Wiener Linien:
Outage-free voice and data radio-based communication

Foto: ©Wiener Linien, Johannes Zinner

Frequentis has been providing radio-based voice and data communications in the field of public transport since 1997. Wiener Linien is the customer where it all began. The company's VCS 3020 has been supporting Vienna's more than two million daily customers since 1997 without interruption.

The day Wiener Linien learned to fly

On Sunday, 15 June 1997 at 03:00, the Frequentis radio communication system VCS 3020 began service on the Wiener Linien. Airport towers and air control centres worldwide had been placing their trust in this highly reliable technology for years, but the VCS 3020's use by a public transport agency was a first. These two markets have one need in common: Absolute protection against outages. "For rail services, Wiener Linien is required by law to ensure that radio communication always works", explains Thomas Grieshofer, head of Wiener Linien's radio department. "We were faced with the choice of either moving the existing analogue equipment into the new operations centre, or finding a more future-proof solution with higher performance that was available 24 hours a day and 365 days a year."

Simplified coordination and new services for passengers

The fully digital VCS 3020, brought enhanced quality to speech transmission, data radio and more efficiency

Client profile

Wiener Linien belongs to the city of Vienna and operates a network of 132 U-Bahn (metro), tramway and bus lines. With 900 million passengers in 2013, Wiener Linien is the leading mobility provider for public transport in Vienna.

Business situation

In 1997, Wiener Linien's original radio communication system had reached the end of its service life. For the new operations control centre at Vienna's Erdberg station, an analogue system was originally sought as a replacement. It needed to integrate many "organically grown" interfaces and guarantee outage-free service and maintainability.

Solution

Wiener Linien operations control centres were equipped with a fully digital solution on the basis of the proven voice transmission system VCS 3020.

Impact

The highly available solution with fully duplicated and multiple redundancies has worked outage-free for the last 17 years. The VCS 3020 continues to run largely on its stable, original hardware resulting in ongoing cost savings for Wiener Linien.

"For the last two decades, Wiener Linien has been able to rely on prompt, non-bureaucratic help. Frequentis is a partner who focuses on the best solution, not formalities."

DI Thomas Grieshofer, Wiener Linien

to the performance of complex tasks. Sixty-three radio workplaces coordinate up to 3,000 enquiries and assignments daily for automatic routing to the right person; accelerating the provision of help and resolution of disturbances.

Analogue button functions were digitalised and transferred onto touch panels. More simply than before, operations managers could contact individual drivers, send messages to driver groups or provide information to passengers in the vehicles and stations. As early as 1998, the VCS 3020's spectrum of capabilities helped Wiener Linien offer passengers countdown displays based on vehicle position data gathered every 20 seconds via an interface to the computer-aided operations control system RBL, which calculates the waiting time until the next vehicle's departure.

Collaboration – as unfailing as the VCS 3020

"Since 1997, the VCS 3020 has never failed, not even once. It has only been shut down for maintenance and improvements", says a satisfied Thomas Grieshofen. In addition to the interference-free, fully duplicated VCS 3020, all remote system workplaces in the Vienna area are connected with the main office by duplicated fibre-optic cables. A smaller, remote secondary system provides additional security for operations.

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The connection to the BOS TETRA network will bring even better security and voice quality.
Additionally, a more intensive use of data communication in the U-Bahn will relieve the radio network of standard voice messages.

"Our operating staff must work with the system and be satisfied with it. We can't use an off-the-shelf product. Frequentis and Wiener Linien have learned much from each other and form a team who all pull in the same direction," said Thomas Grieshof. "For the last two decades, Wiener Linien has been able to rely on prompt, non-bureaucratic help. Frequentis is a partner who focuses on the best solution, not formalities."

Key facts

System structure

Switch: Duplicated, interference-free pulse code modulation (PCM) switch; fully functional, non-duplicated emergency system at a second site that is wholly independent of the primary system

Workplaces: 63 radio workplaces with touch panels; connection of duplicated PCM30 lines

Radio facilities: 4 above-ground radio facilities; 3 tunnel radio stations; 1 reference receiver; 1 radio connection to TETRA; transmission system calculates the propagation times to the different radio stations and carries out a corresponding compensation in periods avoiding cost-intensive maintenance work

Interfaces: 8 duplicated PCM30 interfaces to 7 remote, single-frequency radio stations (with 8 channels each) and a reference receiver; 63 duplicated PCM30 interfaces to remote workplaces; 3 I/O interfaces to the U-Bahn (metro) traffic control system; interface to a voice database automatic public-address announcements for passengers at stations and directly in vehicles; ISDN-Interface PABX connection; RBL connection; data radio for the U-Bahn (metro); technical monitoring and control system (TMCS) for comprehensive monitoring and statistical recording of the system's status

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