

16 January 2013

Rheinmetall hands over state-of-the-art tram driving simulator to Berlin Public Transport Authority

Rheinmetall has successfully completed modernization of a traffic and driving simulator for trams on behalf of the Berlin Public Transport Authority (BVG). Coinciding with the introduction of a new type of tram in the German capital, in recent years Rheinmetall simulation experts have expanded the simulator's virtual network of tram lines, updating and upgrading the computer and projection systems, and integrating additional functions into the simulator controls. They have also expanded the system to include a simulator cabin for the BVG's new Bombardier "Flexity Berlin" tram. Rheinmetall completed the multifaceted simulator project within the agreed cost limits.

BVG's new traffic and driving simulator, known as the VeFaSi for short, is based on an interchangeable driver's compartment concept. It consists of a basic system and different driver's compartments for the three trams in service with the BVG which the system replicates. Vehicle-specific simulator software also forms part of the package.

The basic system includes a motion system for reproducing the forces that occur during driving; the projection system for replicating the driver's view; a digital visualization system for calculating the virtual scenario in real time; and the virtual BVG tramline network. Rounding out the system are a simulation computer with the simulator software, a workstation for the trainer and a facility that enables visitors and/or other trainee drivers to watch.

These driver compartments are designed to be interchangeable. In just thirty minutes, the simulator can be reconfigured for any of the three tram vehicles currently operated in Berlin by the BVG by switching the driver's compartment. Together with the basic system and the vehicle-specific software, it is therefore possible to respond to changing requirements, i.e. training new drivers or conducting periodic refresher courses.

The package of products and services for the VeFaSi upgrade initially encompassed an improved, fully networked computer system based on the latest PC technology that replaced the original mainframe. At the same time, the simulator software and the virtual database of the VeFaSi route network were revised and installed in the new computer system.

Rheinmetall's tried-and-tested interchangeable driver's compartment concept was used in order to include the new "Flexity Berlin" vehicle type in the simulator, together with existing replicas of the GT 6 low-floor vehicle and the modernized Tatra KT4Dt-M vehicle.

To improve the possibilities for operating in the virtual world of the simulator, extensive alterations were carried out on the existing VeFaSi network of routes, including the visual and "invisible" databases.

Ten years had passed since simulator training had first begun at BVG. In the meantime, of course, the network of actual routes had changed. Rheinmetall's simulation experts modified the existing virtual route network to match the real one. They took into account new tram stops and expanded the simulation to meet the requirements of the "Flexity Berlin", whose design allows passengers to enter and exit the tram on both sides. In this context, moreover, it was necessary to modify the traffic lights and the way they are controlled at complex intersections.

During the switchover to the new digital visualization system, the development team replaced the previously used vehicle model with the new Flexity tram. Other improvements add to the system's highly realistic depiction of the Berlin street scene. New 3-D models have replaced the original human figures, while additional motor vehicles, bicyclists and police cars bring greater realism to the simulated city traffic.

In line with the specifications, the operating and malfunction logic of the new "Flexity Berlin" tram has been built into the simulator. Every function sequence fully corresponds to the original vehicle. Based on Bombardier specifications supplemented by Rheinmetall's own measurements, the driving dynamics of the new tram have likewise been replicated in the software with extreme realism. Finally, the driving noise and surrounding sounds have been augmented with the special noises produced by the "Flexity" vehicle.

A large surface projection system that offers the driver a 210° viewing angle, the high image quality and resolution of the depicted virtual scenarios as well as the synchronized image refresh rate of 60 Hertz are further important features of this Rheinmetall simulation system.

"We're very proud of this new simulation system", declares Ralf Lieske, the project manager. "Our innovative team employed state-of-the-art technology to provide Berlin's tram drivers with an extremely realistic training experience – a great way of preparing them to drive in Germany's pulsating capital."

Simulation and training technology from Rheinmetall, where virtual reality and the real world merge

Rheinmetall Defence is part of the Rheinmetall Group, a globe-spanning technology company serving the international automotive industry and the world's armed force and security services. For many decades, it has been one of the most trusted names in the international defence technology and internal security sector. With some 9,800

employees and production and sales units in more than 15 countries around the globe, the Group generated annual sales last year of approximately €2.1 billion.

Today, with over 2,000 of its simulator systems in service worldwide, Rheinmetall's Simulation and Training business unit offers a comprehensive array of products ranging from inexpensive desktop training systems to full-mission simulators for ground, air and maritime platforms, including capabilities for simulating fully networked exercises with major military units. Building on its extensive experience and unsurpassed expertise, Rheinmetall bridges the gap between virtual reality and the real world, supplying state-of-the-art training solutions for preparing personnel for future tasks.

For more information, please contact:

Oliver Hoffmann
Head of Public Relations
Rheinmetall AG
Tel.: +49-(0)211-473 4748
oliver.hoffmann@rheinmetall.com