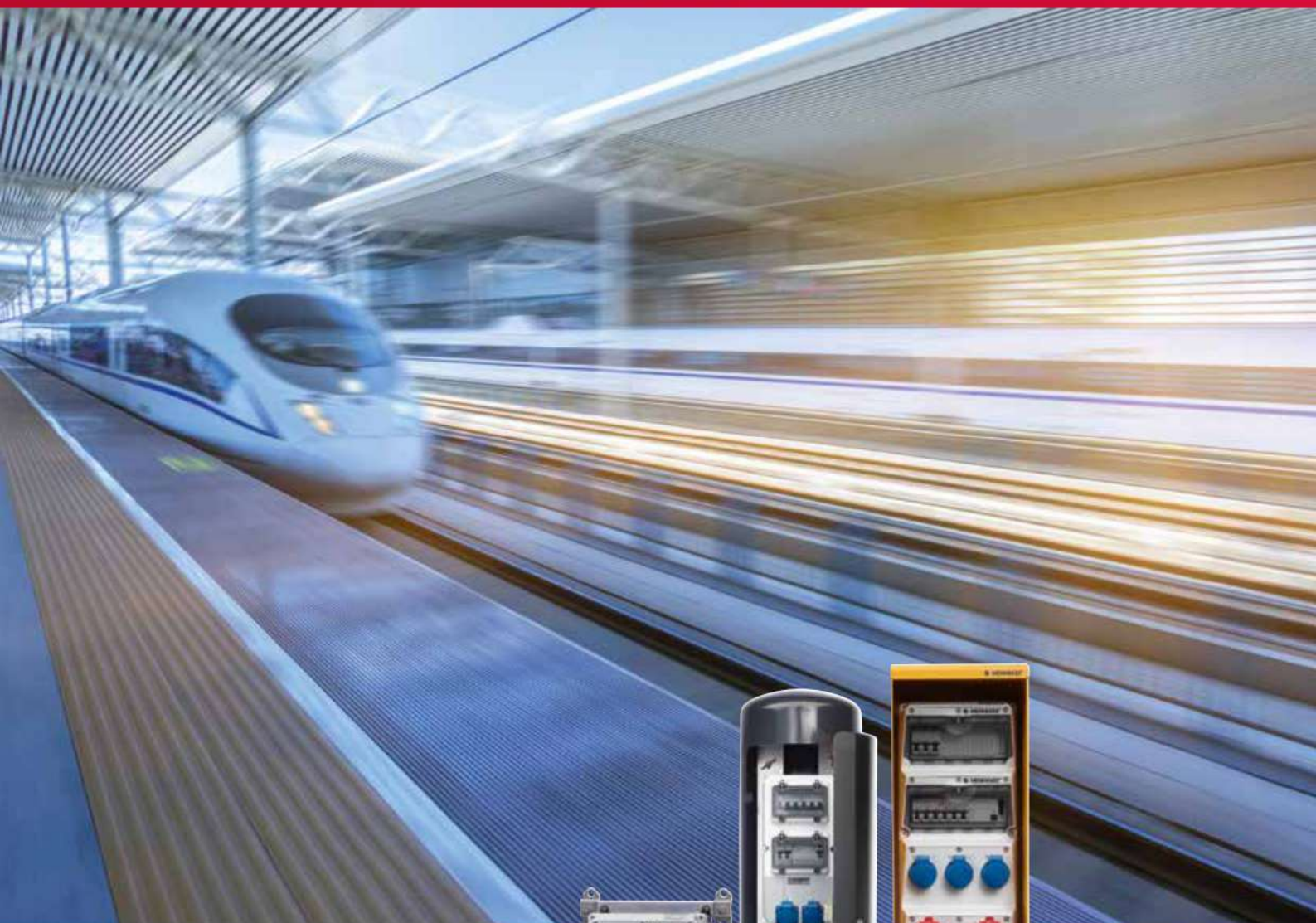




Plugs for the world

YOU ARE ALWAYS CONNECTED WITH US

Solutions for railway and transport companies



YOU ARE CONNECTED ...

... an announcement that gives rail travelers a good feeling. This is exactly what our solutions for plugs and sockets provide, reliability in every application area. Our core competence has one thing in common with railway transportation – we provide a safe connection.

On railway platforms and in tunnels, MENNEKES receptacle combinations form the central interfaces to reliably supply electrical rescue equipment, cleaning equipment or lighting with power. Here our solutions are optimally designed for specific requirements such as high pressure and suction forces, weather protection or other external influences. Whether for combinations or with other solutions such as power posts or plugs – You are guaranteed a safe connection ...

... WITH MENNEKES.



High-current-
connectors

AMAXX® tunnel
combinations

Power
post

Track
combinations

AMAXX® tunnel
power distributor

LIGHT AT THE END OF THE TUNNEL ... IS NOT ENOUGH FOR US

Product solutions for tunnels

In many ways tunnel systems are a particular technical challenge. For example, high demands are placed on receptacle combinations in railway tunnels. For train travel with a speed of up to 300 km/h, they are subject to extreme stress due to several changes of pressure. Verification of sufficient strength with regard to aerodynamic effects is required for all components that are directly installed in the tunnel.

MENNEKES has developed its own range of receptacle combinations that can be reliably used for the operation of electrical rescue devices as well as for lighting scenes of an accident. Sub-distributors for the tunnel safety lighting are also included in the solution portfolio for the rail infrastructure in railway tunnels.

The necessary approvals and authorizations for DB Netz AG Germany, ÖBB Austria and SBB Switzerland are available for AMAXX® receptacle combinations. MENNEKES receptacle combinations are also reliably in service in the Gotthard tunnel.



AMAXX® tunnel receptacle combination

AMAXX® tunnel receptacle combination made of AMELAN®

EverGUM® tunnel receptacle combination

AMAXX® tunnel power distributor



APPLICATIONS FOR TUNNELS

Safe customized solutions

Safety is always the highest priority in railway tunnels. In an emergency, rescue teams also depend on finding a reliable electrical supply for heavy equipment. Here MENNEKES offers the optimum solution with AMAXX® receptacle combinations.

As a customized solution, ■ AMAXX® receptacle combinations from MENNEKES can be fitted with different receptacles as required. CEE and SCHUKO® receptacles as well as fault current switches and circuit breakers can be combined on site in a very flexible manner to meet the relevant requirements.

Together with optimum protection, the transparent window ensures a quick overview and access.

MENNEKES offers suitable solutions for the design of tunnel safety lighting. The ■ fuse boxes for tunnel special lighting as well as MENNEKES receptacle combinations have been generally approved by Deutsche Bahn (in accordance with Directive 954.9107).

1



2



APPLICATIONS FOR TUNNELS

In use for light railways

■ There are special demands for receptacle combinations in the track area of DC railways. They are included in the scope of service of MENNEKES. In many cities and towns of the world, customer solutions have often been in use for decades, primarily for maintenance tasks.

The high level of flexibility of the fitting of AMAXX® receptacle combinations with receptacles, switches, relays, alarms and other functions pays off in order to individually adapt to the relevant requirements.

Thanks to the modular design of our AMAXX® enclosure, a comfortable connection space can be provided even for large cable cross-sections.

Our receptacle combinations can be easily assembled using the sliding mounting rails and hinged enclosure cover.

To guarantee a high level of safety for the user, MENNEKES uses special ground fault circuit protection in its products.



APPLICATIONS FOR TUNNELS

Flexibility in the enclosure material

For the enclosure materials of receptacle combinations, MENNEKES offers a variety of different solutions that are completely geared towards specific project requirements.

Products made of **AMELAN®** combine high mechanical, thermal and electrical properties with excellent resistance to chemicals and dimensional stability. For use in areas where aggressive substances place special demands on the material,

AMELAN® offers resistance to fuels, oils and greases, diluted acids and bases, cleaners and most aqueous salt solutions.

In contrast, the enclosure of **EverGUM®** tunnel receptacle combinations consists of a solid rubber mixture. The material also has a high creep resistance and dielectric strength. EverGUM® receptacle combinations are available in two different enclosure sizes in signal yellow or black.



FULL STEAM AHEAD WITH SMART SOLUTIONS

Applications for railway stations

MENNEKES is your partner for railway stations where energy distribution plays an important role. The installations meet high requirements and withstand deliberate manipulation attempts and vandalism. Reliable function in windy weather is a matter of course for us.

Whether in the track area or platform, maintenance works or cleaning systems and regardless of the specific requirements, we develop the optimum solution together with you.

Depending on the individual requirement and intended purpose, we offer customized rail receptacle combinations, individual connectors or distributors.



AMAXX® receptacle combination

CombiTOWER® rail receptacle combinations

Track receptacle combination, customized special production

Stainless steel distributors



APPLICATIONS FOR RAILWAY STATIONS

Shunting yards, service tracks and sidings

MENNEKES has special **1** track receptacle combinations in its range of products for use in the track area. The individual requirements for dimensions and fittings are professionally and purposefully planned with the decision-makers. As an example, track receptacle combinations have already been manufactured as special customized solutions for Deutsche Bahn.

2 CombiTOWER® is particularly suited for electrical installations in the open according to the specifications of railway operators with protection class IP 44 to IP 67. All the required energy connections for electricity, compressed air and water can be made available directly at the workplace in shunting yards or service tracks and sidings. CombiTOWER® is also available with a lockable door. By using a standard locking cylinder, CombiTOWER® can be optimally integrated in existing lock systems.



APPLICATIONS FOR RAILWAY STATIONS

Cleaning, operational facilities and maintenance plants

There is a tight schedule for service, maintenance and cleaning work. It is therefore all the more important that all plugs and sockets function flawlessly. MENNEKES offers a comprehensive range of energy distributors, plugs and sockets as well as receptacles for different application fields.

■ Receptacle combinations made of different plastics or stainless steel with individual fittings, ■ plugs and sockets with X-CONTACT

for the harshest conditions and ■ high-current connector systems for 400 A or mobile receptacle combinations – MENNEKES offers everything that is required for the energy supply in maintenance areas.

We use halogen-free technical plastics with and without flame protection depending on the application. Halogen-free internal wiring on request.



APPLICATIONS FOR RAILWAY STATIONS

Railway station buildings

High demands are placed on the installation in and in front of railway stations. They must be particularly robust and resilient to withstand deliberate manipulation attempts and vandalism.

For this MENNEKES has robust stainless steel distributors in the form of **1** vertical columns for which the entire installation is protected against access by third parties.

Suburban railways in Munich are fitted with stainless steel distributors. A special feature: an enclosure with two energy distributors and

protection class IP 55. Access to two energy distributors has been restricted with different closures to allow differential access to service personnel and rescue teams. The flexible implementation is also geared towards practical requirements here.

Wherever robust and safe energy distribution is important, **2** MENNEKES offers power posts in its range of programs. These lockable, vandal-proof power posts guarantee energy supply in the transport sector and outdoor area and are safe for transportation. They are available in different sizes and colors.





FULL STEAM AHEAD WITH SMART SOLUTIONS

Developed for you – by MENNEKES

In practice individual solutions are always required for railway and transport companies. At MENNEKES, we are perfectly suited for this. We are the ideal partner as we advise you on site and recommend the most suitable plugs and sockets for you.

We have already developed numerous individual solutions in the past in order to optimally meet different requirements. The very close cooperation and coordination with our customers is always the central aspect of each technological development here. According to the principle "get ahead together", challenging

projects in Germany, France, Peru and Saudi Arabia have been successfully completed. The highest level of satisfaction of our customers is the best possible evidence of our expertise to do with plugs and sockets for the railway sector.



RECEPTACLE COMBINATIONS FROM MENNEKES USED AROUND THE WORLD



KEOLIS, France



**Metro Tunnel Amsterdam,
Netherlands**



Metro Lima, Peru



Metro Riad, Saudi Arabia

References:

- De Lijn (transport company), Belgium
- STIB (transport company), Belgium
- BVG (Berlin transport company), Germany
- Hamburger Hochbahn (Hamburg elevated railway), Germany
- VGF (transport company Frankfurt), Germany
- KTS Kazakh Railway, Kazakhstan
- Doha Metro, Qatar
- NedTrain, Netherlands
- Tram Verlengde Callandlijn RET Rotterdam, Netherlands
- Metro Lima, Peru
- LineVanpee (Metro), Sweden

MADE IN GERMANY – USED AROUND THE WORLD!

Close to our customers everywhere

We support our home market in Germany from our headquarters in Kirchhundem through sales agencies and a dedicated sales team. We are represented in international markets by our own employees with our subsidiaries and sales offices. You can rely on MENNEKES. This remains the motivation for our 1000 employees across the world. Their daily work shows their commitment to the brand of MENNEKES.

MENNEKES has been a family business since it was founded over 80 years ago that has been responsibly managed by members of the owner's family. Responsibility for the company also means responsibility for the people that are the focus of all thoughts and actions at MENNEKES. Through their value awareness together with their conscientiousness, reliability and loyalty, they form an essential cornerstone of the company.



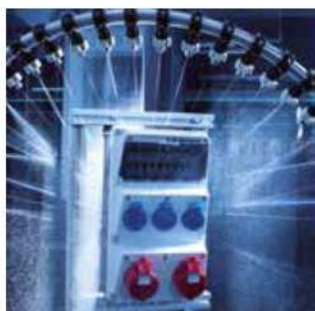
MENNEKES

Your guarantee for the highest quality

When a MENNEKES product leaves our factory, it has already undergone the hardest tests. In our test laboratory, it is exposed to the cold, heat, dust and water again and again. Only if it passes this test can it carry the name MENNEKES. Naturally our products are certified according to national and international standards by recognized institutions. The same is true for the MENNEKES company itself: Our internal quality management system is certified according to DIN EN ISO 9001.

Only the combination of first-class raw materials and first-class processing guarantees first-class results. That is why we only use high-quality plastics that are processed by our highly qualified employees on modern production lines into certified MENNEKES products.

The high quality standard of our products is also safeguarded by our own test laboratory. This is used without restriction for product tests according to DIN EN 60309 for issuing a mark of conformity (our own products) by the relevant test authorities, such as the VDE.





MENNEKES®

Plugs for the world

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