



# **Tailor-Made Roof Jumper Assemblies**

## **Rolling Stock**

**The Quality Connection**

**LEONI**

# Roof jumper assemblies

- High-speed trains
- Regional trains
- Locomotives
- Diesel and electrical multiple units

## Our expertise in assemblies

Quick availability, fast connections and constant performance. Requirements that shape the mobility of today and of the future. In the course of globalisation, the need to be in other places, whether for work or for leisure, is rising. Maximum speed with maximum safety is the essential requirement here. Convenience, technology and ecological awareness are the crucial factors of the market. The Business Unit Tailor-Made Products, combines the elements, whether by water, in the air or on the ground. As a provider of complete solutions in the fields of airports, ship engineering and railway technology we know what matters. Your needs. Innovative quality products, proven and project-related system solutions, as well as highest availability and sustainable service management are a matter of course for us.

People have always been travelling. The speed, distance and mass to be moved will steadily increase in the future. Public transportation grows along with the globalisation of the markets and the mobility of goods and resources. Faster. Bigger. Farther. High demands for the future. The Business Unit Tailor-Made Products combines sustainable safety with performance and innovation here. Our know-how contributes to environmentally friendly traffic and leads the way for the mobility of tomorrow.

**Quality – Reliability – Safety**



## Roof jumper assemblies

The LEONI Roof Jumper Assemblies are designed to transmit electrical power from the pantographs to the transformers. Over 3000 roof spirals are used in about numerous projects of different vehicle systems on more than 500 trains. Our customers appreciate our plug and play maintenance free solutions. Since 1997, systems have been running without any problems. Our double helix coiled roof spirals are specified for applications between  $-40^{\circ}\text{C}$  up to  $60^{\circ}\text{C}$  (incl. heating by current). Its hydrolytic stability, good rebound properties and high UV resistance has been proven under the severe climatic conditions of projects in Russia as well as Norway, Spain and China.

Thanks to the sophisticated cable design and the use of specifically developed jacketing and insulation materials, our systems ensure excellent bending strength and flexibility even when subject to the highest mechanical and physical and chemical strains. The three-dimensional relative movements are fully compensated at the fixing points.

We offer technical solutions from 400 V up to 25 KV.

### Applications up to 1000 V

For applications up to 1000V the unit can be viewed as being insulated and can be supplied with or without termination boxes.

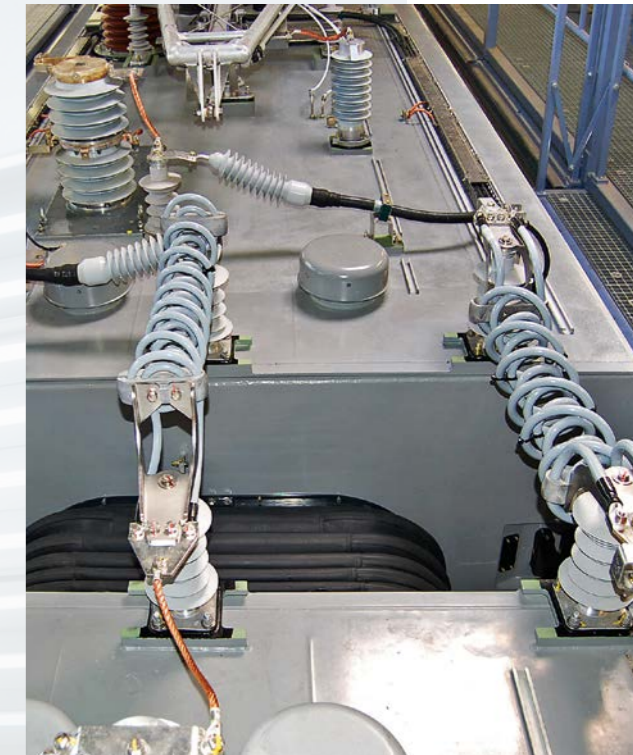
A variety of technical solutions can be offered, starting from simple connection systems up to complex jumper systems for three phase applications within one system.

### Applications from 1000 V up to 25 KV

For high voltage applications, the unit has to be installed on insulators and high voltage cable end terminations – for the actual voltage level. Insulators are defined and provided by the customer according to the voltage level applied. Typical high voltage applications are 15 kV at 16 2/3 Hz or 25 kV at 50 Hz but also 1,5 kV DC or 3 kV DC.

Electrical and mechanical redundancy of the system as well as the retraction force of the spiral warrants fail-safe insulation distance to gangway bellow underneath preventing any danger from passengers.

As a standard and for good practice, our design separates electrical and mechanical connection. Clearances and creepage distances are designed according DIN EN 501241-1.



## Tailor-made spiral design and connecting parts

We aim to exploit our commitment and our consulting services to reach optimum solutions, in collaboration with our customers. You define the performance criteria. We take care of the product.

Talk to us about your requirements regarding:

- operating voltage/power
- consumption
- climatic conditions
- track profile
- train geometry, etc.

We offer several design options in terms of cable and coil design as well as customized mechanical and termination components, which offers the opportunity to fulfill highest requirements including mechanical and electrical redundancy and guarantees an optimum operational reliability data and life cycle costs.

## Total Solution Management

**You do have a specific new or retrofit project and would like to use our tailor made solutions?**

**Please contact [rollingstock@leoni.com](mailto:rollingstock@leoni.com)**



## References

Our customers include well-known companies as Siemens, Stadler, CRRC, DB AG, SBB and Alstom. Worldwide more than 16.500 spirals in use. Due to our international operating we support customers based in Belgium, China, Estonia, France, Germany, Spain, Switzerland and many more.

**More than 30 years of experience in design and development.**

Product development

Design  
+  
Development

Test  
+  
Simulation

Production

Implementation

Installation  
+  
Logistics

Aftersales

Process-related support



## **Rolling Stock**

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