Husovicky Tunnel in Brno

Husovicky tunnel was built in 1999 with the objective to ease traffic congestion between the east and north districts of the city Brno in Czech Republic. It is approximately 600 meters (0.4 miles) long. Thousands of cars pass through every day.

In order to enhance the safety in the tunnel and make the tunnel maintenance more efficient the previous obsolete automation system monitoring traffic signs, lights and ventilation was replaced by a new automation technology in 2012.

The new control system is based on progressive modular system of ControlLogix PLCs and mySCADA Box following the latest trends in automation in performance and security. All visualizations are made in mySCADA Editor and deployed to PCs in the control rooms as well as to iPads that are used as local operators’ touch panels. The operators can retrieve online system data in the control room as well as in the field. The authorized operators can change the alarm activation values, alarm description, severity, action mode and notice delivery (SMS, e-mail). All history data are logged with 1-second precision in mySCADA Box and available on request anytime, so that the operators have a full control over all events and alarms.

With the remote access the system can be accessed 24/7 from anywhere while ensuring system safety.

mySCADA Box
- advanced HMI interface
- multiple PLC protocols
- data logging up to 28 mio of records
- complex alarm system
- trends, reports, data analysis
- secure user access
- visual programming
- box side scripts
- integrated secure web server
- advanced routing options
- 3 types of VPN tunnels
- remote access
- integrated 3G/4G modem
- CISCO VPN compatible

HARDWARE PARAMETERS
- Dual core 1.0 Ghz CPU (Cortex A9 with ULP GeForce GPU)
- 512 MB DDR RAM, 1GB industrial NAND Flash
- up to 3x10/100 Mbit Ethernet interface
- up to 4xRS232 and 2xRS485 serial ports
- micro SD card
- 3G/4G modem with dual SIM option
- 12-48 VDC
- Industrial temperature range on request
RESULT

The deployment of mySCADA application offered the ideal solution for the customer. The advanced visualization of the tunnel technology gives a perfect and user-friendly overview of the entire system. The operators can easily monitor the lights, ventilators and traffic signs, rapidly detect any system failure and - if requested - change the system parameters. The maintenance personnel can take advantage of unlimited mobility and operate the technology in field with the mobile iPads. Running the application on the iPads fully replaced obsolete HMI panels in the control room. The system is shared with police and fire brigades who on-line monitor the tunnel directly in their own control rooms. The customer gained significant acquisition price savings as the mySCADA system price is a fraction of the price of the competition systems.

The synergy of ControLogix and mySCADA presents a very innovative and powerful SCADA solution to provide for maximum security, smooth traffic flow and constant system overview.

HMI

The visualization/control system monitors all technology of the tunnel:
- Traffic signs in the tunnel
- Air-conditioning
- Lights
- Energy distribution
- Camera system
- Physical values – temperature, etc.
- Security/Fire alarm systems
- Values of traffic flow counters and classifiers
- Emergency phone terminals

This screen shows the visualization of traffic signs

This screen shows the main screen for monitoring tunnel lighting. You can see the status of accommodation light and also the main tubus lights. System is running in automatic regime by default, but can be overridden by manual intervention either from operators' PC or from iPad in the field.
Control screen for tunnel lights, you can control accommodation lights, main tunnel lights and even emergency lights. Lights are controlled by outdoor lux meter and can be set manually to any desirable state by the operator.

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This is overview screen of tunnels’ power distribution. Fail free power distribution is crucial for safe tunnel operation. Therefore, all electrical components are controlled by PLC and monitored by mySCADA Box. Any failure is logged for future evaluation.
This screen shows traffic light controlled by mySCADA run on iPad.

The control can be switched between automatic and manual. In manual mode, the operator can change the traffic light directly in the field.

Operator can change the traffic scenario on the fly. All the variable message signs are changed automatically based on selected scenario while maintaining correct timing and traffic control.

Tunnel ventilation together with the physical measurements of opacity, CO and NOXs. Tunnel ventilation is also managed automatically by PLC, however, operator can override the automatic mode any time and any place with iPad or Operators PC. This can be a life saving in case of fire.
This reference sheet is made available to the client for internal use only, unless mySCADA Technologies agrees to it being passed on to third parties.

Status of Emergency Phones (SOS Call Boxes) in the tunnel.

Detail screen of emergency phone (SOS Call Box) in the tunnel – shown error of communication.