



**Elektrizace železnic
Praha a.s.**





RAILWAY ELECTRIFICATION

**SINCE 1954 WE HAVE BEEN DEVELOPING, DESIGNING,
MANUFACTURING AND ASSEMBLING**

elements of overhead contact line for
railway, tram and trolleybus transport

RAILWAY ELECTRIFICATION



ABOUT US

For more than 67 years, the company Elektrizace železnic Praha a.s. has been specializing in the development, design, production, and installation of overhead contact lines for railways and public transportation. Overhead contact lines for railway, tram, and trolleybus transportation systems represent the company's core and most important product.

Another significant line of the company's business consists in the delivery of railway and public transportation power supply systems in the form of traction transformer substations, rectifier substations, sectioning posts, transformer substations, and railway carriages electrical pre-heating systems. The aforementioned power supply systems are delivered in the form of turnkey projects – i.e. including remote control equipment (SCADA), electronic security systems, electric fire alarm systems, installation of all equipment including outside lighting, electric switches heating system, LV and HV cable cabling, etc.

Other important areas of the company's operations include the production and installation of steel structures for railway and energy industry applications, production of floodlight towers, and metalwork, including surface treatments. By default, all products also involve complete engineering services, such as digital documentation (3D CAD), product testing in line with EU standards – either in a testing lab or directly within the application location. Moreover, the company offers professional consulting and advisory services, and preparation of various studies and project documentation at all levels.

The company has been undergoing continuous and comprehensive modernization, with particular emphasis on quality, effectiveness, and durability of our solutions, including individual and flexible approach to our customers' demands and needs. In light of the aforementioned factors, the company Elektrizace železnic Praha a.s. has been one of the most prominent railway infrastructure suppliers in the Czech Republic.

HISTORY



1903

Electrification of the first standard-gauge railway line within the territory of the present-day Czech Republic – from Tábor to Bechyně, as designed by František Křižík



1928

Electrification of railway stations in Prague, using overhead contact line and railway power supply system by AEG, Brown-Boveri, ČKD, Škoda, and Křižík



1949

Starting electrification of the main railway lines in Czechoslovakia using the 3 kV DC traction system; development of the company's own overhead contact line equipment starts

HISTORY



1954

Formation of the state enterprise Elektrizace železnic Praha – as a monopoly supplier of overhead contact lines to the Czechoslovak Railways (ČSD) for the next nearly 40 years; during the period, the company participated in electrification project in Czechoslovakia, Hungary, East Germany, and Yugoslavia



1992

Breakthrough year – the state enterprise was privatized and transformed into a joint-stock company owned by Elektrizace dopravy, spol. s r.o. and the State Property Fund



2004

Elektrizace dopravy, spol. s r.o. becomes the sole owner of the company

HISTORY



2009

Shares in Elektrizace dopravy, spol. s r.o. sold to EP Industries, a.s.; EP Industries a.s. acquired 100% share, thus becoming the majority shareholder/owner of Elektrizace železnic Praha a.s.



2019

Leader in the field of assembly and installation of fixed traction equipment for railways (conventional and high-speed)

OUR WORK

ACTIVITIES ACTIVITY

Assembly and installation of fixed traction equipment for railways and public transport



TECHNOLOGICAL DEVELOPMENT

Technical quality and maturity of our own products

SERVICE

Testing laboratory
Service of railway electrical equipment
Rental of mobile straction transformer substations

PRODUCTION

Steel structures
and electrical engineering production

PORTFOLIO OF THE COMPANY

- Development, production, and installation of overhead contact lines 15 kV, 25 kV AC, and 1.5 and 3 kV DC for railways, and 600 / 750 V DC for public transportation systems (trams, trolleybuses)
- Delivery of equipment for traction transformer substations, rectifier substations, sectioning posts, and transformer substations (HV, and LV), including remote control systems
- Development and implementation of software for electrical engineering units including communication protocols, data acquisition and processing systems including visualization
- Primary and secondary testing of electrical protection including design, calculation and commissioning using state-of-the-art measurement technology
- Installation of HV and LV lines (cabling and aerial lines)
- Production of steel structures, overhead contact lines equipment, and locksmith production, including surface treatments. Design of electrical equipment and complete project activities in construction
- Engineering, consulting, and professional advisory services, preparation of expert studies
- Geodetic and land surveying services, including output for GIS
- Production, installation, and repairs of electrical machinery and devices, electronic and telecommunication equipment
- Installation, repairs, revisions and tests of electrical equipment (LV and HV)
- Road transport – national and international transport of goods over 3.5 tons
- Storage, packaging of goods, cargo handling, and technical operations associated with transportation
- Intermediation of trade and services



COMPANY GOALS

1. Maintain our position of one of the leading suppliers of overhead contact lines power supply systems on the Czech market and promote further expansion to international markets

2. Intensively penetrate both national and international markets – in the area of supplying high – current technologies

3. Continuously expand our portfolio of products and services in all areas of power supply systems for transport infrastructure

5. Take part in the development and modernization of all types of environmentally-friendly electric transport systems

4. Modernize production and installation resources/facilities and further improve qualification of our employees with a view to ensure quality excellence and customer satisfaction

6. Provide comprehensive deliveries for our customers in the form of turnkey projects

CENTRES AND BRANCHES

**Production Centre
Česká Třebová**

**Production Centre
Vlkov**

**Branch in
Estonia**

**Branch in
Slovakia**

**OCL Centre – Moravia,
Česká Třebová**

**OCL Centre – Bohemia,
Velký Osek**

**Power and Technology
Centre
Velký Osek**

Public Transport Centre

CERTIFICATION

ISO 9001, ISO 14001 and ISO 45001

96/48/EC Type testing of interoperability constituent

Authorisation to work on designated technical equipment
in Slovakia

EN 1090-1 Conformity assessment of steel structures

EN 1090-2 Manufacture of steel structures

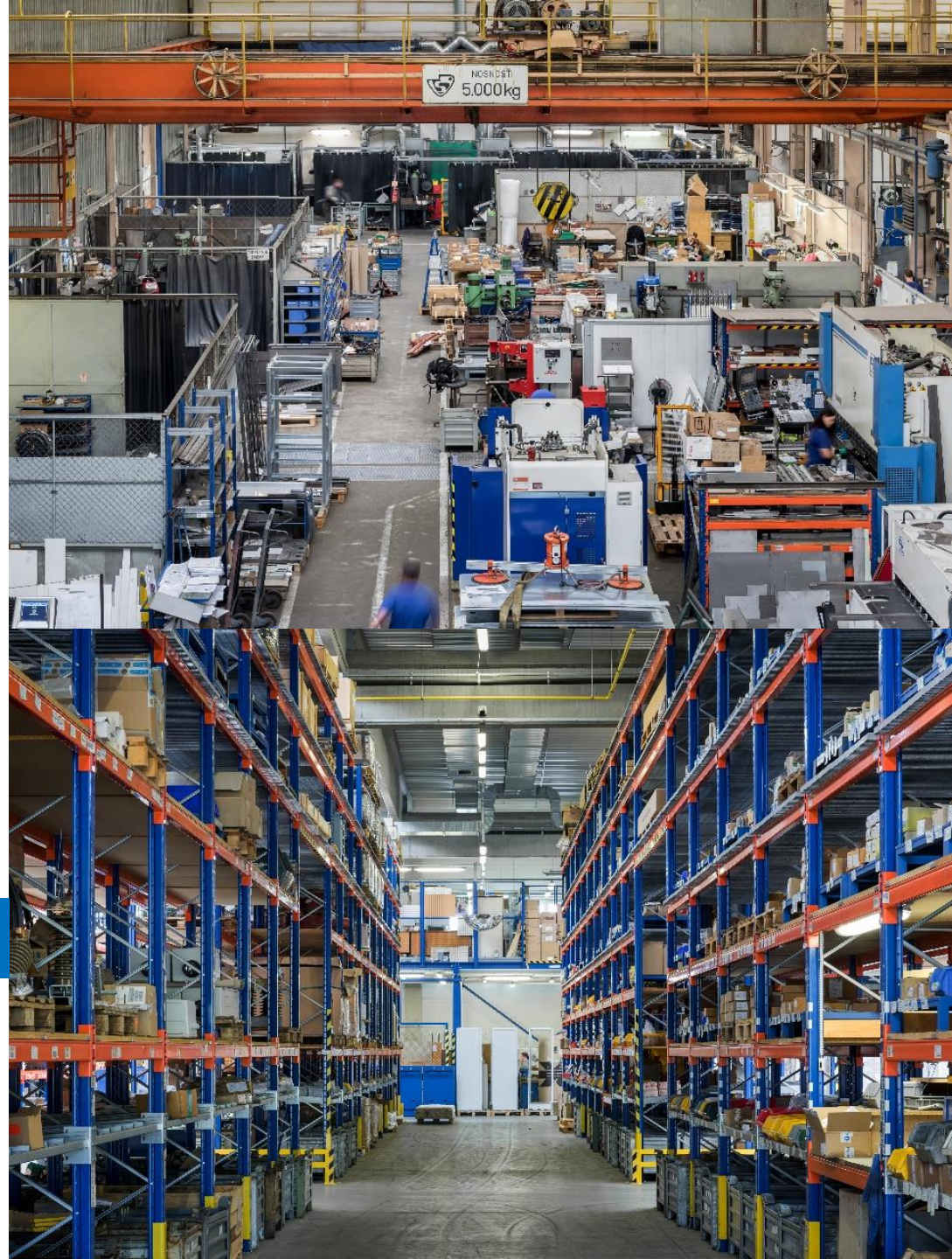
ISO 3834-2 Welding of steel structures

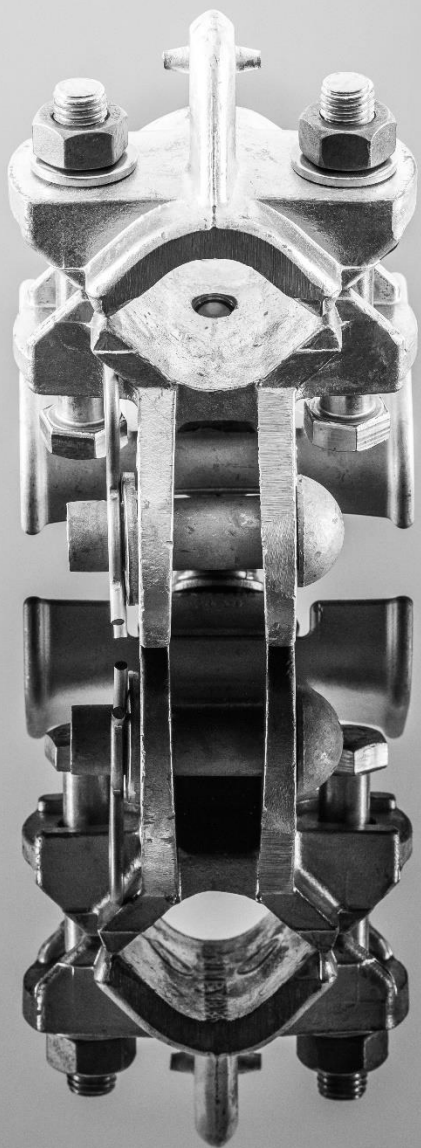
PRODUCTION CENTRE 071 ČESKÁ TŘEBOVÁ

- Production of overhead contact lines equipment for railways and public transportation
- LV and HV switchgear production (cabinet-type assemblies, sheet-steel boxes, plastic cabinet assemblies, etc.)
- Production of 6 kV AC steel container type substations
- Production of 6 kV AC concrete prefabricated type substations
- Production of custom-designed LV switchgears and LV switchgears for special purposes
- Production of special structures for electrical equipment
- Cold forming of metals
- Inert gas-shielded arc welding
- CNC machining
- Processing of sheet metal, including surface treatments (material cutting: dividing shears, and punching press; bending of materials: NC folding press-brake; paint-shop: highpressure coating, degreasing of materials, phosphate coating, painting)
- Surface treatment – sand-blasting and shot-blasting
- Production and repairs of dies and pressing tools
- Accredited testing laboratory with tension testing machine
- Locksmith production of structures, assembled masts, repairs of carriage bodies
- Production of parts for automotive
- Production of aluminum parts

In-house railway siding leading to Česká Třebová railway station

Contact information:
Elektrizace železnic Praha a.s.
Production centre 071 Česká Třebová
Semanínská 2082, 560 02 Česká Třebová Tel.:
+420 296 500 940, Email: 071@elzel.cz,
www.elzel.cz





PRODUCTION CENTRE 091 VLKOV

- Engineering production of lattice, tubular and flat – lattice masts
- Production of steel and special structures
- Production of supporting gantry crossbars
- Production of floodlight towers (up to 25 m)
- Material cutting (sheet metal) using CNC plasma cutting machine
- Engineering production of overhead contact line equipment
- Corrosion protection for metal materials using modern coating systems
- Corrosion protection for metal materials using metallization, hot-sprayed Zn, Al, Zinacor, and hot-dip galvanization
- Cleaning of materials using shot-blasting by steel chippings or cast steel
- Construction work
- Welding – in line with the EN ISO 3834-2 certification

In-house railway siding leading to Vlkov railway station

Contact information:
Elektrizace železnic Praha a.s.
Production centre 091 Vlkov 594 53 Osová
Bítýška Tel.: +420 296 500 910,
E-mail: 091@elzel.cz, www.elzel.cz



OVERHEAD CONTACT LINES FOR RAILWAYS

1,5 and 3 kV DC, 15 and 25 kV AC

- Overhead contact lines for main tracks and speeds up to 270 km/h – (tracks with high traffic and speeds) – Fully compensated catenary with stitch wire
- Overhead contact lines for side tracks and speeds up to 100 km/h – Fully compensated catenary
- Simple and low – cost overhead contact lines for speeds up to 80 km/h (for branch railway lines with low traffic, stations, and lines with complicated directional profile, stabling and cargo tracks) – compensated simple contact wire, for straight section and radius curves suspended by stitch wire
- Overhead contact lines for lines with small radius curves and speeds up to 100 km/h (for branch railway lines) – Fully compensated catenary



OVERHEAD CONTACT LINES FOR PUBLIC TRANSPORTATION

750 V DC tram lines

- Single overhead contact lines with fixed suspensions – uncompensated; to be used in depots; span of supports: 20 – 25 m
- Single flexible overhead contact lines – uncompensated; to be used for lines with speeds up to 60 km/h (particularly for inner – city areas and in places with complicated directional conditions, e.g. curves); span of supports: 27 – 30 m
- Single flexible overhead contact lines with transversal suspensions or auxiliary wire – partially compensated; to be used for straight lines; length of anchoring sections from 1 200 to 1 400 m; span of supports: up to 35 m
- Single overhead contact lines fully compensated by weights – with auxiliary wire; to be used for suburban and high – speed lines with speeds up to 80 - 100 km/h; length of anchoring line sections from 1 200 to 1 400 m; span of supports: 40 – 54 m
- Single overhead contact lines compensated by weights – catenary suspension lines; to be used for suburban and high – speed lines with speeds over 100 km/h; length of anchoring line sections from 1 200 to 1 400 m; span of supports: 60 m



OVERHEAD CONTACT LINES FOR PUBLIC TRANSPORTATION

600 V DC and 750 V DC trolleybus lines

- Single overhead contact line with fixed suspension - uncompensated, limited use, for example, in trolleybus depots, halls, etc.
- Single flexible overhead contact line - uncompensated, characterized by suspension of the contact wire in an arc with flexible arc clamps and in a plane using a suspension with a parallelogram, possibly with an auxiliary wire (delta suspension). It is mainly used inside cities and in places with complex directional conditions, e.g. in curves. Speed up to 60 km/h, span of supports up to 30 meters
- Single flexible overhead contact line fully compensated by weight - an auxiliary wire (delta suspension), used on straight lines with speeds up to 80 km/h, length of anchor section up to 1,400 meters, span of supports up to 54 meters
- Weight-compensated single overhead contact line – catenary line, used on straight lines with a possible speed above 80 km/h (depending on the vehicles and road quality), the length of the anchor section up to 1,400 meters, the realized span of supports up to 112 meters



POWER SUPPLY SYSTEMS

Comprehensive delivery, installation, and reconstruction of:

- Traction rectifier substations and sectioning posts for 1.5 kV or 3 kV DC traction systems (as appropriate), including 22 kV, 35 kV, and 110 kV AC power supply part including control systems
- Traction transformer substations and sectioning posts for 15 kV and 25 kV AC systems, including 110 kV AC power supply part including control system
- Air insulated cabinet – type HV switchgear for 1.5 kV / 3 kV DC and 15 kV / 16.7 Hz, 25 kV / 50 Hz AC traction systems
- Traction rectifier substations for 750 V DC public transportation systems
- Mobile traction rectifier substations (750 V; 1.5 kV and 3 kV DC), HV substations (up to 35 kV AC)
- Air insulated cabinet – type switchgear for systems of up to 750 V DC
- Semiconductor converters (rectifiers, pulse converters) for traction rectifier substations, for filtering – compensation equipment
- Distribution transformer substations (HV, and LV) indoor and outdoor design
- Cubicle – type, cabinet – type, as well as SF6 gas – insulated switchyard
- LV switchgear, including reactive power compensation equipment
- Railway carriages pre – heating system pursuant to UIC 550 (1000, 1500, 3000 V AC and DC)
- Electric switches heating system
- Motor drives and disconnectors, including remote control
- Remote control equipment for traction/non-traction power supply systems
- Development and deployment of SW for energy facilities
- Commissioning and regular inspections of protections of all types, including associated calculations
- Electric heating of public transportation stations
- Automatic control for trolleybuses switches
- Development and application of software for power equipment and communications
- Commissioning and periodic inspections of electrical protection of all types, including calculations





STEEL CONSTRUCTIONS

Production and installation

- Lattice and tubular masts
- Floodlight towers (up to 25 m)
- Suspensions for optical fiber cables of data transmission networks
- Lighting devices mounted on OCL structures
- Steel structures incl. surface treatments
- Custom – designed steel structures
- Signal gantries and cantilevers
- Production of structures for the energy industry (HV)

Technical development and design activities

- Designs of overhead contact line equipment
- Structural analysis for overhead contact line structures and equipment
- Development of new equipment for power supply systems
- Testing overhead contact line equipment and power supply LV and HV equipment, measuring electric and other parameters. Design activities within the scope of the own production and assembly program (3D CAD visualizations)
- Consulting and advisory services
- Design activities for foreign partners
- Expert studies, opinions, and technical designs

Production of overhead contact line equipment, locksmith production

We use many special in – house mechanisms for the overhead contact line installation





TECHNOLOGY FOR INSTALLATION OF CATENARY

As a leader in the field of overhead contact line assembly, we are aware of the need to constantly modernize and optimize assembly procedures, which is why we were the first in the Czech Republic to use elements of overhead contact line assembly with adjustable tensioning force using modern units with different platforms in a continuous process.

The aim of using this technology is to ensure maximum safety and to achieve increased productivity in the optimum time for the assembly of catenary elements.

We are constantly working to optimize and upgrade our technology and catenary elements to meet the current requirements of our customers while maintaining the quality of assembly and work.





PROJECT OF CONVERSION OF TRACTION SYSTEM TO AC 25 kV, 50 Hz

NEDAKONICE – ŘÍKOVICE

The project "Conversion of traction system to AC 25 kV, 50 Hz in the section Nedakonice - Říkovice" was started in September 2019. The subject of the project was the change of traction power supply from DC 3 kV to AC 25 kV, 50 Hz with application of SFC converters. The length of the section is approximately 43 kilometers.

The main reason for the installation of SFC converters is to ensure symmetrical (three-phase) consumption from the distribution network, reduction of losses, introduction of a single phase in the OCL and the possibility of recuperation.

CORPORATE SOCIAL RESPONSIBILITY

QUALITY, ENVIRONMENT, HEALTH AND SAFETY AT WORK POLICY



The mission of the company is the electrification of railway lines in compliance with applicable development and environmental programs. The name of the company is a reference to the company's contribution to cleaner environment. At the same time, the company strives to achieve superior quality of its products while complying with requirements for health and safety at work.

Compliance with applicable laws and other legal regulations in the area of quality, environmental protection, and health and safety at work is implied.

The objective is to ensure continuous production quality improvements, environmental protection, and health and safety at work.

In the area of quality management, the company focuses on:

- Opinion and recommendations of customers, employees, and representatives of stakeholders in adopting various measures aimed at production quality improvements
- Offering products and services at a level comparable to leading European suppliers
- Professional competence of its employees and further improvement of their qualification

In the area of environmental protection, the company undertakes to:

- Minimize any environmental pollution
- Engage its suppliers and contractors in environmental protection

In the area of health and safety at work, the company:

- Evaluates factors that might pose risk to health and safety of employees
- Minimizes safety risks by implementing necessary preventing measures

In order to achieve the above mentioned objectives, the management of the company has decided to implement and maintain in full force quality, environmental, and safety management systems, and allocate relevant resources to ensure the aforementioned systems remain fully functional.

EXPORT

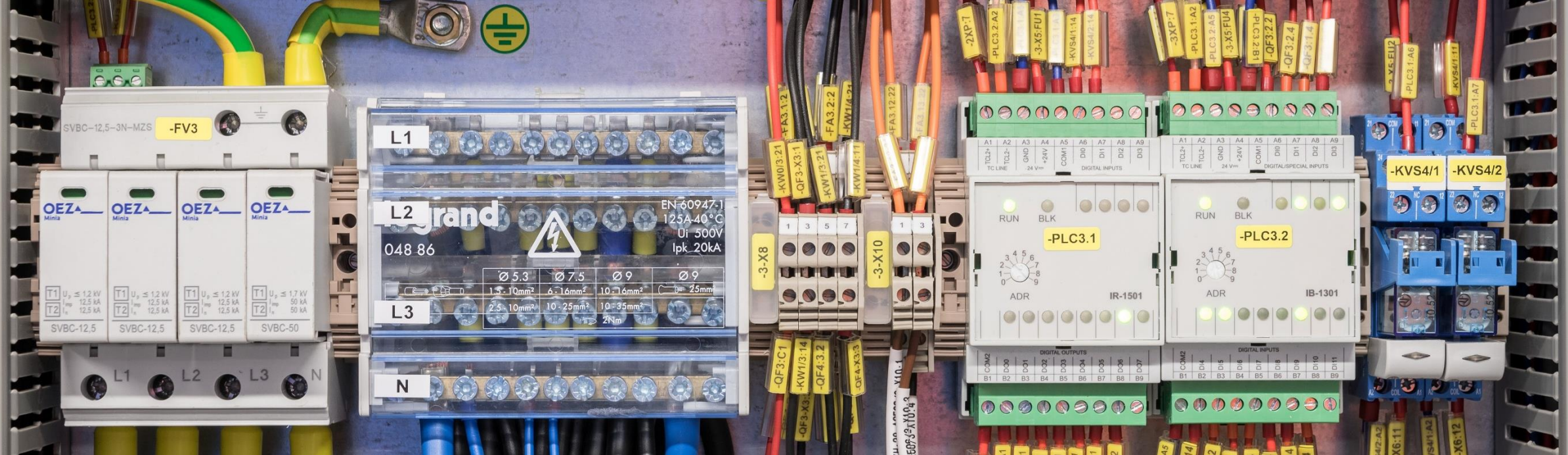
We conduct our business in the following countries

Canada	Delivery of overhead contact lines equipment: Edmonton - North Light Rail Transit Extension Project; The City of Calgary - Northwest Light Rail Transit Extension Project; Oliver Bowen Maintenance Facility Project, Stampede Crossing (17SX) Project
USA	Delivery of overhead contact lines equipment for San Diego (Blue Line & Orange Line), Los Angeles, Cleveland, Oregon, Houston and other light rail projects
Latvia	Reconstruction of 3 kV DC traction rectifier substation in the "Skriveri"
Lithuania	Delivery of a design, OCL equipment and installation works for the project of "Reconstruction of Rail Baltica's existing railway line Rokai-Palemonas-Kaunas. Construction 1: Reconstruction of the railway section Kaunas-Palemonas"
Estonia	Reconstruction of 3 kV DC traction rectifier substations in the Jarve and Keila and turn-key delivery of new 3 kV DC traction rectifier substation in Riisipere
Estonia	Reconstruction of the overhead contact lines in the Tallinn - Vasalemma Section and its branch Lines: Keila - Paldiski and Klooga - Klooga-Rand
Italy (Modena)	Supplies of trolleybuses switches including control system
Montenegro	Modernization and Electrification of Nikšić - Podgorica Railway Line
Poland	Modernization of the railway line no. 109 Kraków - Wieliczka Rynek and construction works relating to a railway station

Hungary	Overhead contact lines for Tram line no. 2 in Szeged; Debrecen, reconstruction of trolleybus overhead contact lines and installation of switch heating
France	Supplies of 750 V DC switchgears for the tram rectifier substations in Montpellier, Lyon, Le Havre, Angers
Netherlands	Supplies of rectifiers for subway rectifier substations in Rotterdam
Morocco	Supplies of 750 V DC switchgears for the tram rectifier substations in Rabat







CONTACT

Managing Director Office: +420 296 500 101
Commercial Dpt. : +420 296 500 301
Export Dpt.: +420 296 500 311
E-mail: info@elzel.cz
Data box: eaedvez

Address:
Elektrizace železnic Praha a.s.
nám. Hrdinů 1693/4a
140 00 Praha 4
Czech Republic

ID: 47115921
TAX ID: CZ47115921

ČSOB Prague – account number : 216025493/0300
Company registered in the Commercial Register
maintained by the Municipal Court in Prague, Section B,
Insert 1809