

Focus: Tunnelling



Table of Contents

All About Tunnelling	5	Our Products and Services	8	Reference Projects	37
Product Solutions by PohlCon	5				
Basics of Tunnelling	6	Product Overview Tunnel Setup and Drive	10		
		Product Overview Tunnel Inner Shell	14		
		Product Overview Tunnel Equipment	20		
		Railway Tunnel	20		
		Road Tunnel	24		
		Supply Tunnel	30		



All About Tunnelling

Product Solutions by PohlCon

Tunnels are masterpieces of civil engineering that combine theoretical knowledge with practical experience. They have always fascinated people because of their construction and complexity.

Tunnels are designed for a specific purpose and realised accordingly.

Expertise and Quality From a Single Source

PohlCon has been your competent partner for tunnelling projects for a long time.

Whether tunnelling, inner shell or tunnel equipment: we rely on a wide range of products and systems that provide the solution you need across all construction phases. Customised special solutions meet even special requirements.

We serve numerous applications with our portfolio:

The GRP reinforcement FIBERNOX® V-ROD allows the material-friendly driving through diaphragm walls and bored piles. Joint tapes, joint sheets and injection hoses from the KUNEX®, PENTAFLEX® and PLURAFLEX® product ranges ensure the water tightness of the structure. Thanks to FERBOX® reverse bending connectors, concrete components can be connected to each other in a force-fit manner.

The wide range of anchor and mounting channels holds connecting structures securely in place. Various cable management systems ensure organised cable routing in the tunnel and round off the extensive product range.

Customised Wishes? Our Strength!

PohlCon meets special requirements with many years of expertise and the trust of its customers in its engineering services.

Whether special constructions, dimensions or solutions: Customised challenges are our strength.



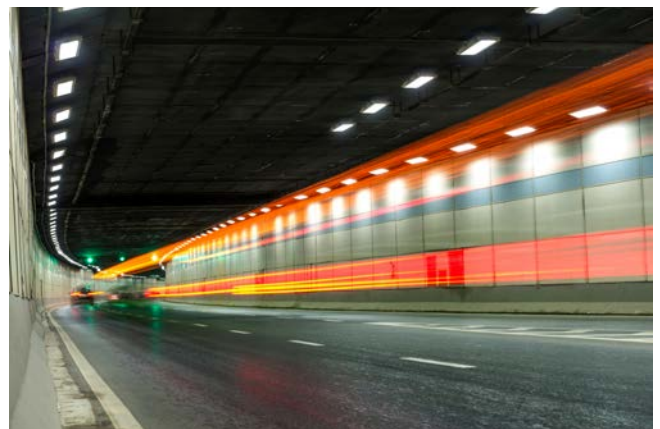
This publication provides an overview of our tunnelling product range. Detailed information on the products can be found in our product-specific **technical information** brochures and **price lists**.



The contents of this publication are for information purposes only. Certain products may not be available in certain countries. The respective country-specific laws, standards and guidelines apply.



Thanks to modern tunnel boring machines, tunnel tubes with a diameter of more than 17.5 metres can be produced.



Corrosion-resistant components protect tunnels from chloride damage, not just during winter. Our range offers appropriate products for this purpose.



Vibrations and air suction require all attachments to be firmly anchored. Our anchor channels, among other products, ensure a secure hold.

Basics of Tunnelling

In tunnelling, a distinction is made between open and closed construction methods. The choice of construction method depends on the geological and structural conditions on site as well as the construction costs.

Knowledge of the structure, composition and strength of the subsoil, its soil mechanics and the presence of water is of immense importance here. It protects against potential dangers during the construction phase as well as after completion of the structure.

Personal Protection, Fire Protection, Power Supply

The protection of people has the highest priority in tunnels. Due to structural conditions, rescue options are severely restricted, which is particularly critical in the event of a fire. Passable escape routes, efficient smoke extraction and functional maintenance create more time for evacuation measures.

Anchor channels and their special screws ensure that connecting structures in tunnel walls and ceilings are firmly anchored. Fire-resistant product variants can even withstand direct exposure to fire - the anchor channels JTA K and JTA W in fire resistance class R120 can even withstand fire for at least 120 minutes.

Fires can occur in railway tunnels in particular due to short circuits caused by a contact wire break. PohlCon offers anchor channels for this purpose - also as a pair variant - with optional earthing lugs. These are short-circuit-proof and connected to the tunnel's own earthing system, safely discharging the current flow in an emergency.

Anti-Corrosion Protection

Corrosion on load-bearing structural elements reduces the stability and service life of the structure and leads to cost-intensive repair measures. Components made of corrosion-resistant stainless steel are the right choice for this. Depending on the application, a distinction is made between high and very high corrosion loads.

PohlCon also offers parts and components in stainless steel across all product groups.

Seismic Protection

Toothed anchor channels are used in sensitive structures and in areas with extreme environmental influences. In combination with the appropriate toothed bolts, they absorb high loads from longitudinal tension, transverse tension and centric tension. This ensures a high load-bearing capacity in the longitudinal direction of the channel even in the event of an earthquake. In addition, the non-slip, form-fit connection of components is possible.

Depending on the structural basis, the tunnel cross-section can be round, elliptical, horseshoe-shaped, rectangular or have a customised shape.

Tunnels must meet the highest safety requirements in order to remain operational. The protection of life is the top priority here. No less important is the protection of the structure itself: fire and corrosion protection measures increase the longevity of the tunnel and protect it from collapse in case of an emergency.

The toothed, hot-rolled anchor channels in the JXA product range offer maximum safety for this - even with crack widths of up to 1.5 mm, depending on the type. This has been confirmed by several series of tests conducted by the German Institute for Building Technology (DIBt).

FIBERNOX® V-ROD GRP reinforcement is also a highly durable alternative for structural elements with special durability requirements.

Refurbishment

The concept of sustainability has played an important role in the construction industry for a long time - and the trend is rising. On the one hand, refurbishment measures help to conserve resources, as they protect buildings that are worth preserving from decay or demolition. On the other hand, they offer the opportunity to modernise older buildings with modern construction solutions and modern technology. The trend towards refurbishment measures is clearly recognisable in tunnel construction.

With the mounting channels of the JM product group, PohlCon provides a wide range of fastening elements including accessories that can be installed in existing buildings. Various designs, materials and coatings make it possible to select the most suitable product for the application, which also has an environmental product declaration (EPD).

Want to Find out More?

Further information and an overview of the areas of application can be found in our technical information brochure **channels and accessories**.



Our application technology team will be happy to answer all your questions. Get in touch with us!

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Our Products and Services

From Start to Future

PohlCon is characterised by a comprehensive range of products and system solutions which are used in the individual construction phases. Whether GRP reinforcement for construction site equipment, tunnelling or in the structure itself, sealing and fastening solutions in the inner shell or mounting and support systems for tunnel equipment:

Our portfolio covers numerous areas of application.

The Plus for the Customer - Our Services

For special requirements beyond the standard range, we develop and produce customised special solutions according to customer specifications.

Planning and installation services complete the range of services and emphasise our customer-oriented and service-oriented corporate culture. Whether planned by ourselves or with the support of our experts:

Convince yourself of the development spirit and engineering expertise of our application technicians and consulting engineers.

All at a Glance

The overview shows our range of product solutions and services.



Tunnel Setup and Drive

Products

- **GRP Reinforcement**



Tunnel Inner Shell

Products

- Shear Reinforcement
- Reverse Bending Connectors
- Joint Tapes
- Joint Sheets
- Sealing Formwork Element
- Injection Hoses
- Anchor Channels – straight and curved
- Anchor Channel Pairs – straight and curved
- Breaking Point Bolts

Tunnel Equipment

Products

- Mounting Channels – straight and curved
- Special Screws
- Cable Trays
- Mesh Cable Trays
- Cable Ladders
- Vertical Ladders
- Cable Clamps
- Cable Support Troughs
- Wall Brackets
- Support Systems

Services

- Customised Constructions
- Planning
- Installation

Product Overview Tunnel Setup and Drive

During mechanised tunnelling, walls made of in-situ concrete are cast at both ends of the future tunnel tube. These so-called soft-eyes serve as entry and exit points for the tunnel boring machine during tunnelling.

The FIBERNOX® V-ROD reinforcement made of glass fibre reinforced composite material (GRP) allows soft-eyes to be driven through without damaging the machine. Thanks to its alkali and corrosion resistance, it is also ideal for reinforcing various types of excavation support and the tunnelling structure itself.

Reinforcement

- **GRP Reinforcement**
reinforcement of the soft-eye made of glass fibre reinforced composite material





Reinforcement

GRP Reinforcement

FIBERNOX® V-ROD; reinforcement of the soft-eye made of glass fibre reinforced composite material (GRP)



- easy to cut for tunnel boring machines thanks to good machinability of the material
- very good bond due to sanded surface
- durable even under extreme conditions
- alkali- and corrosion-resistant
- non-magnetic and electrically non-conductive; permeable to radio waves
- various diameters and shapes

Reinforcement Accessories

optional accessories for fastening and mounting reinforcement elements



- spacers, installation aids etc.
- quick and easy to use
- various materials



Product Overview Tunnel Inner Shell

If the tunnel is excavated conventionally, the exposed subsoil is first reinforced with shotcrete. Arch formwork is used for the subsequent concreting of the inner shell.

In the case of mechanised tunnelling, the inner shell is made of in-situ concrete or segments, which provide the necessary reinforcement.

To protect against moisture and pressing water, the tunnel is sealed all round, regardless of the tunnelling method. PohlCon offers the KUNEX®, PENTAFLEX® and PLURAFLEX® product solutions for this purpose. In addition, the inner shell is equipped with all elements to be permanently installed, e.g. with anchor channels from the JTA and JXA product ranges.

Reinforcement

- **Shear Reinforcement**
used to increase the shear force resistance in beams and slabs
- **Reverse Bending Connectors**
used for reinforcement and force-fit connections of reinforced concrete components

Sealing

- **Joint Tapes**
used to seal expansion joints between concreting sections
- **Joint Sheets**
coated joint sheet used to seal expansion joints between concreting sections
- **Sealing Formwork Element**
shuttering made of expanded metal for simultaneous inclusion of a joint sealant
- **Injection Hoses**
injection system for subsequent sealing of cavities

Fastening

- **Anchor Channels – straight**
used for flexible fastening of adjacent constructions under static and dynamic loads
- **Anchor Channels – straight, toothed**
used for flexible fastening of adjacent constructions under static, dynamic and seismic loads
- **Anchor Channels – curved, adapted to the tunnel geometry**
used for flexible fastening of adjacent constructions in the tunnel curvature, individually manufactured according to customer specifications
- **Anchor Channel Pairs – straight and curved**
high load transfer, individually configurable
- **Breaking Point Bolts**
for formwork constructions in tunnels





Reinforcement

Shear Reinforcement

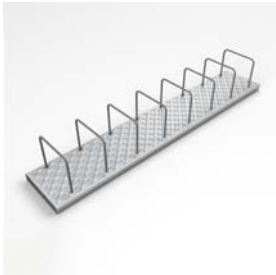
JDA-S; used to increase the shear force resistance in beams and slabs



- double-headed anchor made of smooth or ribbed reinforcing steel
- for heavy-duty linear supports
- German technical approval (Z-15.1-268)
- several shear reinforcements are combined into reinforcement elements via mounting strips
- various variants and sizes

Reverse Bending Connectors

FERBOX® Type B05; used for reinforcement and force-fit connections of reinforced concrete components



- quick installation in walls, ceilings and stairs
- suitable for almost all wall thicknesses, low concrete cover required
- highest joint category 'interlocked' in transverse and longitudinal direction
- storage box and lid made of galvanised steel, recyclable
- customisable on request

Reinforcement Accessories

optional accessories for fastening and mounting reinforcement elements



- spacers, installation aids etc.
- quick and easy to use
- various materials

Sealing

Joint Tapes

KUNEX®; used to seal expansion joints between concreting sections in tunnels



- made of thermoplastic material (PVC-P)
- water tightness in accordance with DIN
- fastened to the reinforcement with eyelets or joint tapes clamps
- external DIN joint tapes are bitumen-compatible
- steel-reinforced version available

Joint Sheets

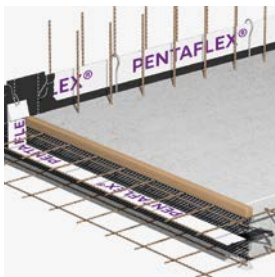
PENTAFLEX KB® 167; coated joint sheet used to seal expansion joints between concreting sections in tunnels



- galvanised steel sheet with a special coating
- can be used for pressing and non-pressing water
- water tightness tested up to 5.0 bar; permissible according to ETA and AbP 2.0 bar (safety factor 2.5)
- fastening with a retaining bracket, no moulded parts required
- resistant to a wide range of organic and inorganic substances

Sealing Formwork Element

PENTAFLEX® ABS; shuttering made of expanded metal for simultaneous inclusion of a joint sealant



- formwork element with lattice girders and a coated joint sheet
- water tightness tested up to 5.0 bar; permissible according to ETA and AbP 2.0 bar (safety factor 2.5)
- available as a rough or serrated joint, eccentric joint guidance possible
- with corner support for vertical connections (optional)

Injection Hoses

PLURAFLEX®; injection system for subsequent sealing of cavities



- PVC-based injection hose
- for subsequent grouting with injection material
- water tightness up to 1.0 bar (according to AbP)
- can be combined with other products as a secondary seal (e.g. KUNEX®, PENTAFLEX®)

Sealing Accessories

optional accessories for fastening and installing sealing solutions



- brackets, clamps, tapes, tools etc.
- quick and easy to use
- various materials

Fastening

Anchor Channels – straight

JTA K, JTA W; used for flexible fastening of adjacent constructions under static and dynamic loads



- approved for almost every safety requirement worldwide (ETA 09/0338, ICC ES Report)
- approved for installation in components with fire protection requirements
- suitable for cracked and non-cracked concrete; simple levelling of construction tolerances
- optimal utilisation of the channel thanks to small edge distances
- cold-formed or hot-rolled
- various variants and lengths made of steel or stainless steel (for various corrosion loads, CRC III)

Anchor Channels – straight, toothed

JXA W; used for flexible fastening of adjacent constructions under static, dynamic and seismic loads



- for high tightening torques; fatigue-resistant up to the limit of the working load
- approved for almost every safety requirement worldwide (ETA 09/0338, ICC ES Report)
- ideally suited for areas with extreme environmental influences and for sensitive structures
- suitable for cracked and non-cracked concrete; simple levelling of construction tolerances
- optimal utilisation of the channel thanks to small edge distances
- hot-rolled, low residual stress
- various variants and lengths made of steel or stainless steel (for various corrosion loads, CRC III)

Anchor Channels – curved, adapted to the tunnel geometry

JTA K, JTA W; used for flexible fastening of adjacent constructions in the tunnel curvature



- product characteristics: see **Anchor Channels – straight**
- suitable for any tunnel curvature thanks to concave or convex bending
- individually configurable with earthing lugs, spacers etc.; short-circuit-proof
- special solutions possible; also available as hot-rolled, toothed anchor channel JXA W



The minimum bending radius and channel length can be found in our technical information brochure **channels and accessories**.

Anchor Channel Pairs – straight

JTA K, JTA W; used for fastening adjacent constructions, individually configurable



- product characteristics: see **Anchor Channels – straight**
- high load transfer thanks to two channels
- pre-definable channel spacing using connecting brackets or struts
- electromagnetic compatibility thanks to optional earthing lugs

Anchor Channel Pairs – curved, adapted to the tunnel geometry

JTA K, JTA W; used for flexible fastening of adjacent constructions in the tunnel curvature, individually configurable



- product characteristics: see **Anchor Channels – straight** and **Anchor Channels – curved, adapted to the tunnel geometry**
- high load transfer thanks to two channels
- pre-definable channel spacing using connecting brackets or struts
- electromagnetic compatibility thanks to optional earthing lugs



The minimum bending radius and channel length can be found in our technical information brochure **channels and accessories**.

Breaking Point Bolts

JB-SB, JH-SB; for formwork constructions in tunnels



- for mounting and positioning anchor channels in formwork constructions
- thanks to the breaking point, the tunnel formwork can be moved without damage even with breaking point bolts attached to it
- simple levelling of construction tolerances in tunnelling
- made of steel (galvanised)

Fastening Accessories

optional accessories for fastening and mounting adjacent constructions



- sliding nuts, anchor nuts, threaded rods etc.
- in conjunction with anchor channels and special screws
- quick and easy to use
- various materials and coatings

Product Overview Tunnel Equipment

During the extension phase, the tunnel is equipped with fastening elements and support systems, which subsequently enable the installation of the planned technical tunnel equipment.

The requirements for the installed products and systems vary depending on the application.

Railway Tunnel

Trains generate enormous forces and vibrations on the overhead lines due to the high speeds at which they pass. The cantilever constructions that hold them transfer static and dynamic loads, so they have to be firmly anchored in the tunnel ceilings and walls. The right combination of anchor channel and special screw provides the necessary support. PohlCon's cable management systems ensure the safe and bundled routing of cable trays in the tunnel.

Fastening

- **Mounting Channels – straight**
used for flexible fastening of adjacent constructions in all directions under static and dynamic loads
- **Mounting Channels – curved, adapted to the tunnel geometry**
used for fastening of adjacent constructions in the tunnel curvature, individually manufactured according to customer specifications
- **Special Screws**
for every requirement
- **Customised Constructions**
developed project-specifically according to customer specifications

Cable Management Systems

- **Cable Clamps**
used for single or multi-layer cable routing on tunnel walls and ceilings
- **Cable Support Troughs**
used for single or multi-layer cable routing on tunnel walls





Fastening

Mounting Channels – straight

used for flexible fastening of adjacent constructions in all directions under static and dynamic loads



- approved throughout Europe
- various types, e.g. perforated and serrated
- cold-formed or hot-rolled (depending on type)
- variable attachment by welding, screwing or dowelling, depending on the substrate; simple levelling of construction tolerances
- universal installation solutions thanks to special screws
- ideally suited for tunnel modernisations and refurbishments
- various variants and lengths made of steel or stainless steel (for various corrosion loads, CRC III)

Mounting Channels – curved, adapted to the tunnel geometry

used for fastening of adjacent constructions in the tunnel curvature



- product characteristics: see **Mounting Channels – straight**
- suitable for any tunnel curvature thanks to concave or convex bending



The minimum bending radius and channel length can be found in our technical information brochure **channels and accessories**.

Special Screws

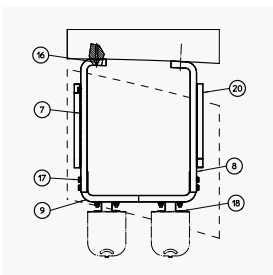
for every requirement



- safe and flexible system solution for anchor and mounting channels
- suitable for transferring very high loads in conjunction with anchor and mounting channels
- approved for almost every safety requirement worldwide (ETA 09/0338, ICC ES Report)
- coordinated interaction of special screws and channels
- flexible, time- and cost-saving mounting of adjacent constructions
- various variants and lengths made of steel or stainless steel (for various corrosion loads, CRC III), different strength classes

Customised Constructions

developed project-specifically according to customer specifications



- customised constructions and solutions for fastening adjacent constructions, manufactured according to customer specifications
- various materials and coatings

Fastening Accessories

optional accessories for fastening and mounting adjacent constructions



- sliding nuts, anchor nuts, threaded rods etc.
- in conjunction with anchor channels and special screws
- quick and easy to use
- various materials and coatings

Cable Management Systems

Cable Clamps

used for single or multi-layer cable routing on tunnel walls and ceilings



- ideally suited for cable diameters up to 175 mm
- flexible attachment to profile rails, tensioning straps, flat steel, profile steel and directly to the substrate
- various types and sizes
- various materials, e.g. stainless steel (for various corrosion loads); various coatings

Cable Support Troughs

used for single or multi-layer cable routing on tunnel walls



- ideally suited for cable diameters between 40 and 120 mm
- flexible attachment to profile rails and directly to the substrate
- various types and sizes
- made of steel (hot-dip galvanised)

Fastening Accessories for Cable Management Systems

optional accessories for fastening and mounting cable trays and support structures



- screw fasteners, clamp fasteners, suspension fasteners etc.
- quick and easy to use
- various materials, e.g. stainless steel (for different corrosion loads)

Road Tunnel

There is a risk of chloride concentration in road tunnels - especially in winter. Corrosion-resistant parts and components are used to prevent corrosion damage.

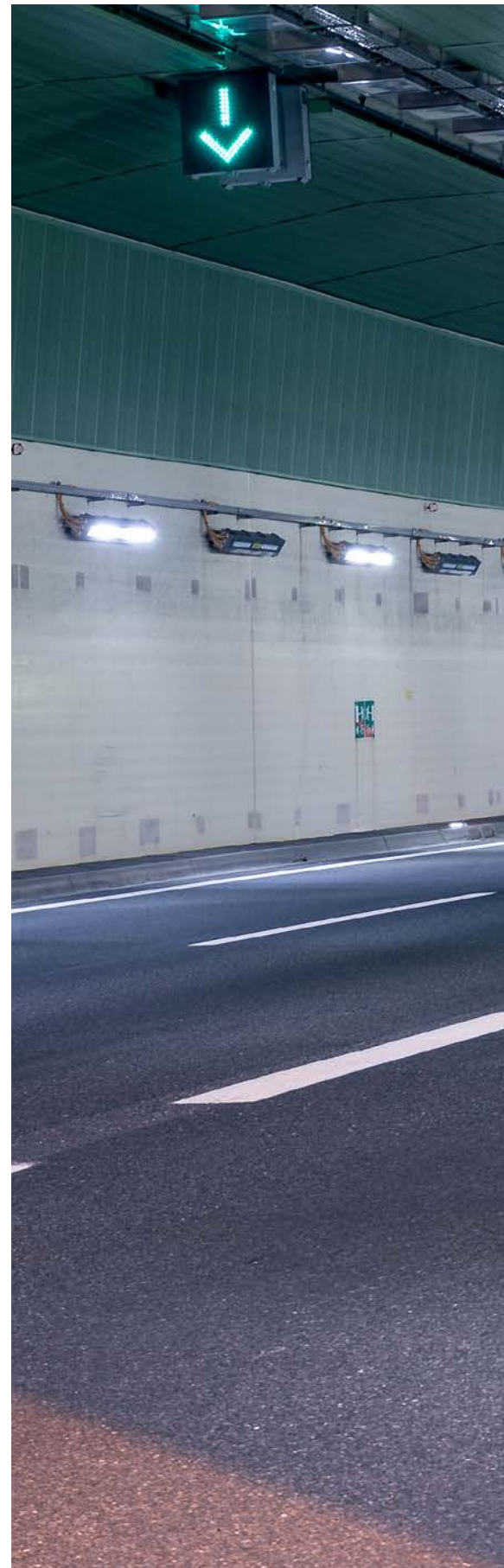
To this end, PohlCon also offers many of its product solutions in stainless steel. This applies e.g. to cable management systems that enable organised and safe cable routing in tunnels.

Fastening

- **Mounting Channels – straight**
used for flexible fastening of adjacent constructions in all directions under static and dynamic loads
- **Mounting Channels – curved, adapted to the tunnel geometry**
used for fastening of adjacent constructions in the tunnel curvature, individually manufactured according to customer specifications
- **Special Screws**
for every requirement
- **Customised Constructions**
developed project-specifically according to customer specifications

Cable Management Systems

- **Cable Trays**
used for flexible cable routing on tunnel walls and ceilings
- **Mesh Cable Trays**
used for flexible cable routing with excellent cable ventilation
- **Cable Ladders**
used for flexible cable routing on tunnel walls and ceilings with excellent cable ventilation
- **Vertical Ladders**
used for vertical cable routing on tunnel walls or as a free-standing construction
- **Cable Clamps**
used for single or multi-layer cable routing on tunnel walls and ceilings
- **Wall Brackets**
used for fastening cable trays to tunnel walls and beams, primarily intended for cable trays and mesh cable trays
- **Support Systems**
used to suspend cable trays





Fastening

Mounting Channels – straight

used for flexible fastening of adjacent constructions in all directions under static and dynamic loads



- approved throughout Europe
- various types, e.g. perforated and serrated
- cold-formed or hot-rolled (depending on type)
- variable attachment by welding, screwing or dowelling, depending on the substrate; simple levelling of construction tolerances
- universal installation solutions thanks to special screws
- ideally suited for tunnel modernisations and refurbishments
- various variants and lengths made of steel or stainless steel (for various corrosion loads, CRC III)

Mounting Channels – curved, adapted to the tunnel geometry

used for fastening of adjacent constructions in the tunnel curvature



- product characteristics: see **Mounting Channels – straight**
- suitable for any tunnel curvature thanks to concave or convex bending



The minimum bending radius and channel length can be found in our technical information brochure **channels and accessories**.

Special Screws

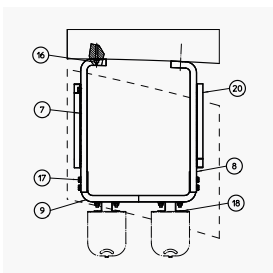
for every requirement



- safe and flexible system solution for anchor and mounting channels
- suitable for transferring very high loads in conjunction with anchor and mounting channels
- approved for almost every safety requirement worldwide (ETA 09/0338, ICC ES Report)
- coordinated interaction of special screws and channels
- flexible, time- and cost-saving mounting of adjacent constructions
- various variants and lengths made of steel or stainless steel (for various corrosion loads, CRC III), different strength classes

Customised Constructions

developed project-specifically according to customer specifications



- customised constructions and solutions for fastening adjacent constructions, manufactured according to customer specifications
- various materials and coatings

Fastening Accessories

optional accessories for fastening and mounting adjacent constructions



- sliding nuts, anchor nuts, threaded rods etc.
- in conjunction with anchor channels and special screws
- quick and easy to use
- various materials and coatings

Cable Management Systems

Cable Trays

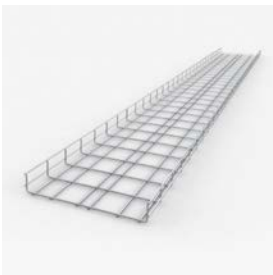
used for flexible cable routing on tunnel walls and ceilings



- integrated system in conjunction with the appropriate support system
- thanks to a large number of moulded parts horizontal and vertical changes of direction are possible
- various types, e.g. perforated, non-perforated, permeable to extinguishing water
- various types and sizes made of steel or stainless steel (for various corrosion loads); various coatings

Mesh Cable Trays

used for flexible cable routing with excellent cable ventilation



- highly flexible system with the option of unthreading cables in all directions at any time
- thanks to a large number of moulded parts horizontal and vertical changes of direction are possible
- various types, e.g. U-, C- and G-shaped
- various types and sizes made of steel or stainless steel (for various corrosion loads); various coatings

Cable Ladders

used for flexible cable routing on tunnel walls and ceilings with excellent cable ventilation



- suitable for medium to large cable diameters with medium to large support spacing
- integrated system in conjunction with the appropriate support system
- thanks to a large number of moulded parts horizontal and vertical changes of direction are possible
- various types and sizes made of steel or stainless steel (for various corrosion loads); various coatings

Vertical Ladders

used for vertical cable routing on tunnel walls or as a free-standing construction



- highly flexible system with excellent cable ventilation for various applications
- various types, e.g. light and heavy-duty variants
- heavy-duty vertical ladders can be used on both sides
- various types and sizes made of steel or stainless steel (for various corrosion loads); various coatings

Cable Clamps

used for single or multi-layer cable routing on tunnel walls and ceilings



- ideally suited for cable diameters up to 175 mm
- flexible attachment to profile rails, tensioning straps, flat steel, profile steel and directly to the substrate
- various types and sizes
- various materials, e.g. stainless steel (for various corrosion loads); various coatings

Wall Brackets

used for fastening cable trays to tunnel walls and beams



- easy-to-install support structure for cable trays, mesh cable trays, cable ladders and more
- various types, variants and sizes
- made of steel or stainless steel (for various corrosion loads); various coatings

Support Systems

U-Handle System, I-Handle System, STRUT Mounting System; used to suspend cable trays



- integrated systems consisting of wall brackets, bracket holders and head plates, as well as profile rails (STRUT Mounting System only)
- various types and sizes
- variably customisable for different loads and areas of application
- used for cable systems with functional integrity
- the bracket holder can be used as an independent profile rail; available as a variant with a screw-on or weld-on head plate
- made of steel or stainless steel (for various corrosion loads); various coatings

Fastening Accessories for Cable Management Systems

optional accessories for fastening and mounting cable trays and support structures



- screw fasteners, clamp fasteners, suspension fasteners etc.
- quick and easy to use
- various materials, e.g. stainless steel (for various corrosion loads)

Supply Tunnel

Media running through supply tunnels, such as gas, electricity and tele-communication lines, must be protected against failure in the event of an emergency. PohlCon's cable management systems enable both the safe and bundled routing of the media through the tunnel and their functional integrity in the event of e.g. a fire.

Fastening

- **Mounting Channels – straight**
used for flexible fastening of adjacent constructions in all directions under static and dynamic loads
- **Mounting Channels – curved, adapted to the tunnel geometry**
used for fastening of adjacent constructions in the tunnel curvature, individually manufactured according to customer specifications
- **Special Screws**
for every requirement

Cable Management Systems

- **Cable Trays**
used for flexible cable routing on tunnel walls and ceilings
- **Cable Ladders**
used for flexible cable routing on tunnel walls and ceilings with excellent cable ventilation
- **Wall Brackets**
used for fastening cable trays to tunnel walls and beams, primarily intended for cable trays and mesh cable trays
- **Support Systems**
used to suspend cable trays





Fastening

Mounting Channels – straight

used for flexible fastening of adjacent constructions in all directions under static and dynamic loads



- approved throughout Europe
- various types, e.g. perforated and serrated
- cold-formed or hot-rolled (depending on type)
- variable attachment by welding, screwing or dowelling, depending on the substrate; simple levelling of construction tolerances
- universal installation solutions thanks to special screws
- ideally suited for tunnel modernisations and refurbishments
- various variants and lengths made of steel or stainless steel (for various corrosion loads, CRC III)

Mounting Channels – curved, adapted to the tunnel geometry

used for fastening of adjacent constructions in the tunnel curvature



- product characteristics: see **Mounting Channels – straight**
- suitable for any tunnel curvature thanks to concave or convex bending



The minimum bending radius and channel length can be found in our technical information brochure **channels and accessories**.

Special Screws

for every requirement



- safe and flexible system solution for anchor and mounting channels
- suitable for transferring very high loads in conjunction with anchor and mounting channels
- approved for almost every safety requirement worldwide (ETA 09/0338, ICC ES Report)
- coordinated interaction of special screws and channels
- flexible, time- and cost-saving mounting of adjacent constructions
- various variants and lengths made of steel or stainless steel (for various corrosion loads, CRC III), different strength classes

Fastening Accessories

optional accessories for fastening and mounting adjacent constructions



- sliding nuts, anchor nuts, threaded rods etc.
- in conjunction with anchor channels and special screws
- quick and easy to use
- various materials and coatings

Cable Management Systems

Cable Trays

used for flexible cable routing on tunnel walls and ceilings



- integrated system in conjunction with the appropriate support system
- thanks to a large number of moulded parts horizontal and vertical changes of direction are possible
- various types, e.g. perforated, non-perforated, permeable to extinguishing water
- various types and sizes made of steel or stainless steel (for various corrosion loads); various coatings

Cable Ladders

used for flexible cable routing on tunnel walls and ceilings with excellent cable ventilation



- suitable for medium to large cable diameters with medium to large support spacing
- integrated system in conjunction with the appropriate support system
- thanks to a large number of moulded parts horizontal and vertical changes of direction are possible
- various types and sizes made of steel or stainless steel (for various corrosion loads); various coatings

Wall Brackets

used for fastening cable trays to tunnel walls and beams



- easy-to-install support structure for cable trays, mesh cable trays, cable ladders and more
- various types, variants and sizes
- made of steel or stainless steel (for various corrosion loads); various coatings

Support Systems

U-Handle System, I-Handle System, STRUT Mounting System; used to suspend cable trays



- integrated systems consisting of wall brackets, bracket holders and head plates, as well as profile rails (STRUT Mounting System only)
- various types and sizes
- variably customisable for different loads and areas of application
- used for cable systems with functional integrity
- the bracket holder can be used as an independent profile rail; available as a variant with a screw-on or weld-on head plate
- made of steel or stainless steel (for various corrosion loads); various coatings

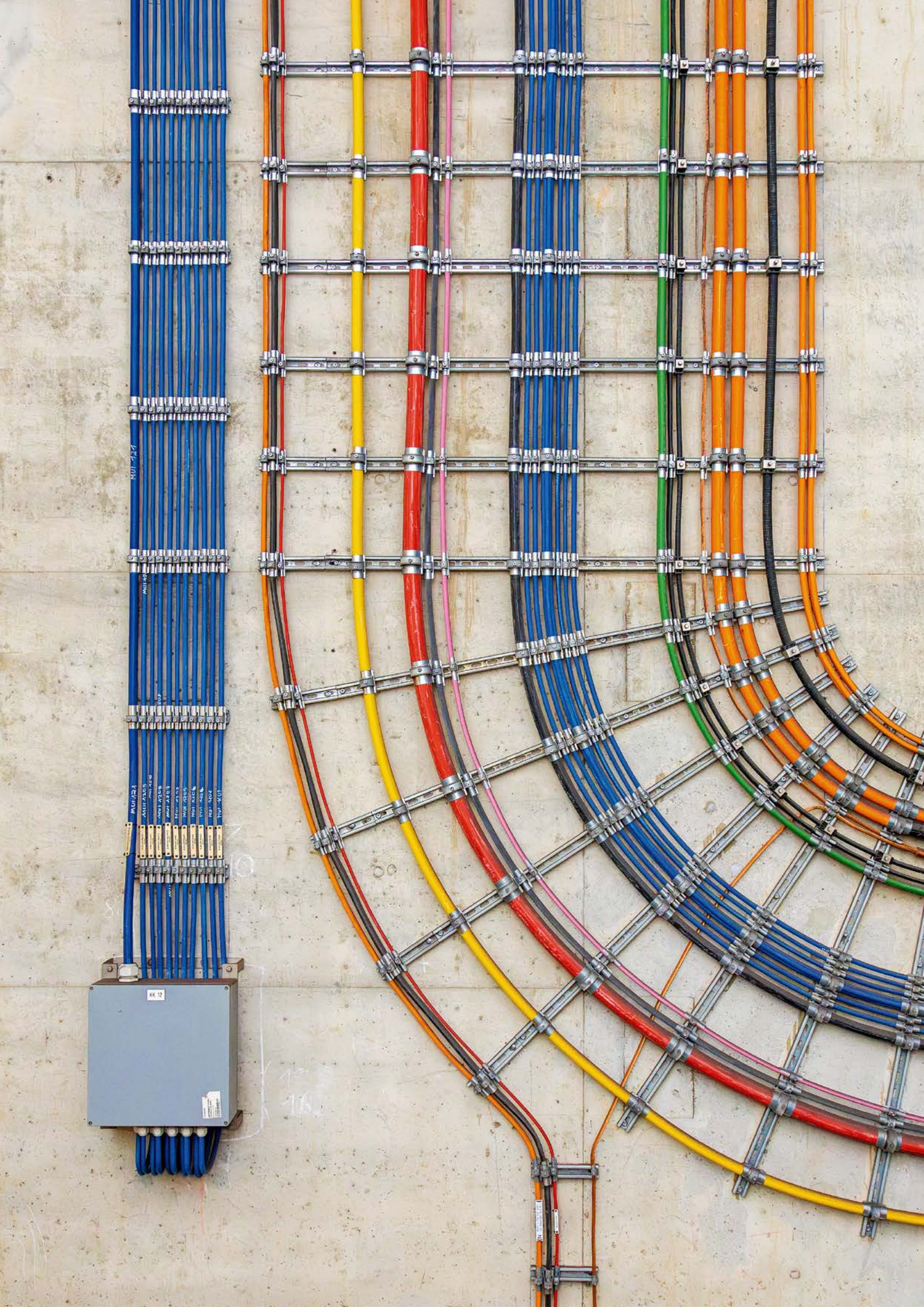
Fastening Accessories for Cable Management Systems

optional accessories for fastening and mounting cable trays and support structures



- screw fasteners, clamp fasteners, suspension fasteners etc.
- quick and easy to use
- various materials, e.g. stainless steel (for different corrosion loads)





Reference Projects

As a globally active manufacturer and service provider, PohlCon is involved in various infrastructure projects. We support partners, investors and decision-makers in all tunnelling phases with our products, systems and application

solutions and as well as the necessary knowledge.

The overview shows a selection of tunnelling projects in which PohlCon was involved.



Extension of the U5 metro line (Berlin, Germany)



City-Tunnel (Leipzig, Germany)



Supply tunnel, Koralm Tunnel (Carinthia / Styria, Austria)



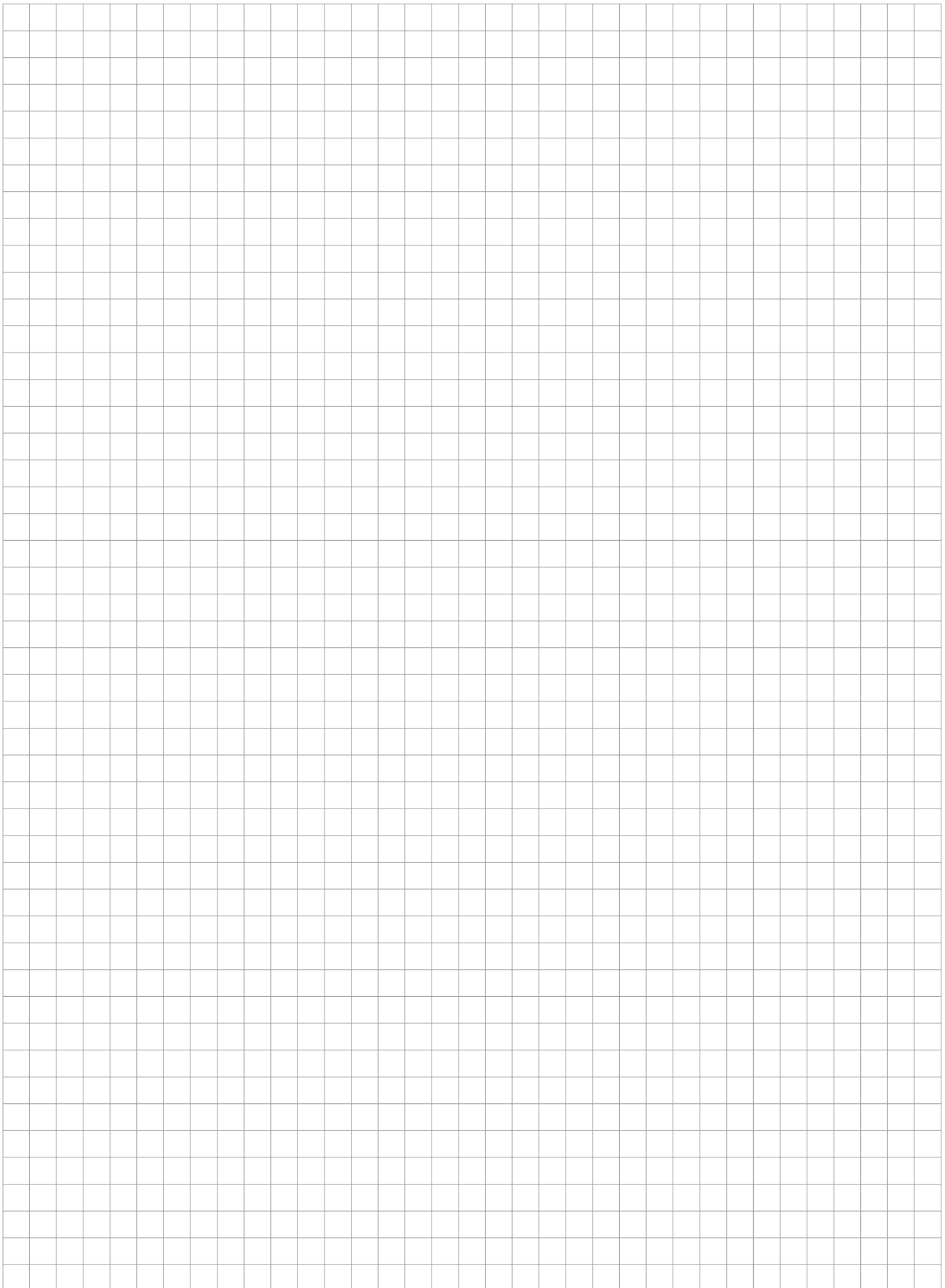
Horchheim Tunnel, refurbishment (Koblenz, Germany)



Extension of the U6 metro line (Stuttgart, Germany)



Tiergarten Tunnel (Berlin, Germany)





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