



# Rail Consulting.

Safe and reliable traction.



COPY

# Rail Consulting.

Safe and reliable traction.

*Rail transport makes a vital contribution to the mobility of people and goods. Optimizing the management and operation of rail networks is therefore extremely important. However – against a background of demand growth, increasing speed and safety expectations, high network loads and far-reaching technological developments – optimization is a considerable challenge. KEMA has the breadth of experience and expertise to help the rail industry meet this challenge.*



In the dynamic modern world, the demand for transport is constantly increasing. Railways have a crucial role to play in meeting that demand. A modern rail transport system relies heavily on electric traction. With demand rising exponentially, new rolling stock is entering service all the time. Furthermore, in line with European rail transport policy, the number of train movements is increasing steeply, stretching network capacity to the limit. This in turn places enormous demands on the network's electrical infrastructure. If the appropriate safety and reliability standards are to be met, it is necessary to make optimal use of equipment and systems.

As the owner or operator of a rail network, you want to know that your traction power supply system is capable of moving with the times. This raises issues of economics,

performance, risk management, load forecasting, safety, reliability, energy management and maintenance. Where do we stand in relation to such issues? How much 'stretch' is there in the system? How much additional load can the system handle in the future? How do we ensure that quality is maintained? What are the implications for schedules and services?

## **Wide-ranging expertise**

KEMA is committed to offering specialist expertise in all fields of rail network management.

Our consultancy services include:

- System Planning and Design: layout, load estimation and load forecasting, protection, communication and control, specification, assessment of the reliability of traction and ancillary power supply systems

- System Review: how can your traction power supply system be updated to meet future demands?
- Protection and Control: analysis and coordination of electrotechnical aspects of signaling, control, command and power supply to secure the highest levels of safety, efficiency and reliability
- Owner's Consultant: verification of order specifications, procurement specifications, quality plans and test reports, witnessing routine, acceptance and commissioning tests, construction supervision, assembly and transportation, inspection of engineering tools
- Regulation and Policy: supporting rail network operators with the implementation of regulatory requirements
- Asset Management: advice on how to maximize the utilization, performance, safety and condition assessment and maintenance of infrastructural assets, while ensuring that quality and reliability are not compromised
- Earthing and EMC: ensuring the safe and reliable performance of electrical power systems and industrial and com-

### High speed Rail Links

KEMA has decades of experience with high voltage systems and components, which is invaluable in the realization of high speed rail links. A high speed train needs an alternating supply voltage of 15 or 25 kV: a fundamentally different prospect from the traditional 1500-volt DC supply. A high voltage AC supply not only requires dedicated hardware, but also behaves in a quite different way.

### RAMS

Ongoing growth in rail traffic and increasing traction power requirements imply even greater emphasis on reliability, availability, maintainability and safety. Central to our railway consultancy services is therefore the RAMS Management System. Based on EN 50126, this system uses the local regulatory requirements on power supplies as its starting point. From this basis, a route can be mapped out to verify and demonstrate that an existing or new rail link meets the applicable criteria. KEMA supports rail and power network operators embarking on this process.



- mercial equipment, without interference from the electromagnetic environment
- Energy Storage: research into the recovery of braking energy by the integration of batteries or flywheels into the power supply system.

### Comprehensive service offering

- From power supply to train feed systems
- From common rail to high speed
- From rolling stock to trolley buses
- From catenary to third rail systems
- From signaling to train control systems.

### The KEMA-ELBAS alliance

*For the last ten years, KEMA has been working with ELBAS, an engineering consultancy firm based in the German city of Dresden. The firm's specialist fields of expertise are designing and advising on power supplies for electric rail systems. The alliance between KEMA and ELBAS has proved particularly valuable in the context of system design, planning and analysis projects. In such activities, considerable use is made of the unique traction simulation software packages developed by ELBAS: SINANET and WEBANET. The combined expertise of the two organizations is brought to bear in output data analysis and in protection and control system projects. It allows us to make detailed performance projections on the basis of periodically updated service schedule data. We use our experience to analyze the results by reference to reliability and optimization criteria.*

### For more information:

KEMA  
P.O. Box 9035  
6800 ET Arnhem  
The Netherlands  
T +31 26 3 56 24 00  
F +31 26 3 36 24 77  
[contact@kema.com](mailto:contact@kema.com)  
[www.kema.com](http://www.kema.com)

COPY

[www.kema.com](http://www.kema.com)



KCE-8005  
R&T02