

## Press release

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# Optimally Connected, Faster, More Reliable: VGF and Siemens Mobility Present Milestone in Track Equipment with CBTC

## Semi-automated test runs with metro prototype for the Digital Train Control System Frankfurt

Over the past year, a metro prototype has been running on the test ring of the central urban train depot managed by the Frankfurt Transport Company (VGF). The tests are for one of the most important digitalization projects in Frankfurt am Main: the "Digital Train Control System Frankfurt" or DTC. The prototype, a converted "U5" type train, communicates continuously with the infrastructure in order to operate more quickly and efficiently. The tests are at "Grade of Automation 2" (GoA2) level, in which trains run partially automated yet require driver supervision.

### More trains on the same track

Starting in 2027, VGF will gradually digitalize its current train control system. The trains will continuously communicate with the track infrastructure via radio. The "Communications-Based Train Control" (CBTC) technology enables a "moving block" system, which automatically maintains absolute braking distances between the trains rather than having them operate in inflexible block sections. As a result, trains can run at shorter intervals, allowing VGF to significantly expand service offerings without having to modify or build new tracks or stations. The new system not only increases schedule precision and reliability but saves up to 25 percent energy. The technology also reduces vehicle and track wear and enhances passenger comfort by ensuring smoother acceleration and braking.

"I am pleased that the DTC digitalization project has reached this milestone, and we will now see in practice what we've been discussing in theory for years," said Wolfgang Siefert, Head of Mobility. "This is good news for Frankfurt: The automated prototype tests show that the digital transformation can drive urban mobility. Specifically, DTC will make public transportation more efficient, reliable, economical, environmentally friendly, and even more comfortable," he added.

### Interaction between DTC und MIND(+)

Since Frankfurt's metros also operate in part above ground, the seamless integration of road traffic engineering is essential for the project. Aiming to network

its urban railways, trams, and road traffic consistently and intelligently, the city has thus closely integrated DTC with the urban project "Frankfurt MIND(+)" (Multimodal, Intelligent, Sustainable, Digital) that utilizes "C-ITS" ("Cooperative Intelligent Transport System") technology. The interfacing between "CBTC" and "C-ITS" technologies was successfully tested for the first time on VGF's test ring.

"We are pioneers here and the first transport company worldwide to connect these two technologies. For VGF, DTC is one of the most important innovation projects, and a technology with which we will be future-proof for years to come," explained VGF Managing Director Steffen Geers.

"With our modern CBTC technology Trainguard MT, we are making Frankfurt's public transport fit for the future. Trainguard MT enables more trains to run at shorter intervals through semi-automated operation. This provides up to 30 percent more capacity with technically possible train sequences of less than 100 seconds, increases energy efficiency, and significantly improves punctuality. This technology has already been proven in cities such as Paris, New York, and Singapore – and it is now being used in Frankfurt," says Guido Rumpel, Head of Rail Infrastructure Germany at Siemens Mobility.

By linking the two projects, networked mobility in Frankfurt is set to become reality quickly, optimizing inner-city traffic flow and enhancing and prioritizing public transport. Future mobility in Frankfurt will be urban-compatible, sustainable, environmentally friendly, and attractive.

## **What's next?**

The required technology has been fully installed on lines U4 and U5 in the tunnel between Bockenheimer Warte and Seckbacher Landstraße. Static system tests are being conducted here in September and October, and the first test runs without passengers are planned on this route in January 2026. Operations in a moving block, for example, can be tested for the first time, along with stress and load tests.

Communication between the metro prototype and the track infrastructure was tested on the test ring during the past year to ensure that automatic starting and stopping of the train meets all requirements.

The lines U4 and U5 are to be completed by 2027. By 2030, the "A-Route" with lines U1, U2, U3, and U8 will follow. The "C-Route" and the tram will follow in 2033.

## **About VGF**

VGF is Frankfurt's urban transport company. In 2024, it transported 182.4 million passengers on nine metros and ten tram lines over 133.53 kilometers of routes. More than 2,800 employees ensure public mobility with around 400 rail vehicles in a city with 780,000 residents and over 463,000 workday commuters. VGF is also responsible for its fixed infrastructure of 84 metro stations, 27 of which are underground, and 141 tram stops.

## **About Siemens Mobility**

Siemens Mobility is a separately managed company of Siemens AG. As a leader in intelligent transport solutions for more than 175 years, Siemens Mobility is constantly innovating its portfolio. Its core areas include rolling stock, rail automation and electrification, a comprehensive software portfolio, turnkey systems as well as related services. With digital products and solutions, Siemens Mobility is enabling mobility operators worldwide to make infrastructure intelligent, increase value sustainably over the entire lifecycle, enhance passenger experience

and guarantee availability. In fiscal year 2024, which ended on September 30, 2024, Siemens Mobility posted revenue of €11.4 billion and employed around 41,900 people worldwide. Further information is available at:

[www.siemens.com/mobility](http://www.siemens.com/mobility)

## About the DTC Project

In the “Digital Train Control System Frankfurt” (DTC) project, VGF is digitalizing signal and train safety on the city’s metro lines based on Communications-Based Train Control (CBTC) Technology. CBTC enables trains to operate in a “moving block,” meaning that trains no longer operate in block sections but within braking distance from one another. This allows more trains to be deployed on the same route.

## About the MIND(+) Project

Above ground, the “Frankfurt MIND(+)” project takes over – an innovative joint venture designed to create the conditions for a multimodal, intelligent, sustainable, and digital (MIND) mobility offering in the city. It uses “C-ITS” technology, which, by interconnecting traffic participants, ensures that trains can quickly integrate into road traffic upon exiting the tunnel and operate punctually and reliably. Acceleration and braking maneuvers are minimized by continual communication between the trains, the signal controls and other traffic participants. This provides a more pleasant passenger experience and reduces pollutant emissions.

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## Photos

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