

Case study



Zagrebački Električni Tramvaj d.o.o.

ITCS / AVL-system based on a TETRA radio system



THE CLIENT

Zagrebački Električni Tramvaj d.o.o. (ZET) was founded in 1897. Meanwhile, it has become the largest transport company in Croatia with around 4,700 employees. During the day, the route network of ZET consists of 130 bus routes and 15 tram routes, and the passengers can board the vehicles at 2,314 stops. In 2008, the company transported a total of more than 300 million passengers.

THE TASK

More attractiveness and customer satisfaction in public transport in combination with increased profitability of the operational processes - these are the goals of ZET.

THE SOLUTION

By using the ATRON AVL-system, passenger information in the vehicles and at the stops becomes more comprehensive. Furthermore, the TETRA radio system provides a high-performance voice and data infrastructure. The new system displays the operational processes in a structured way and supports the operator in assigning both vehicles and personnel more efficiently and thus more economically.

PROJECT OVERVIEW

- Implementing an AVL-system based on a TETRA radio system
- Equipping the complete vehicle fleet with ATRON on-board computers AFR city
- Dynamic passenger information at the stops
- Acoustic and optical passenger information in the vehicles
- AVL control centre with four operator workstations
- Voice and data communication via TETRA
- Data supply and return via WLAN

ATRON as general contractor - everything from one source

The communication infrastructure

Five TETRA radio units provide fail-proof, comprehensive radio connection between the vehicles, the control centre and the background system ATRIES. Larger data amounts, such as fare and timetable data, are transferred in the depots via WLAN.

The equipment of the vehicles

The on-board computer AFR city is installed in the trams and buses. By means of GPS and logical positioning, the AFR city determines the current location, compares the data with the target timetable and autonomously calculates the timetable deviations. The data is then transferred to the control centre at definable intervals, where it is processed for connection synchronisation and for supplying the stop boards with real-time information. Additionally, the AFR city displays important information about the journey for the driver, regulates the communication with the control centre and controls the IBIS-periphery.

The control centre

In order to monitor the operational processes in the most ideal way and to synchronise connections, the operators constantly receive information on the current operational situation from the ATRIES AVL-system in form of tabular and graphic overviews. A web-based GIS-display continuously presents the operators with the updated location of the vehicles on digital map material. By means of standardised encoded messages, the ATRIES AVL-system ensures a simplified communication between the control centre and the service personnel, whereas the operators can also react to extracurricular events with free text messages. The selective or group call function of ATRIES AVL-system enables the operators to establish contact with one or possibly several drivers and to intervene in the operational processes.

Passenger information

At the stops, passenger information displays inform passengers about currently predicted departure times. The boards receive their data from the control centre via TETRA-radio. In the vehicles, the passengers are informed about the following stop acoustically as well as by means of interior displays.

PROJECT SCOPE

- 585 on-board computers AFR city
- 520 passenger information displays in trams and buses
- 150 stationary boards for dynamic passenger information at the stops
- 600 TETRA radio devices
- Background system ATRIES
- Planning system Interplan



Assembly version of AFR city

