For our cooperation we choose reliable, long time-honored partners.** One of our most important partner is **Vlcek Solution, Ltd.**, which is in the professional community known as the only true follower of the Vlcek Group, s. r. o. Their main cast iron bridge water drainage systems have been for many years successfully utilized in the bridge constructions field, not only in the Czech Republic and Slovakia, but also throughout the Europe and worldwide.

The establishment of the company **VLCEK-KOGA** was a logical result of the successful cooperation between KOGA Bau and Vlcek Solution, companies. Mr. Ing. Petr Vlcek, who is the initiator and also the warrantor of the cooperation, has been in the field of bridge drainage systems widely known and recognized experts for many years in the whole Europe. Our association produces brand new series of bridge water channels under the own brand **VLCEK-KOGA** and delivers reliable and innovative solutions that meet the most stringent criteria. The cooperation of **VLCEK-KOGA** is the response to various „professional” companies from abroad which are promoting on the Czech and Slovak market only with the low price, without the knowledge of local requirements and using materials that cannot withstand the lifetime of the object, and often neither the standard warranty period. Within this association we approach individual contracts in the Czech Republic in Slovakia but also in other countries of our operations. The aim of our association is to meet the needs of our customers reliably and rapidly, while using our long practical experience in the field and paying much attention to every technical detail. Therefore our motto is **“DETAILS MATTER”**.

Bridge gullies KOGA-VLČEK LABE II

Bridge gullies which adapt to the bridge,

A close cooperation between the two companies has earned its first results in terms of the brand new series of bridge gullies VLČEK-KOGA Labe II. New features of the water channels have been designed in order to fully meet the requirements of technical regulations of several countries, including Slovakia and the Czech Republic. Another condition was a complete compatibility with the existing elements and components of bridge drainage channel from the Vlcek product group. As a result, we offer a completely new grid with the pressure plate and three hydro bottom plates with the discharge DN 150, a plate with the direct discharge, a plate for F-fitting and a plate with a side discharge. The grid and frame form a single unit even after opening. The grid is lockable with a latch system without the need for other mechanical parts. Obviously, there is a collection basket for dirt. The rounded shape of the upper surfaces of the ribs in combination with the risering in shape of rounded curves and recessed longitudinal beams significantly improve the hydraulic properties, resulting in increased drainage absorbency.

Our bridge gullies adapt to the bridge, not the bridge adapts to the gullies!

Positioning at the curb - less water in expansion joints

The main advantage of the new series of our water channel is that it can be positioned directly next to the curb without a 10 cm spacing asphalt strip. It is enabled due to a new technical solution of the pressing plate, which has no side flanges reaching under the ledge below the curb. This solution ensures that all parts of the gully are removable from the top, upright and without stock removal in creating curb. By positioning the gully right at the curb, we can obtain its functionality even at minimum rainfall and melting ice, minimize the amount of water flowing next to the curbs and reaching expansion joints. By contrast, rain water together with dirt particles would often clog expansion joints leading and stocking water at the bridge curbs. By positioning the bridge gully LABE II right at the curb, (Fig. No. 2) we can obtain its functionality even with minimum rainfalls and melting ice, minimizing the amount of water flowing at the curbs, around the drains and the expansion joints, while none of its components does not interfere in the curb itself.



Fig. 1 Positioning the bridge gully 100 mm from the curb



Fig. 2 Positioning the bridge gully right at the curb

Attributes of the drainage channel VLČEK-KOGA LABE® II:

- grid sized 500 × 300
- loading D400 according to EN124
- openable grid with hinges
- sediments basket and lock
- rectification by screws or plates
- pressure plate allows water to be drained out of the isolation by drainage holes
- capable of changing of the sloping in the transverse and longitudinal direction
- compatibility with all previous 13 lower plates, meaning the variability of drains
- discharge DN100, DN150, DN200



Fig. 3 Drainage channel VLČEK-KOGA LABE® II - TYPE BR101

Pipe drainage system for bridges

KOGA HDPE and KOGA GRP - Details matter

Another of our dominant activity is the pipe drain system, where we also offer comprehensive range of products and services. The complexity of our services is made up of professional design, manufacture, supply and installation of the systems. In any case, it is a complete project solution, with precisely defined details. Pipe drainage can be provided in two material designs:

- System KOGA HDPE - high density polyethylene
- System KOGA GRP - fiberglass

The systems include all necessary drainage parts in different variability, including fittings, hinges and compensatory elements.

KOGA HDPE - features:

It is a single-layer pipeline system, which was developed solely for the purpose of draining engineering objects outside the buildings. During the designing stage, all the factors and aspects related to the purpose of use of the system were taken into the account. The pipelines never become the subject of the degradation due to UV radiation and during exploitation it is characterized by its color stability. As a single thermoplastic bridge drainage system, it was tested directly on the product with positive results according to the aging UV radiation in accordance with DIN EN ISO 4892, which **proved the lifetime of 40 years**. The system retains the shape, desired mechanical strength and withstands **temperatures from -40° C to 60° C**. It has a high chemical resistance to chloride and sulphide (oil substances), rust resistant, and electrochemical corrosion resistant. The smooth inner surface gives the product **excellent hydraulic properties** and due to high abrasion resistance exhibits a minimal



Fig. 4 KOGA HDPE – Slovakia, D1 highway, Lot: Ja-Ja I., SO201



Fig. 5 KOGA HDPE – Bulgaria, Sofia, Seminaria Bridge

tendency to sediments. Pipelines are produced in gray and black color designs.

KOGA HDPE – structural assembly

The pipeline system is **homogeneous**, which is its major advantage. All parts of the pipeline system, including fittings and compensatory calyx are **made of a single material**, produced by a single technology. This means there is no space for such an effect, where the fittings produced by injecting into the mould exhibit different characteristics than the pipes made by the extruders. The pipeline system consists of a vertical and longitudinal pipes, fittings, cleaning items, it is made of polyethylene HDPE from 50 mm diameter to 630 mm and the hanging system. Connection of the pipes may be processed in the form of detachable joints with the sealing calyx, in which the other end of another element is positioned. The calyx serves also the **compensation function** with respect to the higher polyethylene thermal expansion against the construction of the bridge. Polyethylene HDPE also performs the feature of firmly fixed connections by a front welding, electrical resistance welding or extrusion welding of pipes and fittings. This feature is the biggest advantage of this system over existing competing solutions because this solution offers considerable **reduction in the number of detachable pipeline elements**, which ensures accurate fitting and reliability of the system. In case of welding the fittings to the pipes, it is possible to **reduce the distance of the bridge structures and pipelines** to the radius of the elbows or fittings

KOGA HDPE – design principles

The hanging system of the drains made of thermoplastic materials cannot allow a formation of excessive deformations incurred as a result of a higher linear thermal expansion compared to the supporting bridge structures in changing thermal conditions. It is required to implement



Fig. 6 KOGA HDPE – details

in the pipeline attachments with compensations where the extension are eliminated by the compensatory calyx pipes or rubber expansion joints. In order the compensatory calyx fulfills its function, it must be firmly stabilized in its position, therefore the hinges were divided into **fixed and sliding points**. The fixed point is stabilizing the pipe in its position and prevents it from free moving in the direction of pipe axis. This point is usually placed behind the compensatory element. The sliding point fixates the collector transversely to the pipe axis, but allows single-axial movement in the axial direction.

KOGA HDPE – hanging technology

For the purpose of mounting and installation, the **innovative telescopic frame hinge system** was developed, which uses galvanized steel elements (zinc coating thickness $\geq 85\mu\text{m}$), which are additionally treated with powder coating (Coating thickness $\geq 70\mu\text{m}$). Fasteners are made of the stainless steel Class A4. Hinges can also be made of the stainless steel, if required. Telescopic frame hinges supplied by our company are protected by utility patterns applicable throughout Europe.

KOGA HDPE – the benefits of polyethylene system of bridge drainage

The system offers a higher technical and esthetic level at a better price than currently used systems on the market. Its main advantages include in particular:

- KOGA HDPE is designed from the beginning especially for the bridge objects and never for the land sewage adapted to bridges, as it is usually processed
- KOGA HDPE as the only thermoplastic piping systems has UV stability declared according to EN ISO 4892, with a lifetime of 40 years,
- the system is homogeneous – the pipes and fittings are made of a single material • the elbows and fittings are welded directly to the manifold, which in practice means fewer joints and lower risk of leakage,
- the construction is positioned completely under the bridge
- delivered in 4-6 m long segments – meaning faster installation,
- gray color RAL 7032 – the system corresponds with the color of the concrete structure,
- telescopic frames of the steel hinges are corrosion resistant (hot dip galvanizing, powder coating), connecting hinges material is corrosion resistant, class A4,
- Hanging elements require no cutting of the elements – intact corrosion protection of all elements
- complete service – from design, manufacture, supply to installation.



Fig. 7 BARIN and MOGG in action



Rental of assembly bridge inspection platforms

Our company offers the possibility of renting the mounting platform **MOGG MBI 60-1/S** on Mercedes-Benz chassis and **BARIN ABC 20** on Tatra 815 chassis. They can serve as a platform for regular or emergency bridge inspections. Using the platform, it is possible to check the bottom of all critical bridge parts and its accessories, as the bridge deck, bearings, dilation, drainage system, etc. They can also serve as a mounting platform. Our platforms can be oriented transversely below structure, but also in parallel with the ledge of the bridge. They are a mobile form of a platforms, which means activating requires no additional machinery. Rental price is always upon agreement. In case of interest, please send an email with your requirements to the address **kogabau@kogabau.sk**. Our sales managers will contact you and agree with you the details of the lease.



WATER CONNECTS US