

Tempi Valley. Automation for the longest Balkan tunnel

SIEMENS



CHALLENGE

Provide the automation system for keeping the longest tunnel in the Balkans, in optimal safety conditions.

SOLUTION

Central CPU: S7-400H

Remote IO: ET200S

Scada: WinCC OA

RESULTS

Integrated total solutions that meet stringent safety requirements.

PROJECT DESCRIPTION

Subcontractors for SIEMENS for the automation of the SCADA/TMS system for the three tunnels in the region “Tempi Valley”.

The 3 tunnels have a total length of 11 km (2km, 3km, and 6km). The third one is the longest in the Balkans and bypasses the winding and rock slide – plagued Tempi Valley on the main Athens-Thessaloniki highway.

The automation is supervising and controlling the following tunnel subsystems:

- Lighting
- Ventilation
- Fire Detection
- Fire Fighting
- CCTV
- Emergency Roadside telephones
- Radio communication
- Power Supply distribution system
- EDGs
- Network Supervision
- Traffic Data Counting System and Traffic Management System (TMS)



“Keeping optimal safety conditions”

TECHNICAL SOLUTIONS

We designed our solution around SIEMENS SIMATIC S7-400H for a fault-tolerant automation system, which minimizes the probability of a failure to nearly 0%!

In each tunnel we used the CPU 417-5 H controller to collect all the control signals and perform the automation program. We used SIEMENS ET200S series in over **100 remote I/O stations**, for the benefits of the highest quality and the extremely rugged design.

Some of the most important technical aspects of this project are summarized below:

- 3 pairs of redundant PLCs (S7-400H), 1 pair per tunnel.
- 120 Remote I/O stations (RIO).
- A total of over 10.000 physical control points, and over 8.000 network measurements and information.
- Enhanced ventilation at the T2 tunnel to compensate for the length of the tunnel.
- Automatic reconfiguration of Medium Voltage loop in case of M/V network faults or black out.
- More than 500 traffic management scenarios (TMS) for scheduled and emergency incidents.
- First time use in tunnel project of Siemens WinCC OA for the visualization of the SCADA/TMS.

At the control room of the three tunnels, the Motorway Management System (MMS) has a full picture of the traffic conditions at all times and oversees the safe operation of the motorway. The incidents are immediately acknowledged and the response is quick and efficient.

System operators can see in real time the operation of all control points and alarms, while they are able to remotely control most of the equipment.



“Solutions that meet stringent safety requirements”

IMPACT OF THE PROJECT

This is a major infrastructure project for Greece with major benefits. The drivers will experience uninterrupted and constant traffic flow even in adverse weather conditions, cleanliness and respect for the surrounding area and maximum road safety and economy! At the same time, the region will benefit from the provision of many direct and indirect jobs and environmental protection of the Tempi Valley due to reduced pollution levels!



*“This is a major infrastructure project
for Greece”*
