

Railway & Metro
Smart powering solutions

An aerial photograph of a city's transit hub. In the foreground, several blue and yellow high-speed trains are parked on multiple tracks. The tracks are equipped with overhead power lines and signal systems. In the background, a dense urban skyline features several prominent modern skyscrapers with glass facades. The sky is clear and blue, suggesting a bright day.

Powering green mobility

Railroad transportation has a key role to play in a “green mobility” society, where people and goods can move efficiently and safely, with minimal environmental impact.

Eltek’s power solutions help drive this development. They are based on cutting-edge power conversion technology, are highly efficient, reliable and safe. They are modular and scalable. They reduce complexity, environmental impact and total cost of ownership across the entire rail infrastructure.



Meet an Eltek expert

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Mathias Lang is segment manager for Railway & Metro. He is located in Karlstad, Sweden, from where he is responsible for Eltek's portfolio and position in the global railway & metro market.

Eltek and railroads

Eltek is one of the pioneers in the international power conversion industry, with some 45 years of experience as a supplier of power systems for applications in the most demanding environments. We're big in telecom, where requirements are as tough as they come. Our telecom heritage has been the foundation for our growing presence as a rail power supplier over the past two decades.

Room and need for a new technology regime

The current railroad infrastructure is rapidly coming of age. To a large degree, it is held together by a large number of interlocking systems, each one stand-alone, but depending on its neighbor as links in a chain. Not every one of these systems has its own battery backup, and if one link fails, so does the entire chain of systems required to operate the rail service.

There are lots of different systems of different voltages, catering for different needs, with different types of equipment sourced from different suppliers. This complexity also makes it hard – if not impossible – to oversee the entire landscape and foresee problems. There is no way to manage the network as one entity.

The same is true for the power systems used in the rail network – by and large they are old, inefficient and do not have the reliability expected in this day and age. The equipment may not fail frequently, but when it does, it could be costly to repair and there may be problems with spares. There is usually no redundancy on module level.

Inefficient power conversion modules equal waste equal higher operating cost and higher emissions than need be. The accumulated effect across thousands of systems is tremendous, not least in terms of risk exposure.

The better way

There is an obvious case for streamlining and simplifying the rail technology architecture. One place to start is with the power systems. Eltek's technology, solutions and products fit hand-in-glove with a desire to reduce complexity, cost and environmental impact, and increase overview and control. "Modularity" is the key word:

the ability to build power systems to fit a broad range of needs based on a just a few building blocks, and even the ability to manage many systems as one.

The advantages for Railways

Modularity equals scalability – a modular system is future proof as new modules can be added and systems dimensioned to the requirements in question. Within a single stand alone system, various combinations of uninterruptible supplies, required each for different load, are possible.

One modular system, with one battery backup and one controller, catering for several applications and voltage levels, will obviously save a lot of space compared to several smaller systems with duplicated functions. Our systems are very flexible, with many options for system configurations (both hardware- and software-wise).

Simplified and less costly maintenance is another advantage. The modular system architecture with several modules sharing the load, means modules can be hot-swapped, swiftly, with no disturbance to operation.

Continuity of supply is also inherent to the switch-mode & modular technology: redundancy is realized by one or more modules, according to specific customer needs

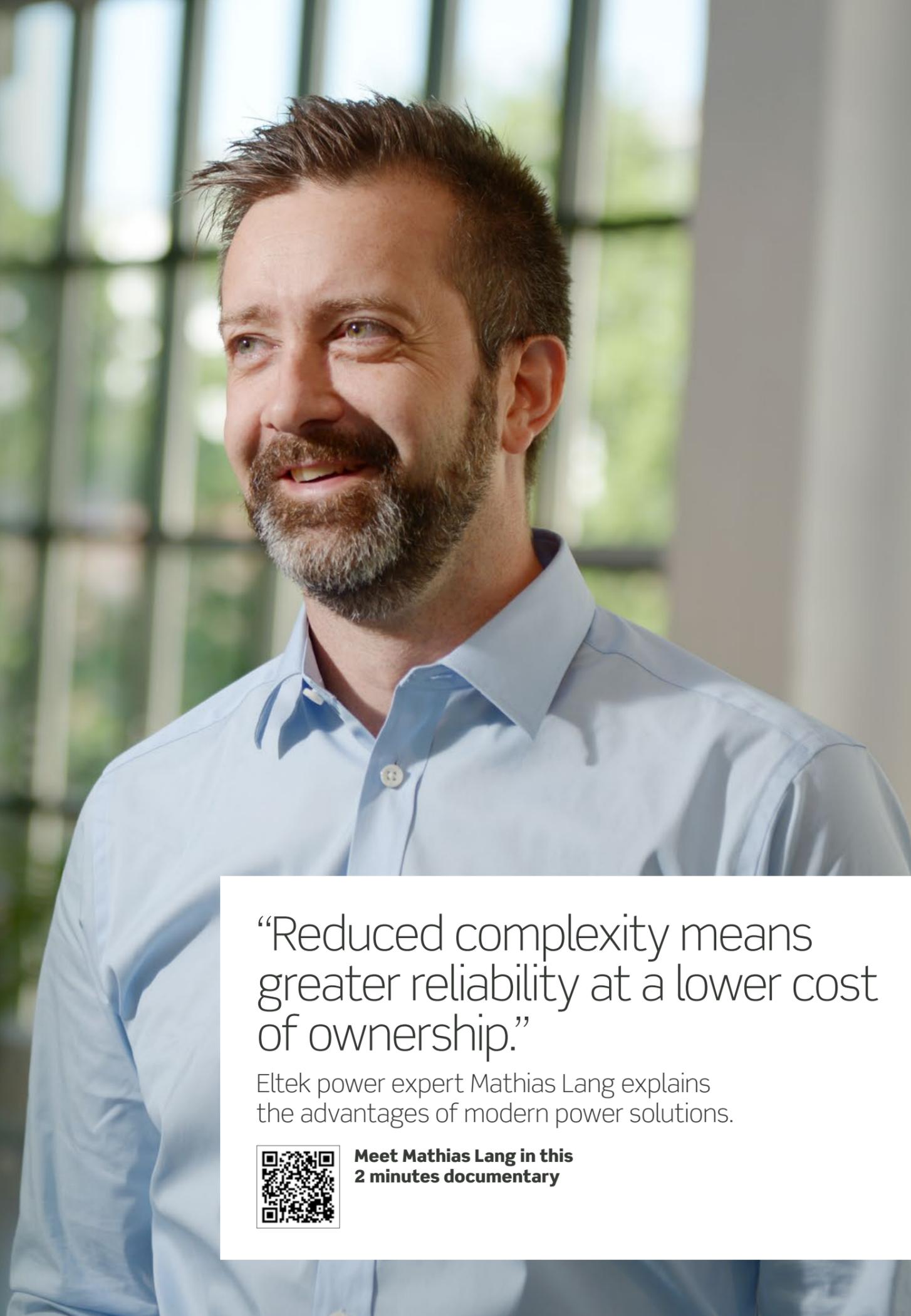
Another important aspect of our systems is their ability to be controlled, not only the individual power system itself and locally, but several systems from one remote terminal.

Let me also add that our HE modules are industry leading when it comes to efficiency, up to 98.5%.

At the end of the day, it all adds up to lower total cost of ownership, a simpler job of running and maintaining power supplies and a greater contribution towards a "green mobility" society.

The future is here

Looking ahead, our technology is set to play a key role in powering tomorrow's railways. The Rectiverter, our latest power conversion module, is the world's first to combine AC and DC output in one module, capable of feeding both types of loads and charging batteries at the same time.



“Reduced complexity means greater reliability at a lower cost of ownership.”

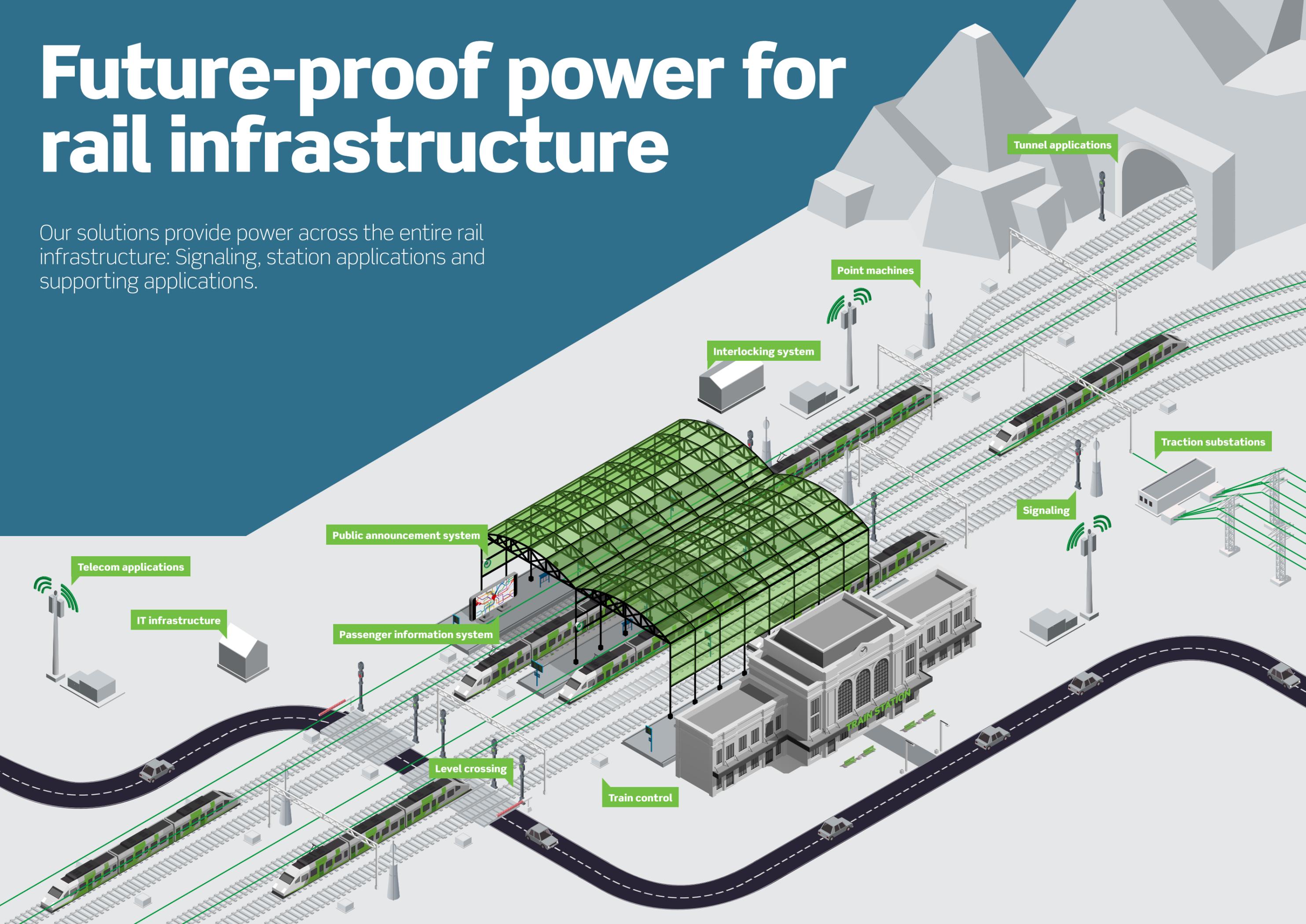
Eltek power expert Mathias Lang explains the advantages of modern power solutions.

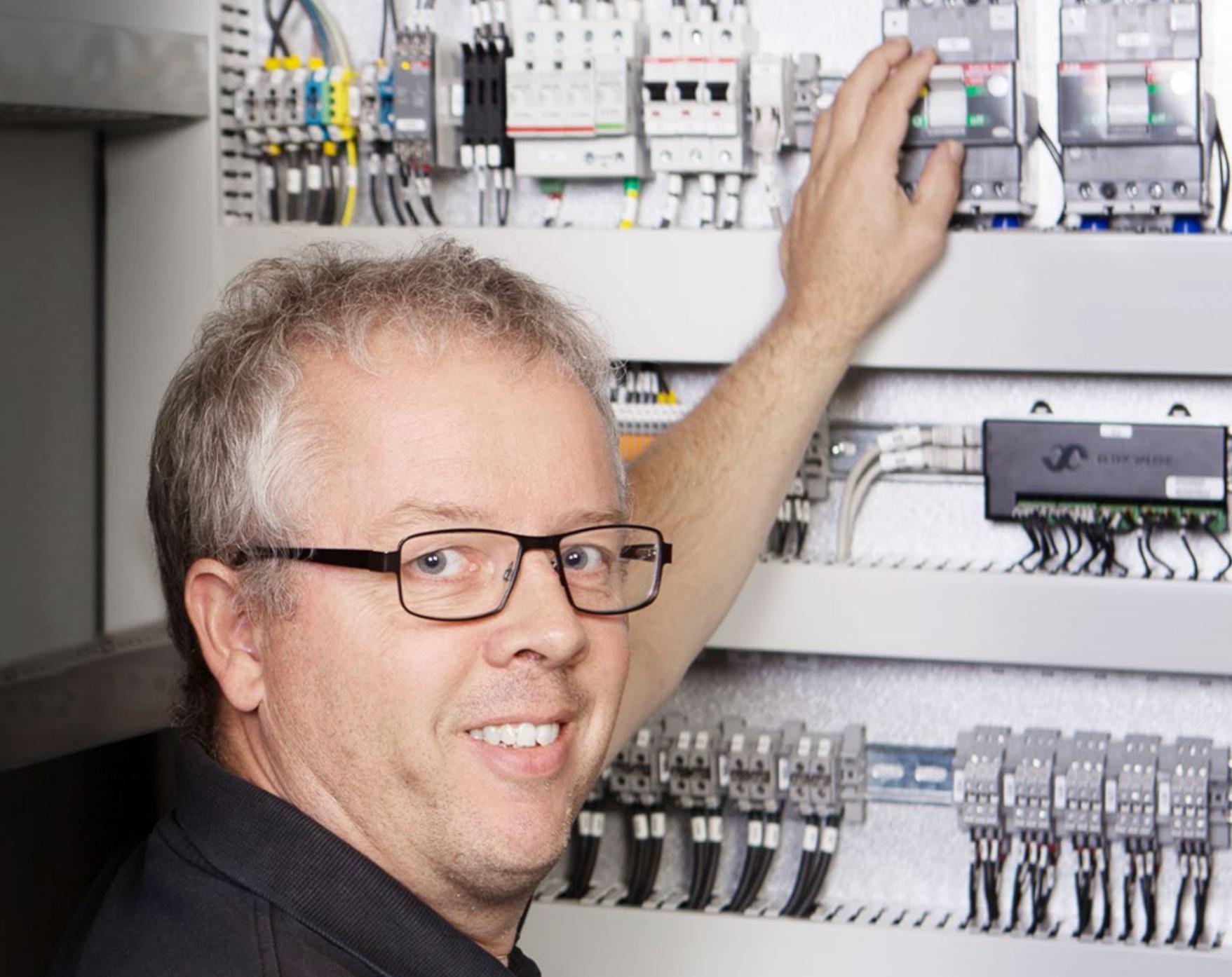


Meet Mathias Lang in this 2 minutes documentary

Future-proof power for rail infrastructure

Our solutions provide power across the entire rail infrastructure: Signaling, station applications and supporting applications.





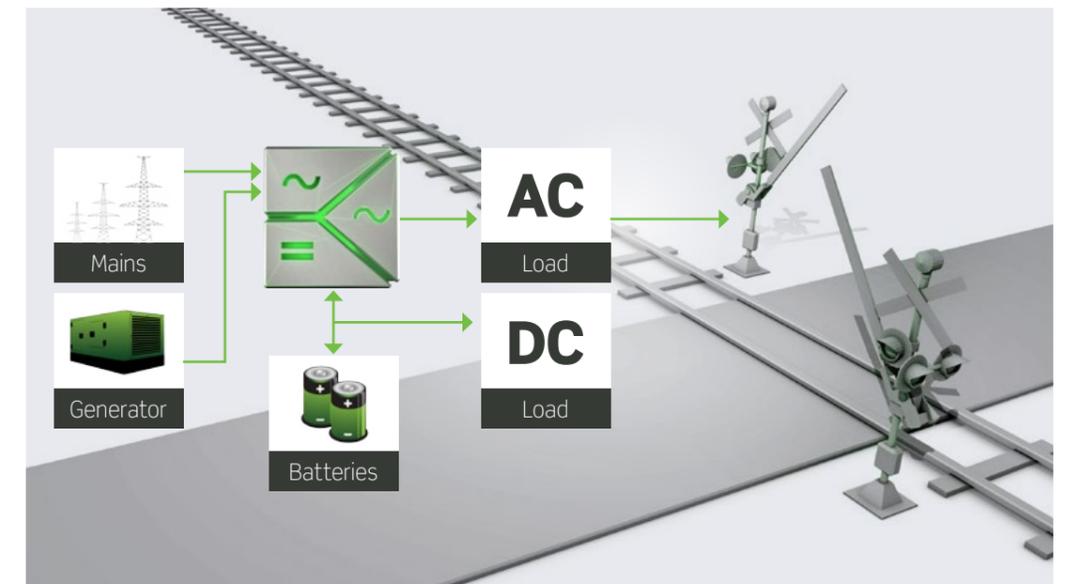
Future-proof modular power solutions



Hot swap modules



Complete AC and DC systems providing various loads



Example of configuration suitable for level crossings

Powerful solutions for railway networks

Interlocking systems

Interlocked signaling systems often have many potential single points of failure. They are becoming old, origin from many suppliers and there may be problems with spares and costly repairs. They lack in efficiency and there is usually no redundancy on module level. Not every application has battery backup.

Eltek's modular power systems, managed locally or remotely through one controller, outputs several voltage levels with n+1 redundancy. They provide a completely different level of efficiency, controllability and reliability, securing continuous operation of interlocking systems.



Rectiverter:

More flexibility with the Rectiverter

The Rectiverter is a 3-port bidirectional converter that provides both AC and DC power simultaneously. With its ability to feed both AC and DC applications, the Rectiverter system can replace many other systems. It reduces complexity, saves space and increases flexibility immensely.

Level crossings

There are a number of Rail & Metro applications where the Rectiverter is a particularly attractive proposition. One example is level crossings, where, for obvious safety reasons, there are very long back-up times. Rather than using over-dimensioned AC UPS's with extra DC chargers, the DC capacity in the Rectiverter is sufficient to recharge the batteries.

Point machines

Point machines constitute another application where the Rectiverter system fits very well. Point machines can be fed from AC or DC supplies and have different power requirements depending on the amount of motor drives. A modular Rectiverter-system is easy to configure for this application.

Combined systems with multiple voltages for customized UPS's

The building blocks and the glue

Eltek's power solutions are genuinely modular, based on industry leading power conversion modules. They are combined in flexible solutions controlled by system management hardware and software.



AC/DC

Various DC output levels are possible. Modules can be stacked from a few to hundreds in a system with or without battery.



DC/AC

For direct conversion from a DC source in the same cabinet or for supplying AC fed from batteries.



DC/DC

Either as add-on to existing DC system or integrated into a new one to avoid additional battery banks for each voltage.



AC/DC/AC

By using Rectifier modules, custom modular UPSs will manage batteries and supply AC loads as well as DC loads, simultaneously.

Batteries

Our systems are compatible with different types of batteries such as various lead acid, Ni-Cd & Lithium-ion.

Distribution

AC or DC distribution may be incorporated within our power supply cabinets or as a stand alone system.

For more information about our Railway & Metro products visit eltek.com/rail



Supervision, control and MultiSite Monitor

Power Supply systems sharing an Eltek controller, benefit from its extensive communication facilities. They can be remotely controlled and supervised easily. Furthermore, an Eltek MultiSite Monitoring system can supervise, from a central location, any number of sites equipped by our systems.



Welcome to a new world in railway power

With both AC and DC outputs, the RECTIVERTER is a small revolution in the world of power supplies. It has the power to forever change the way you power your rail infrastructure equipment and applications. For the better.

Visit rectiverter.com



Local presence - Global reach

Sales in more than 100 countries, offices in 40 countries and 2500 employees

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EXPERIENCE THE POWER.

At Eltek, we are power experts with a sharp focus; to develop and provide our customers all over the world with the greatest power solutions available for applications used in an industrial context - where stable, safe and efficient supply of power is crucial.

This has been our passion and motivation for more than 40 years: to innovate and lead the way in power conversion and control. Today we help our customers optimize and safeguard operation of business-critical equipment, reduce their carbon footprint, while at the same time reduce their total cost of ownership of power supply equipment.

Nordic by birth, we have grown to service all countries and cultures, offering the best global technology and solutions matched to local requirements.

The combination of superior expertise, advanced solutions, support and service, makes it possible for our more than 2500 passionate and proactive power experts world-wide to provide our customers with a unique, powerful experience.

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