



PLATFORM SCREEN DOOR SYSTEMS



KNORR-BREMSE

Knorr-Bremse has pursued a single mission for over 110 years, to make mobility on roads and railways safe, sustainable and environmentally friendly.

Today the Knorr-Bremse Group, with headquarters in Munich, is the world's leading manufacturer of braking systems and a leading supplier of safety-critical sub-systems for rail and commercial vehicles.

With a local presence around the globe, the Rail Division operates at over 60 locations worldwide with a diverse portfolio, offering comprehensive solutions for the future megatrends of urbanisation, eco-efficiency and digitalisation.

The Knorr-Bremse Group Centre of Competence for Platform Screen Door Systems is based in the UK, and has more than 40 year's experience designing, manufacturing, installing and maintaining Platform Screen Door Systems.

We create customer specific solutions for both new and retrofit projects, and, today, cities around the world are served by Knorr-Bremse Platform Screen Door Systems.

Thanks go to Crossrail for all images marked with a © throughout this document.



» Our passion and expertise have made Knorr-Bremse a leading supplier to the railway industry worldwide, and our innovative developments allow us to grow with each new challenge.«

Paul Goodhand
Managing Director Knorr-Bremse Rail Systems UK

Knorr-Bremse Platform Screen Door Systems. Supported by a truly global group.



Global and Local

The Knorr-Bremse Group operates at over 100 locations in over 30 countries worldwide. This enables us to serve our customers around the world in the best possible way. Our customers can benefit from close connections to the local sites, offering major advantages in maintenance and support. We also implement project specific concepts regarding

local content or series assembly. Knorr-Bremse act globally but locally so sourcing of local input and materials for your project will be optimised. The target is typically 50% localisation. Manufacturing for your project can also take place locally, with a dedicated UK based team working together with your local team on the project.

As a global company, we need a common basis – our five corporate values. Our everyday lives are becoming ever faster, more digital and more connected. Globalisation is increasing the competitive pressure on companies. All these developments place great demands on people. Values that are anchored in our core identity provide us with orientation and stability. We are convinced that our shared corporate values help us develop and grow as we take on the challenges of the future.



Entrepreneurship

We identify future demands and possess an open mind – as well as the courage to develop new business



Excellence in Technology

We focus on anticipating customer needs and on creating customer values, offering innovative, leading-edge and competitive system solutions.



Reliability

Our products and services respond to the highest safety levels and call for excellent quality standards in all areas and processes.



Passion

We passionately work for outstanding results with a commitment to achieve our targets and we are always prepared to go the extra mile.



Responsibility

As a global player we assume corporate responsibility in the social sphere as well as for our environment.

Platform Screen Door Systems from Knorr-Bremse. Making passenger travel more attractive.

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RAIL
VEHICLE
SYSTEMS



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Enhance your passenger environment

Urban travellers have a choice; mass transit systems compete with easily accessible 'above ground' options such as trams, buses and taxis. Knorr-Bremse Platform Screen Door Systems transform the passenger environment and make mass transit systems much more attractive.

Our platform screen door systems...

- ... increase safety
- ... create cleaner, quieter platforms
- ... deliver consistent dwell times
- ... greatly enhance platform architecture
- ... are a key enabler of Automatic Train Operation (ATO)
- ... facilitate enhanced passenger information and entertainment

Platform Screen Door Systems from Knorr-Bremse. Our systems.

PLATFORM SCREEN DOOR SYSTEMS

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Features

- Specifically designed for rail applications
- Can be installed on new build platforms or retrofitted to existing platforms
- Modular build and installation
- 'Plug and play' control systems
- Suitable for underground, external and elevated stations
- Emergency escape doors
- Platform door operation synchronises with train door operation
- Additional passenger information and advertising potential
- Choice of materials for construction
- Enhanced passenger information and entertainment

Benefits

- Improved passenger safety
- Enhanced, cleaner and quieter station environment
- Operational efficiency enhanced
- Improved station patronage
- Consistent dwell times
- Key enabler of automatic train operation

Sustainability

- Low energy consumption
- Reduced tunnel ventilation and loss of air conditioning effect
- Long service life
- Low life cycle costs
- High availability
- 99% of construction materials and 100% of delivery packaging is reusable and/or recyclable





Platform Screen Door Systems from Knorr-Bremse. Our systems.



Platform Screen Doors (PSD)

- Full height screen work
- Full height systems offer the ultimate in platform enhancement
- Civil interface is at the platform and ceiling level
- Train noise is suppressed
- Economical air conditioning of the platform is possible
- Can be fitted new and retrofitted
- Optional digital enhancements, including media walls, Wi-Fi and dynamic lighting
- Built in blast protection



Platform Edge Doors (PED)

- Screen work 2.3m to 2.5m high (typical)
- Allows free flow of air for platform ventilation
- Civil interface at platform level only
- Can be fitted new and retrofitted
- Optional digital enhancements, including media walls, Wi-Fi and dynamic lighting operation



Platform Safety Gate (PSG)

- Screen work 1.3m to 1.7m high (typical)
- Allows free airflow for ventilation
- Mounted directly onto finished floor
- Rapid installation
- Can be fitted new and retrofitted
- Optional digital enhancements, including media walls, Wi-Fi and dynamic lighting

Platform Screen Door Systems from Knorr-Bremse. New build projects and retrofit.



Both new and retrofit

Knorr-Bremse have the capability to deliver platform screen door systems for both new build and existing platform environments. We have experience of successful new build and retrofit projects around the world.



» Each project, whether new build or retrofit, is unique and each solution from Knorr-Bremse is designed to optimise operational safety and efficiency.«

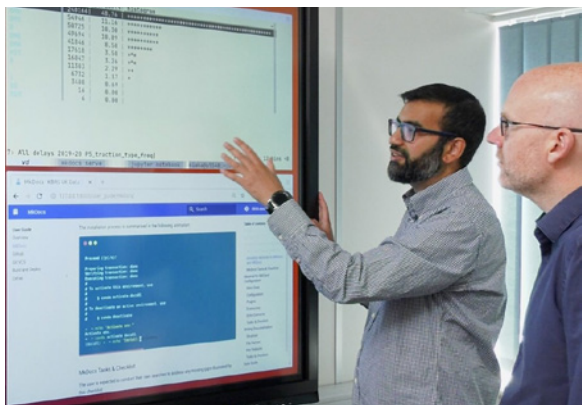
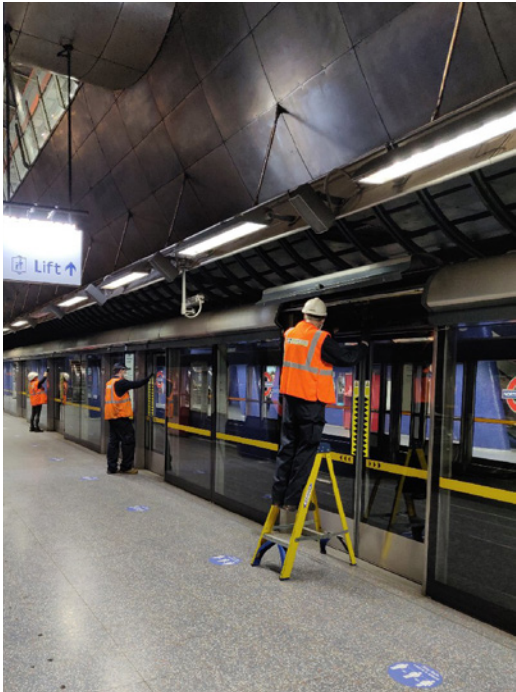
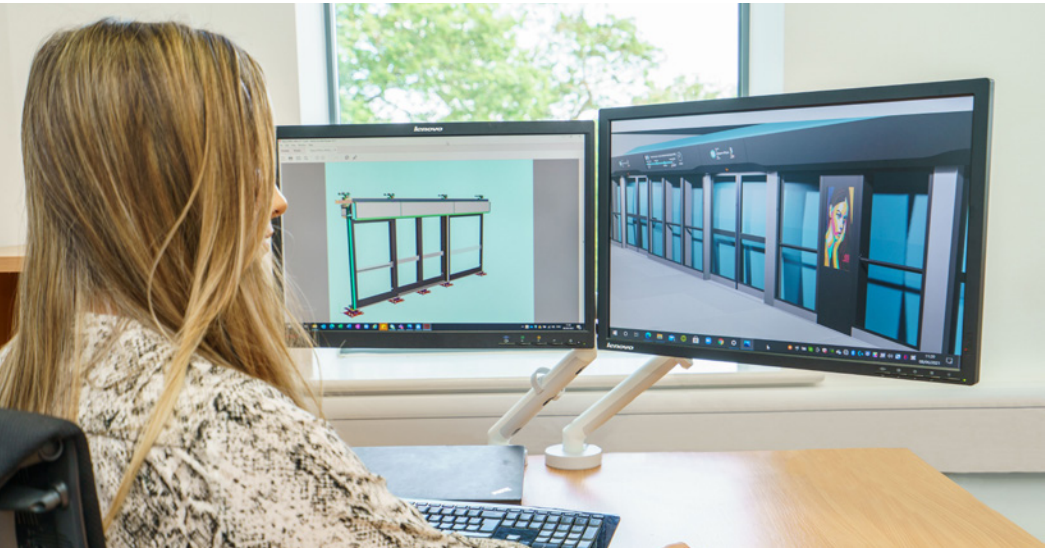
Alan Meakin
Projects and Field Services Director

Platform Screen Door Systems from Knorr-Bremse. Our Expertise.

A comprehensive service package

Our skillset is all-inclusive. From creating a concept to manufacture, through to installing and maintaining your system, we do it all.

- Concept and Design
- Prototyping
- Manufacturing and Testing
- Installation and Commissioning
- Whole Life Support, including Remote Monitoring
- Project Management



Digital Enhancements. For new and existing systems.

Knorr-Bremse offer a range of digital and safety enhancements for Platform Screen Door Systems, both during installation and for existing systems, which we can upgrade at your request. These enhancements include:



Dynamic Lighting

Located above and around doors, changes in intensity and brightness, to clearly highlight and approaching train, in addition to the boarding and disembarkation area



Dynamic Status Displays

Usually located directly above doorways, can detail next train information, network status, time, date, emergency messages and a host of other information and all in real time



Maintenance

Digital, real time monitoring of the health of the platform screen doors to optimise availability



Media Screens

Located along the platform screen door system, carrying advertising content and earning revenue for the operator. Content can be remotely controlled



Public Address Systems

Hi-definition speakers integrated into the platform screen system to deliver operator announcements; another major safety feature



Wi-Fi

Delivered through the platform screen system allowing metro users internet access underground



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Our Projects

You can trust Knorr-Bremse to deliver your project because we have a proven track record. We were the first organisation to install a heavy metro platform screen system in Singapore in 1987, and since then, we have successfully delivered over 40 projects around the world. Today, cities around the world are served by Knorr-Bremse Platform Screen Door Systems, including:

- | | | |
|--------------|-------------|----------------|
| ■ Beijing | ■ Guangzhou | ■ London |
| ■ Brescia | ■ Paris | ■ Shanghai |
| ■ Copenhagen | ■ Hong Kong | ■ Singapore |
| ■ Dubai | ■ Makkah | ■ Thessaloniki |

Our Projects. In Focus.

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Makkah, Saudi Arabia

Perhaps our most complex project to date, truly demonstrating that, whatever the project management, logistics and installation challenges faced, Knorr-Bremse have the skills and experience to overcome them and deliver for our customers

- 8.4KM combination of Platform Edge Doors and 'Segregation' Doors a first ever!
- 9 stations; 1,860 active doorways
- Completed in temperatures of up to 55 C on an external elevated rail system
- 700 strong team of Muslim only workers sourced and managed by Knorr-Bremse
- Phase One completed, as requested, for the largest single faith gathering on earth, the Hajj Religious Festival of November 2010



Elizabeth Line (Crossrail), United Kingdom

Crossrail is the biggest railway infrastructure project in Europe and one of the largest single investments undertaken in the UK. Knorr-Bremse were chosen to design, manufacture, install, commission and maintain Platform Screen Door Systems on all underground stations that serve the Elizabeth line.

- Full height Platform Screen Systems
- 8 stations in the central section of London
- 16 platforms, 432 active doorways
- Local design, manufacture, installation, commissioning and maintenance



Whole Life Support

We provide 'whole life' support for all our systems, anywhere in the world, through our dedicated service organisation, Knorr-Bremse RailServices. Our team of experts are responsible for maintaining systems on some of the busiest metros in the world, including London's Jubilee and Elizabeth lines. In addition to ensuring original levels of Knorr-Bremse safety, performance and reliability are maintained, RailServices also offer the latest Knorr-Bremse modernisation and digitalisation expertise, advice and upgrades to existing systems.



» Our know how provides support to Knorr-Bremse Platform Screen Systems throughout their entire life cycle.«

Chris King
RailServices Manager



**Knorr-Bremse Rail Systems
(UK) Limited**

Westinghouse Way
Hampton Park East
Melksham

SN12 6TL

Phone: +44 1225 898700

Fax: +44 1225 898710

rail.knorr-bremse.com



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