

INTELLIGENT TUNNEL LIGHTING SOLUTIONS



Schröder 



# INTELLIGENT TUNNEL LIGHTING SOLUTIONS

TWO GLOBAL MARKET LEADERS AND INNOVATORS IN THEIR FIELDS OF ACTIVITY,

**Schröder** FOR TUNNEL LIGHTING

AND

**PHOENIX CONTACT** FOR INDUSTRIAL COMPONENTS AND AUTOMATION SOLUTIONS,

MERGED THEIR EXPERTISE TO DEVELOP A SUPERIOR INTELLIGENT TUNNEL LIGHTING CONTROL SYSTEM.

Our solutions go beyond simply adapting the light levels with a luminance meter. We provide intelligent control system that can be easily integrated into the main tunnel network.

## » ADVANTAGES

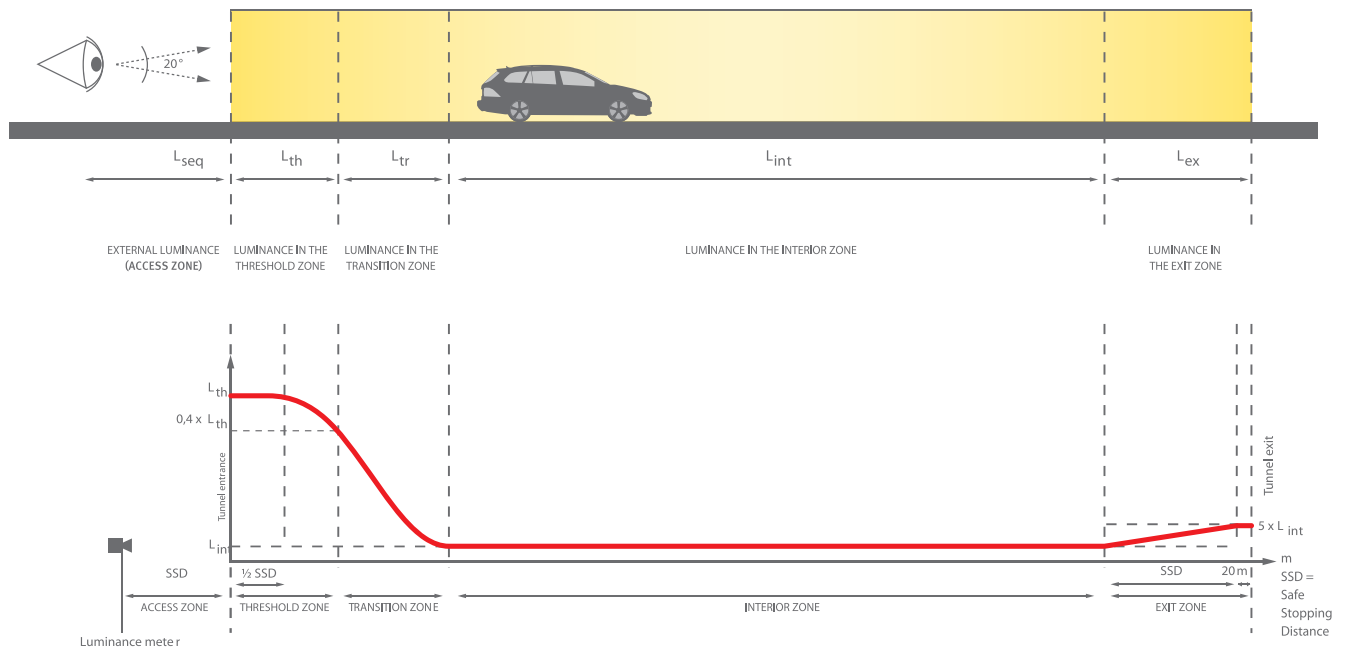
- Managing groups of luminaires according to external light levels
- Excellent luminance uniformity in all circumstances
- Maximised savings in energy and maintenance costs
- Easy commissioning of your installation
- Plug and Play cabling system
- Redundant system for complete safety
- Maintenance control, visualisation and efficient management
- Emergency scenarios
- Interoperable system - open protocol
- Easily integrated into the main tunnel network (SCADA)



# ADVANCED TUNNEL SOLUTION

THE ATS (ADVANCED TUNNEL SOLUTION) BY SCHRÉDER AND PHOENIX CONTACT IS DEVELOPED SPECIFICALLY FOR TUNNEL APPLICATIONS.

It is an unique and flexible solution for all tunnel zones and for all tunnel configurations (single, bi-tubes...). It respects more accurately the ideal luminance curve by applying more dimming levels. Therefore, it increases energy savings and cost reductions while ensuring maximum safety.



The ATS is easy to install in a stand-alone tunnel or to integrate into the general tunnel infrastructure system which manages emergency, ventilation, fire safety... (SCADA).

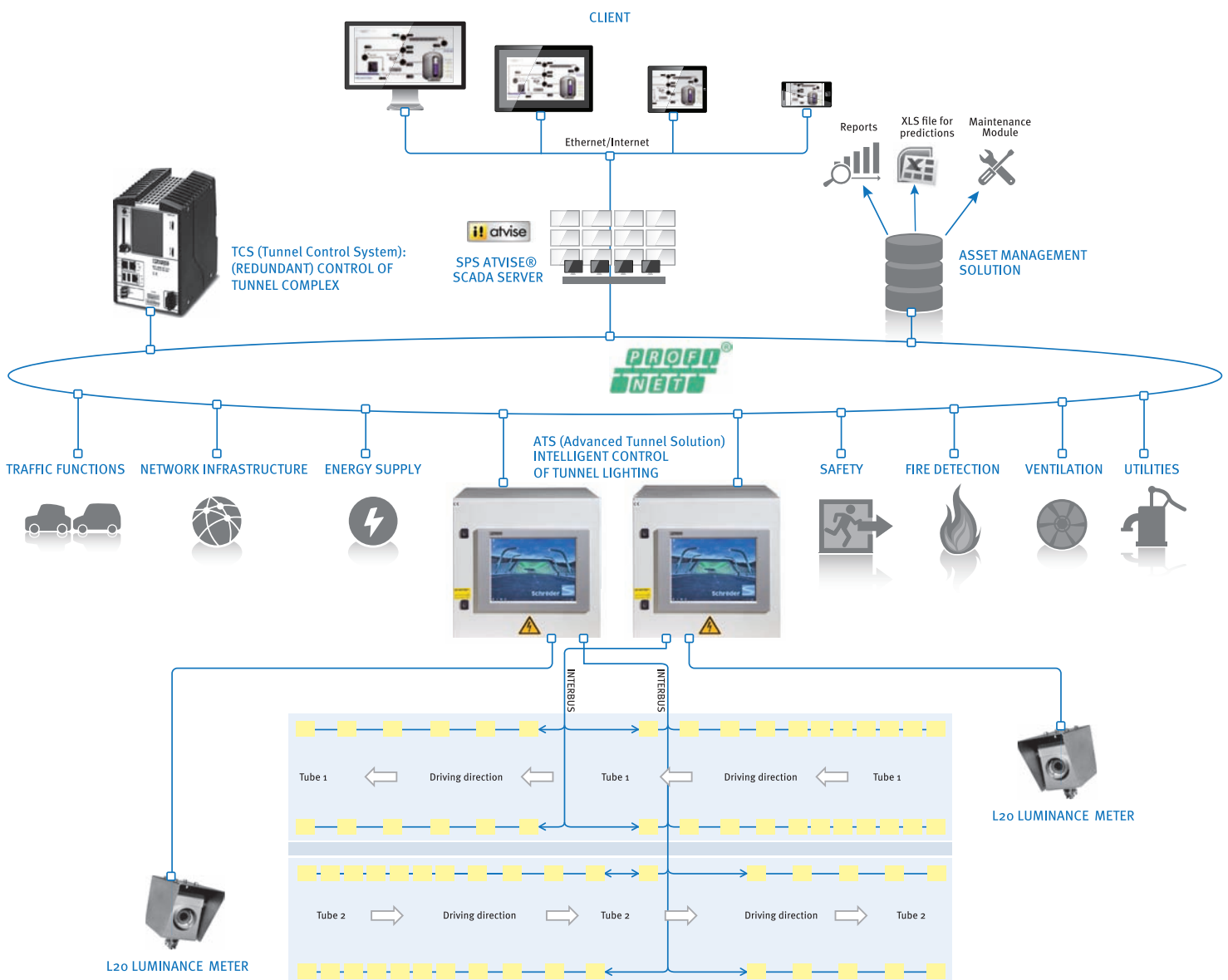
## PRINCIPLE OF LIGHTING CONTROL

The system is based on the luminance value measured by L20 cameras outside the tunnel. Each luminaire has its own integrated local controller (Lumgate), which makes it possible to accurately respect the ideal luminance curve through continuous dimming which consequently saves energy. The ATS controller can communicate with up to 240 Lumgates. If multiple ATS controllers are applied, they are connected together via a modbus system and coordinated via the TCS controller (Tunnel Control System).

A WELL SPECIFIED TUNNEL LIGHTING SOLUTION MUST HELP A DRIVER'S EYES ADJUST EASILY AND QUICKLY, PROVIDE A HIGH QUALITY OF LIGHT FOR EXCELLENT UNIFORMITY AND VISIBILITY, KEEP DISRUPTIVE MAINTENANCE TO A MINIMUM WHILE REDUCING ENERGY AND MAINTENANCE COSTS.

# EASY NETWORK INTEGRATION

Due to the great flexibility of the Advanced Tunnel Solution, integration into the tunnel infrastructure control system (e.g. SCADA) is fast and easy. Managing the lighting installation with the same centre for the other tunnel functions improves energy efficiency, ensures more reliability and enhances the operations while providing the right light at the right time.



## THE COMPONENTS

### ATS: ADVANCED TUNNEL SOLUTION

The ATS controller communicates with the local controllers (Lumgates) via the proprietary INTERBUS protocol. It manages up to 240 Lumgates placed with a distance of up to 400m from each other. The ATS provides reports and feedback on the local surge protection devices and light status (on/off, dimming level, energy consumption, burning hours, failure detection...) and performs a safety scenario. In case of failure, the lighting is switched to 100%.

Multiple variants of the ATS cabinet exist.

The ATS controller can operate as a stand-alone unit or can be linked to the main tunnel control system.



ATS cabinet with visualisation on the front panel.

### TCS: TUNNEL CONTROL SYSTEM

If a central management system is foreseen, all ATS controllers should be linked together in a local network through a TCS gateway. This gateway ensures the connection/control of the multiple ATS controllers as well as the communication with the SCADA system if applicable.

The TCS acts as the master system where all the data from all of the individual ATS controllers is interpreted and commands are sent.

Optionally, a redundant TCS provides full operational reliability.



### LUMGATE

The Lumgate is an INTERBUS device connected to the luminaire drivers to control the light intensity. The Lumgates have an internal current measurement probe that checks if the lamps are working properly. If the measured current is above or below a configured threshold value, a signal will be sent to the ATS which sends an alerts for an appropriate action to be taken. If a Lumgate loses the interbus connection, it will set the light intensity at a predefined value.

The Lumgate is integrated into the luminaire or driver box. One Lumgate can run up to 8 LED drivers (150W).



### L20 LUMINANCE METER

The Luminance Meter measures the luminance provided by natural light in the access zone from a stopping distance. It sends the data to the ATS controller to adjust the lighting levels to avoid any visual adaptation problems.







SAFETY



WELL-BEING



SUSTAINABILITY



SAVINGS



SOLUTIONS



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