BizLink

HIGH-TECH CABLES & SYSTEMS
FOR ROLLING STOCK ENGINEERING

elocab

Mobility

elocab *Hightech cable & system solutions*

Solutions for complex requirements

Our fields of competence ›

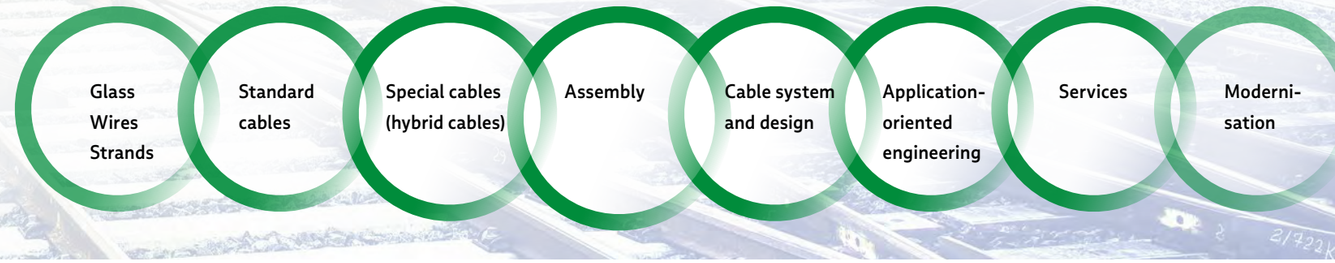
- High-speed trains
- Regional commuter trains
- Locomotives
- Trams
- Underground
- Freight trains
- Passenger carriages
- Commuter and multi-unit coaches
- O-buses

BizLink is one of the world's leading providers of standard and customised specialist cables as well as complex cable systems. We provide our customers with all the expertise of a global enterprise, focused on the needs of the rolling stock engineering.

With our extensive product and service portfolio in the area of cabling for rolling stock, we accompany you throughout the entire lifecycle of your vehicles – worldwide.

As a strong partner, we offer you application-specific cables and cable system solutions according to national and international standards. In the process, you can rely on our well-established industry and product knowledge and our longstanding experience.

BizLink value added chain



BizLink offers you a comprehensive product spectrum which corresponds to the complex requirements in terms of both breadth and depth.

Fields of application ›

- Network and communication connections with fiber optic and copper-based solutions
- Data bus and train safety systems, ETCS
- Infotainment
- Seat cables
- Driver console and cabin wiring
- Supply and control of door and running board system
- EMC-resilient inverter control with POF
- Electric railcar jumper for data, signal and power connections
- Roof jumpers
- High voltage roof cable systems
- Drive systems and moving driving motor cabling
- Bogie cabling
- Data and control cables up to Cat7 with insulation and total system integrity in the event of fire
- UIC railway cable and UIC jumper systems
- Earthing connections
- High and very low temperature applications
- Sensor and actuator cabling
- Planning and assembly of wiring systems and carriage body cabling
- GSM and mobile networks
- Antenna systems
- Train radar
- Refurbishment and retrofit solutions

The BizLink value added chain

Anyone with the the task of cabling of rolling must have a wide range of technical disciplines and a broad product range at their disposal. The requirements are both technically demanding and very complex. On the one hand, numerous extremely diverse products are required and on the other hand, the most extreme operating conditions and difficult installation conditions must be taken into account. BizLink is one of the few cable manufacturers and system providers able to satisfy all these requirements.

This is made possible thanks to the unique BizLink value added chain, which extends from miniaturized cable components wire to multi-strand special cables to installation-ready cable systems. All cable components and products are developed and manufactured in-house. This guaranteed optimally matched solutions. We offer you earthing straps, standard cables according to national and international standards, application-specific special cables, connection-ready packaged cable, subsystems and complete system solutions for rail-bound vehicles such as high-speed trains, locomotives, trams, underground and passenger carriages.

Quality – Reliability – Safety

Comprehensive expertise

for your core business

Product development

Implementation

Concept + Development | **Test + Simulation** | **Production + Logistics** | **Installation + Support** | **Aftersales Services**

Process-accompanying support

When you consistently focus on you core business, you arrive at better solutions faster and more efficiently.

Benefit from our support services and technologies.

Concept + Development

- On-site consultation
- One-stop shop for customer-specific and standardised solutions
- Development of new materials for cables with special operating conditions
- Development of system solutions based on specified interfaces
- Arrangement and dimensioning of custom cable solutions
- Concept development and rolling stock jumper solutions already in the development phase for new vehicle platforms
- Construction of mechanical connections of rolling stock jumper systems
- Exact longitudinal arrangement in the moving area corresponding to the specific profile
- Calculation of maintenance and operating costs over the entire life cycle (life cycle costs) of rolling stock jumper systems
- Design to cost

Test + Simulation

- Prototype construction under close-to-production conditions
- Design and implementation of individual and integration tests
- Determination of optimisation potential
- Design and construction of special testing devices for system endurance tests for verification of the planned service life
- Testing devices for the layout testing of moving cable systems
- Service life calculations using load models
- Finite element calculations for cable suspension and guidance systems
- Climate and service life tests for cables, system components and cable systems
- In-house fire test laboratory

Production + Logistics

- Global Production and Service Presence
- Cutting-edge technologies from the creation of prototypes through to customer-specific serial production
- Production of application-specific and market-specific standard and special cables
- Cable assembly from simple serial-production parts through to highly complex customised solutions
- Installation of complete assemblies and systems.
- Customer-specific logistics solutions (just in time)

Installation + Support

- Installation Outsourcing
- Technical support for the installation of rolling stock jumper systems.
- Installation of rolling stock jumper systems and training of assembly and maintenance personnel

Aftersales Services

- Spare parts management for components and systems for up to 40 years
- Retrofit partner for the modernisation of systems in existing railway vehicles

Process-accompanying support

Project management made by BizLink handles the majority of your work, provides planning assurances and ensures that you can concentrate fully on your core business.

Project management

… for efficient solutions worldwide

Complex projects require clear structures and processes. We define the project goals together with our customers in consideration of the specified time and cost framework and the available resources. With international projects, in particular, it is essential to harmonise the most diverse technical, economic, cultural, legal and political influences. Here we bring our experience gathered in countless international projects. Once they have been established, we assure compliance with the individual steps and the realisation of the overall project.

…while keeping an eye on the big picture

Highly qualified, internationally-experienced project managers with interdisciplinary and intercultural qualifications plan and coordinate all work packages related to electrical connection technology for your overall project with respect to quality, costs and time – worldwide. In the process, we use the latest communications and project management tools, which also correspond with our customer's IT environment.

In our project management, all phases of development, production and installation of cable systems for railway vehicles are incorporated, in particular

- planning and implementation of development services over all review and verification stages
- prototype creation and initial sample testing with the customer
- consultation and support with the installation of the initial components delivered to the customer.

Technologically leading

BizLink has established a worldwide leading position with its elocab products. BizLink combines its entire know-how especially in the area of rolling stock technology to create a perfect ensemble which hardly any other cable manufacturer is able to offer.

In addition, BizLink continuously invests in new technologies, systems and processes and even develops machinery and processes for the production and testing of cables and cable system solutions as necessary.

Customer-specific cable solutions

Highly flexible power and supply cables
- Cross-section range up to 400 mm²
- Single-wire or multi-core
- With/without Cu braided shield
- Arrangement for all common cable ratings (300/500 V · 0.6/1 kV · 1.8/3 kV · 3.6/6 kV)

For applications subject to high mechanical stress (e.g. in BizLink rolling stock jumper system)

Highly flexible hybrid cables
- Application-specific combination of power and signal transmission as well as data and bus lines in one cable (WTB, MVB, coaxial cables, Ethernet)
- Hybrid cable made of a combination of metallic conductors and individual optical fibers or even complete optical fiber cables (e.g. application-specific rolling stock jumper cable)
- For applications subject to high mechanical stress (e.g. in BizLink rolling stock jumper system)

Details often make the difference in the performance and safety of a cable. Special cable solutions from BizLink are exactly attuned to your application for optimal functionality, regardless of whether it is a flexible or stationary application.

Individual cable design and the use of specially developed sheath and insulation materials enables high thermal and mechanical resistance. BizLink special cable solutions are produced according to national and international standards for the railway industry.

Our additional services
- Production of short lengths
- Prototype cable
- Implementation of cable design through to the finished cable within a few weeks
- Patented solutions for energy cables with high currents with higher frequencies up to square current flow (skin effect and EMC optimised)

elocab *Hybrid cables as the heart of system solutions*

Benefits
- Optimised cable design for dynamic applications
- Compact structure and motion-optimised cable diameter
- Excellent use of installation space
- Maximum use of connections by means of modular connectors
- Flexibility in the design of the mechanical connection of the system
- Resilient to mechanical and climatic influences
- Meets current fire protection requirements for the rail industry

The appropriate mechanical and electrical design of a jumper system is crucial in terms of fault-free functioning and service life.

The selection and design of the standard cable material are particularly important. Thanks to our longstanding experience in the most diverse industries and application areas as well as our cutting-edge design and production methods, we are able to provide optimum cable solutions for the jumper systems developed by us.

The selective use of hybrid cables allows us to draw on virtually unlimited options in distributing a highly diverse range of (transmission) functions among the individual cables in such a way as to create excellent conditions for reliable, long-lasting systems while at the same time ensuring optimum use of the installation space available.

What is more, hybrid cables are much more compact and resistant to harmful mechanical and climatic impact than individual cables installed in the conduit.

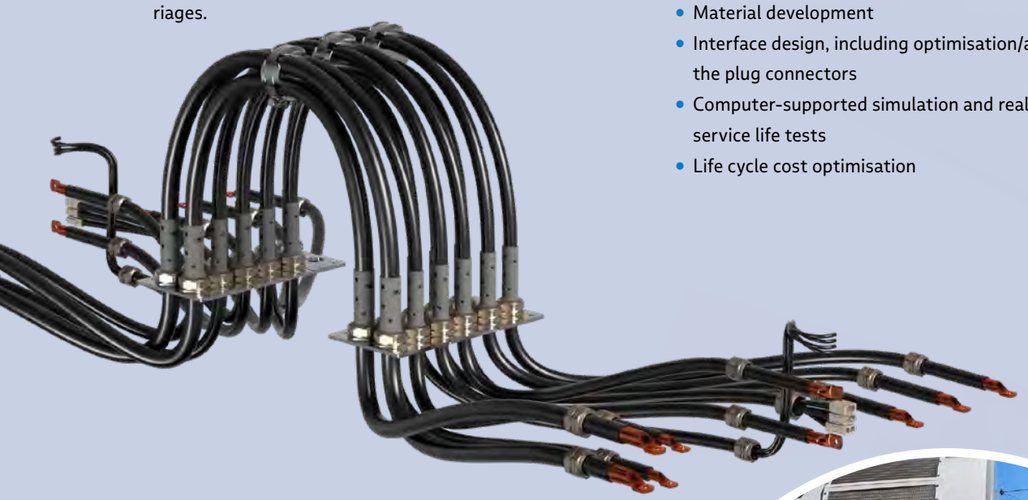
The application-specific design of our special cables also enables us to create the best solution for the mechanical connection of our systems in each case.

Development competence

As your development partner, we supply application-specific system solutions. This particularly includes rolling stock jumpers and roof jumpers, cable harnesses for device wiring and cable assemblies for economical and functionally safe wiring of switch cabinets, panels, blocks and entire carriages.

We draw on our experience and competence gathered in the following areas:

- Mechanical and electrical design plus overall system architecture
- Application-specific cable design
- Material development
- Interface design, including optimisation/adjustment for the plug connectors
- Computer-supported simulation and real product and service life tests
- Life cycle cost optimisation



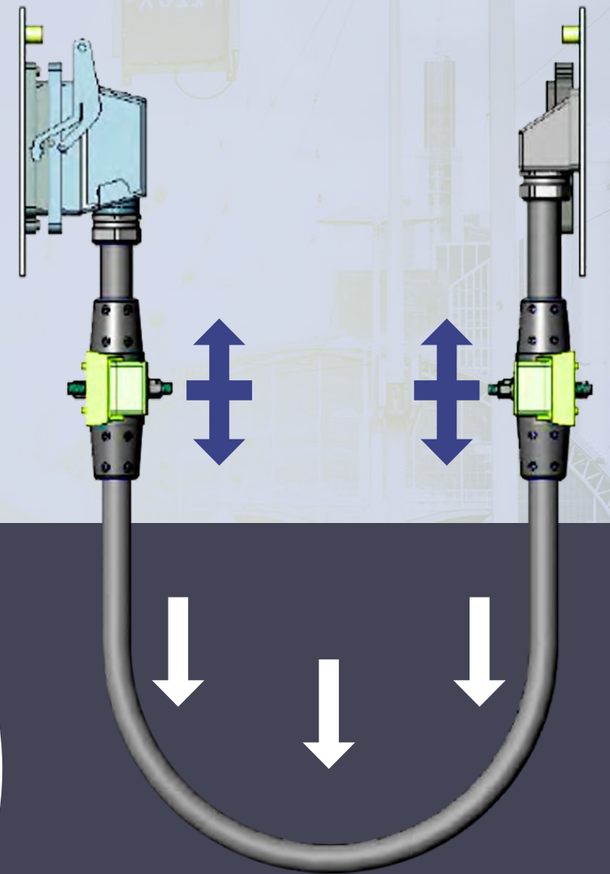
Fields of application ›

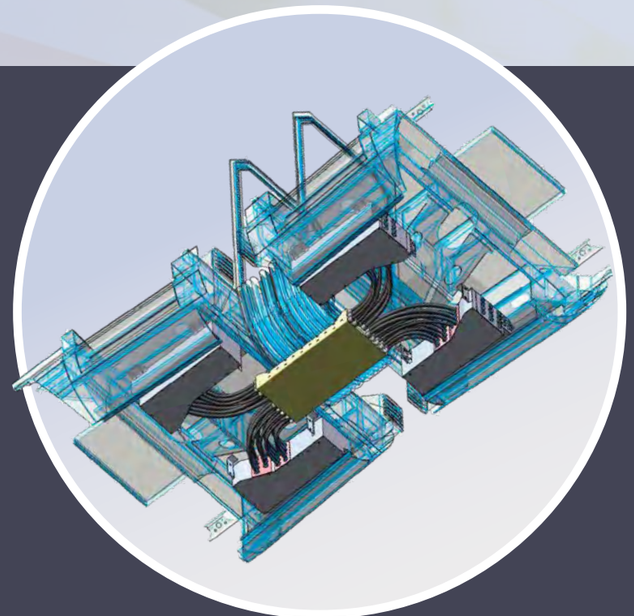
- Feasibility and concept studies
- Rolling stock jumper systems
- Roof jumpers
- Build to print
- Refurbishment
- Medium voltage cable systems and jumpers

Feasibility and concept studies

Feasibility and concept studies have an important role to play in the development of cable systems for rolling stock.

BizLink has developed and produced numerous products in the course of implementing various rolling stock engineering projects. This longstanding experience pays off when it comes to finding technical solutions for an extremely limited installation space or where the issue of space poses particular problems. Existing restrictions and limitation profiles are taken into account in coordination with the customer. By optimising our designs we achieve optimum technical service life of our systems and rapid validation of the overall system.





elocab *Rolling stock jumper systems*

elocab rolling stock jumper systems are designed for areas between vehicles and/or carriage bodies and bogies that are subject to high mechanical stress: they are specially developed for each individual installation situation.

Jumper systems are normally designed as a breakout cable between the face ends of the carriage bodies, or else as a roof or underfloor jumper system. In terms of cable design, consisting of power, control data bus, fiber optic and/or coaxial cables, and in terms of the mechanical design of cable mounting and guiding, BizLink can solve even the most complex problems based on the company's extensive experience.

To satisfy rigorous requirements in terms of flexibility, functionality and service life, we use especially high-quality materials and specially developed connecting systems with corresponding plug connectors and connection components.

We also have a wide variety of testing means for the development and inspection of functionality and the service life of our systems.

Benefits ›

- One development and system partner assures an improved technical solution and reduced interface costs
- Perfectly matched components
- With the BizLink value added chain, a customer-specific solution and the very fast availability are even possible at the component level
- Product qualification and safeguarding by means of service life testing
- Simple, safe and quick installation, reduced process costs

elocab *Medium voltage systems*

Roof jumpers

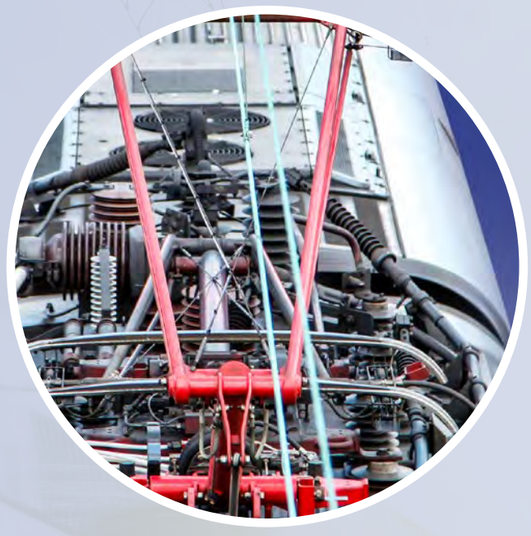
elocab high voltage jumper systems are a special form of jumper system. The highly flexible cable systems permanently compensate for vibrations as they occur as well as large distance changes. High hydrolysis resistance, good rebound properties at temperatures of –40 °C to +60 °C and high resistance to UV radiation are also provided.

Benefits ›

- Complete compensation of three-dimensional relative movements of the fixation points
- High operational reliability due to patented mechanical absorption and load-free electrical connection
- Additional safety due to redundant design (double spiral)
- Available in various cross-sections depending on the network layout
- Secured insulation section to the bellows even in the event of a spiral tear with inherent stability
- Attachment on support insulators or directly on the cable termination.
- Customer/application-specific connection
- Product qualification and safeguarding by means of service life testing

› **Engineering by BizLink** (calculation, design)

Cable harnesses and components



BizLink is an expert in the design and manufacture of roof jumper systems. Since we also supply pre-fabricated medium voltage cables and the necessary components, we are able to offer a complete and consistent medium voltage cable system.

Benefits ›

- Medium voltage cables for roof installation
- Transformer cables
- All medium voltage cables are electrically tested after cable assembly (HV test and partial discharge test)
- Fire prevention standards according to US standard NFPA 130 and European standard EN 45545-2
- Completely consistent medium voltage transmission system available

Components

Flexible cable termination

Rigid cable termination

Roof ducting

Plug-in terminals

Transformer plug and overload arrester

Insulators

Internal rolling stock wiring / cable harnesses

Our range of services includes small-scale assemblies, build-to-print solution, refurbishment and the complete development and design of your wiring system.

In view of the ongoing development that rolling stock wiring has passed through in recent years from simple to highly complex cable systems for the most diverse control, regulation and data signals, a partner is required who is able to respond to such developments flexibly and dynamically with the appropriate production and measuring environment.

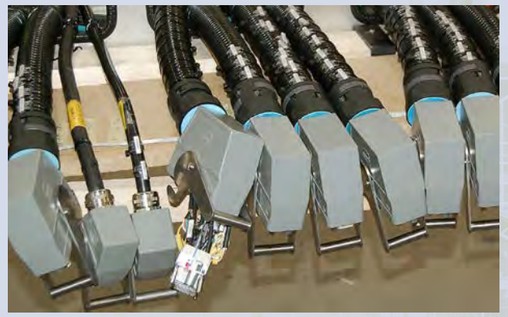
In this transformational context, BizLink offers an individually tailored, customer-specific production environment for your cable system solutions which is entirely geared towards your products. Our assembly know-how encompasses all of the standard connectors used in rail systems, and includes both copper data lines as well as fiber optic cable.

Even data systems with data transmission rates of >10 GB/s are possible with our copper-based and/or fiber optic systems – without any restrictions. We can also offer over-moulded connector variants if required.

From small lot sizes and prototype development to large-volume production and long-running projects. For product start-ups in particular, you can benefit from our comprehensive experience in relation to project ramp-up and the change management process.

When planning new projects, one option is to integrate the ready-assembled data lines into the cable assembly system.

Refurbishment



System solutions for bogie and underfloor cabling
To meet the extreme requirements of bogie and underfloor wiring we offer you an entirely harmonised range of system solutions. These are perfectly designed to meet requirements such as permanent motion, durability, external impact from waste heat from engines/brakes and ballast pick-up.

Our cable solutions allow us to integrate highly quadratic drive motor cables as well as data, control and sensor/actuator cables in our systems.

All our solutions are 100 % electrically and mechanically tested by us
We carry out a 100 % electrical and mechanical interface test on all our products. In addition, all electrical connections are checked for continuity and dielectric strength. On request we can also provide evidence of the required data cable performance capacity based on the appropriate measurements.

elocab *Earthing straps and current leads*

We manufacture flexible and highly flexible earthing straps and current leads for both protective earthing in the interior of the railway vehicle and in the underfloor or exterior area of the vehicle. In the process, you choose between standardised or tailored solutions in the widest variety of designs – flexible or highly flexible, as metre goods or assembled and ready for connection.

In addition to copper flexibles and meshes, our product spectrum also includes fiber ribbons made of various materials in the cross-section range from 0.5 mm^2 to 300 mm^2. Customised design is also possible.

Highly flexible copper flexibles
based on DIN 46438

Materials
E-Cu/OF-Cu and Cu alloys, bare, tin-plated, nickel-plated or silver-plated

Flat-rolled fiber ribbons, highly flexible
based on DIN 46444

Materials
E-Cu, bare, tin-plated, nickel-plated or silver-plated

Ranges of application ›

- Switch and control cabinets
- Cable trays
- Roof attachments
- Under-floor components

If necessary, we can also provide the earthing straps and current leads with special insulation or with strain relief.

Fiber optic cables

Data transmission for rolling stock

Benefits ›

- OM1–4, single-mode, POF and PCF
- Data transmission >10 GB/s
- EMC compliance even at very high interruption levels on frequency converters
- Cross-linked sheath material LE.X.CO
- High resistance to typical rail service fluids
- Excellent fire protection properties according to EN 45545-2 or IEC 60332-1 and IEC 60332-3
- Bend-optimised fibers
- Reduced weight
- Maximum flexibility for easier installation
- Available as a cable or preassembled product
- Halogen-free, low fire load

Properties of pre-assembled products ›

- Suitable for typical rail plug connectors
- Waterproof to IP 68 in split hood housing
- Optimised anti-kink protection
- Adapted to customer-specific needs
- Integration in hybrid cables and jumper systems
- Completely harmonised systems from the end car to end car
- Quality-tested

Application

Our fiber optic cables are an important component of cable systems and data networks in rolling stock and trolleybuses.

They are suitable for connecting active components for low-loss, EMC-compatible and interruption-resistant data and signal transmission.

With our modular solutions customised to your precise needs, you are perfectly equipped to handle the long-term trend towards device and application networking in any area.

Market portrait – Mobility

Intelligent energy and data solutions for rolling stock and airport engineering

Mobility plays an outstanding role for BizLink among the global trends of the future. We are committed to providing our customers with answers to the mobility challenges of tomorrow's world.

As a comprehensive solution provider in the area of rolling stock engineering, we know what counts. Innovative quality products, tested and project-related system solutions as well as the highest degree of availability and sustainable service management all go without saying as far as we are concerned.

We are pleased to take on the challenge of digitalisation – intelligent systems minimise downtimes and enable longer lifecycles.

BizLink has a global network in the Mobility market with locations in

- **Germany (BizLink elocab GmbH)**
- **Canada (BizLink elocab Ltd.)**
- **Italy (BizLink Silitherm S.r.l.)**

Our customers benefit from a wide range of products, from temperature-resistant silicone cables to complex jumper systems.

Digital transformation thanks to intelligent products and smart services

BizLink pursues the goal of becoming a leading solutions provider of intelligent systems for the megatrends of energy transmission and data management. To achieve this, the portfolio is expanding to include intelligent cables, cable systems and components – areas of increasing significance in light of digitalization and the establishment of failure-tolerant systems with a high networking density.

To do so, the company is extending its expertise in fields such as electronics, sensor systems and big data, and offering customer-specific smart services such as predictive maintenance and error analysis. Within BizLink, the digital transformation manifests in digital processes and software know-how, which are deployed for reasons that include ensuring greater automation in production.

When combined with international customer networks and strategic partnerships, this works to create new, digital business models – individually tailored to the requirements of our customers.

Quality & environmental management

Combining innovation with quality and sustainability.
As a company, this is one of our most important goals.

Our vision is to create sustainable connections in technological harmony with the natural resources. The natural cycle offers us the perfect model to emulate here. It is our responsibility to learn from nature and make use of it while conserving it and treating it with care. As natural resources grow scarcer and the burden on the environment increases, a rethink is required at all levels of our society. For BizLink, sustainability is therefore an integral part of Group policy. We were the first cable manufacturer in the world to develop an integrated Green Technology programme.

While trends such as globalisation, mobility and urbanisation are crucial for market movements, our core principles are sustainability and global responsibility. To be considered the most innovative cable manufacturer for environmentally friendly technologies – that is our goal. Other points of vital interest to us are to detect the needs and requirements of tomorrow today and to supply the markets of the future with sustainable, future-proof solutions. We also view it as our responsibility to take on an active role in shaping the markets for environmentally-friendly energy production – such as solar thermal technology.

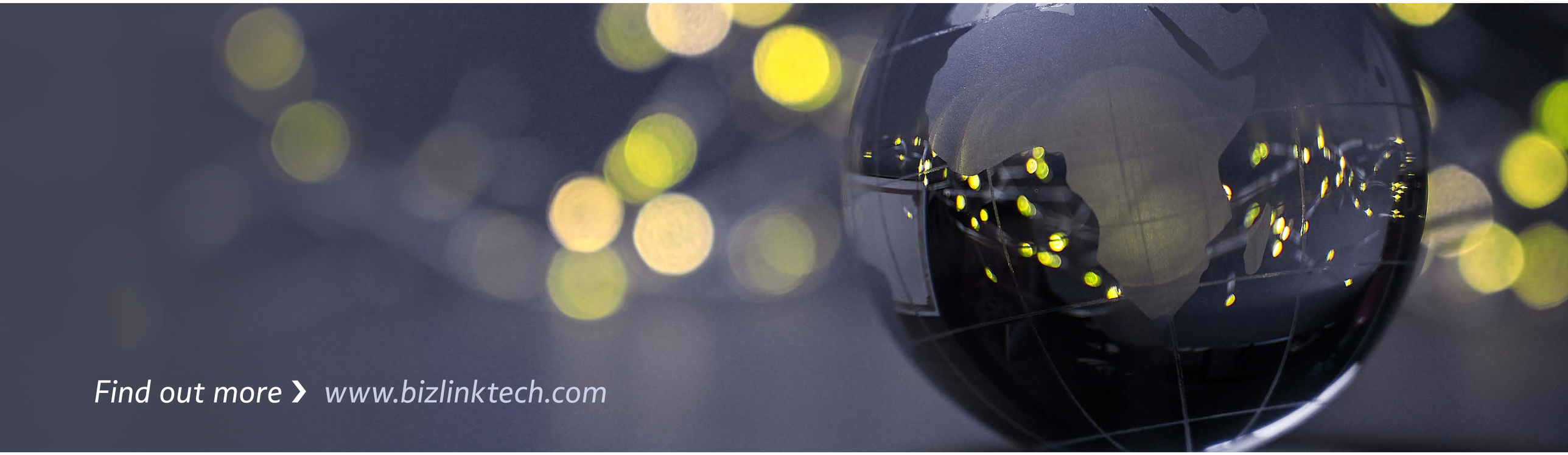
Green Technology stands for the resource-conserving and low-emission production of sustainable quality cables made with low-pollution elements. We constantly work at optimising the efficiency with which resources are used in the manufacturing process by deploying energy-efficient machines or taking heat recovery measures. More and more facilities in our global production network are now environmentally certified to the ISO 14001 standard.

One of our success factors has always been the high quality of our products, which has remained consistent for decades. We pay particular attention to this by means of precise planning, testing and documentation. In order to meet our customer's rigorous quality requirements, our extensive production facilities only comprise installations that fulfil high technical standards – whether for processing plastics or materials, extrusion technology or electronic beam cross-linking. Not only do our products comply with all the familiar national and international guidelines, we also offer certified quality.

Together with ecological compatibility, future technologies are measured in terms of efficiency, service life, emission reduction and the conservation of natural resources. Innovative cable products and systems, integrated solutions and maximum performance in project management make up the added value that we offer to our customers and business partners. These are also our cornerstones for strong connections into the future.

About BizLink

Innovative. Reliable. Sustainable.



Founded in 1996 and headquartered in Silicon Valley, USA, BizLink is dedicated to making transformative connections that bring visionary ideas to life.

We specialize in providing essential components such as wire harnesses, connectors, and cables to a broad spectrum of industries including IT Infrastructure, Client Peripherals, Optical Fiber Communications, Telecom & Networking, Electrical Appliances, Medical Equipment, Factory Automation & Machinery, Semiconductor Technology, Healthcare, Motor Vehicles, Mobility, Marine, Industrial, and Solar Energy.

Our global presence, with flexible production resources and R&D teams across America, Europe, and Asia, allows us to proactively drive innovation and enable future possibilities.

At BizLink, our customer-centric approach and commitment to relentless advancement empower us to deliver zero-distance service and continual performance optimization, making a positive and meaningful impact worldwide.

We turn possibilities into reality; furthermore, we connect possibilities to world-changing visions.

Where Possibilities Connect™

Mobility

BizLink elocab GmbH
Obere Lerch 34 · 91166 Georgensgmuend · Germany
T +49 9172 6980-0

BizLink elocab Ltd.
258 McBrine Drive · N2R 1H8 Kitchener, ON
Canada
mobility_info@bizlinktech.com

Find out more
mobility.bizlinktech.com

Contact us
mobility.bizlinktech.com/contact

BizLink Mobility
BizLink elocab – Engineered Solutions
BizLink Group channel

© Copyright 12/2024 – All contents of this catalog/brochure, in particular texts, photographs and graphics, are protected by copyright.
The trademark BizLink and other trademarks stated herein are trademarks of BizLink International Corp., its subsidiaries, or other recognizable companies. Technical changes reserved, a statement of use for your application is not made herein. All deliveries and services are subject exclusively to our General Terms and Conditions for Deliveries and Services to Entrepreneurs.