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# Remote-controlled rail transport: Rheinmetall contributes secure remote control technology to research project for the rail sector

Rheinmetall is participating in the new research project “RemODtrAIn” (Remote operated train with AI based Obstacle Detection) through its subsidiary MIRA. Under the consortium leadership of Siemens Mobility, a network of industry, operators, and science is developing a secure remote control solution and modular, AI-supported obstacle detection with a focus on highly automated train operation.

The main objective of the project is to equip an ICE 4 train with a remote control system enabling it to be operated by a control station located at the DB (German Railway) maintenance depot near Cologne. It is based on a 5G communication solution designed to enable secure and highly available operation within a wide variety of conditions. In addition, AI-based obstacle detection is being tested in real operating environments, including the Berlin S-Bahn network.

Together with its RemODtrAIn project partners, MIRA is developing a secure, robust remote control solution that can be integrated into new vehicles and used as a cost-effective RTO (Remote Train Operation) retrofit for large existing fleets. The solution consists of a compact control unit for the remote operator, a teleoperation kit in the vehicle, and a cloud-based fleet management system, with which MIRA is contributing to the development of an RTO control centre.

The focus is on delivery, dispatch, and stabling, operations during which trains often have to be moved by train drivers. MIRA addresses this issue by standardising the operator panel and interfaces: In future, a standard operating logic for different train vehicles should suffice – contributing to remote control and providing opportunities for automation, thereby helping to overcome driver shortages in railway operations.

The core technical elements of the MIRA solution include a vision system with safety design (ASIL-D), a high-availability communication system, certified vehicle interfaces (in cooperation with Cattron as a subcontractor of MIRA) and a compact RTO system complying with the relevant railway standards. RemODtrAIn defines specifications that will enable subsequent use in real railway operations – from factory and depot logistics to other applications in rail transport.

By remotely controlling trains from a remote control station, the same person can operate several vehicles or switch flexibly between vehicle types. This will enable

## ▸ Key facts

- Research project “RemODtrAIn”: Remote control of traction units
- Industry consortium led by Siemens Mobility
- Funding from the Federal Ministry for Economic Affairs and Energy (Bundesministeriums für Wirtschaft und Energie, BMWE)
- Use of 5G technology and AI-based obstacle detection in rail transport
- Retrofit solution for existing fleets

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better use of existing resources, stabilise operations and strengthen the resilience of the rail system.

“With RemODtrAIn and MIRA's teleoperation solution, we are passing our system expertise from the road mobility to rail transport,” says Win Neidlinger, Managing Director of MIRA GmbH. “Remote-controlled trains in workshops and depots increase efficiency, reduce staff workload and lay the foundation for further automation steps in the railway sector – safely, economically and scalable.”

The RemODtrAIn project is funded by the European Union and through the “DNS of the sustainable mobility’ funding programme. Digital – Sustainable – System-compatible" by the Federal Ministry for Economic Affairs and Energy (BMWE). A total of around €17 million in funding is being made available. The project thus provides an important contribution to the digitalisation of the railway system, to increasing the performance of the infrastructure and to the sustainable modernisation of rail transport in Germany and Europe.

**About MIRA**

MIRA, a wholly owned subsidiary of Rheinmetall AG, specialises in teleoperation solutions for complex mobility systems. The company has been remotely controlling vehicles safely and reliably on public roads for several years, relying on a specially developed technology platform that can be used for all mobility platforms. Within the RemODtrAIn project, MIRA is developing a modular remote control platform for train vehicles that can be integrated into both new vehicles as well as existing fleets via a retrofit solution. The aim is to make rail transport more efficient and resilient in the long term through safe, standardised and efficient teleoperation.

**About Rheinmetall**

Rheinmetall AG is an international technology group with a focus on security and industry. The company develops and manufactures solutions for defence, mobility and industrial applications, and drives the digitalisation and automation of key infrastructure systems with innovative technologies.