

SALT: greater safety on the motorway

by Wonderware Italia

“The entire system will be up and running in a few months’ time, thanks also to the special nature of Industrial Application Server by Wonderware, which provides a series of particularly innovative functions, based on straightforward programming...”

Andrea Ballatore, Engineering Manager,
Giordano & C.



Company Overview

S.A.L.T. S.p.A. - Lido di Camaiore (Lucca), Italy
S.A.L.T. S.p.A., Società Autostrada Ligure Toscana is a motorway network that meets all the users needs: it guarantees safety and services along the entire length of the motorway, and it is adequate to support the ever-increasing traffic without disfiguring the landscape and wonderful tourist places it runs through, which can be reached from the exits, located in the areas of higher cultural, historical and tourist interest.

Tortona (AL), Italy - For many of us, the motorway is only a long strip of asphalt that allows us to reach our destinations sharp on time and comfortably. Every day, millions of vehicles travel on motorways, and high levels of safety must be guaranteed to them, along with the full functionality of all systems, on which scheduled planned maintenance work must be carried out. Indeed, every maintenance operation has a direct cost as well as a ‘cost’ in terms of traffic interruptions, slow-downs and increased risks of accidents. Similar issues are especially relevant on sections of the motorway such as the A12, which goes from Sestri Levante to Livorno: 130 km of motorway run by S.A.L.T. S.p.a. (Società Autostrada Ligure Toscana), which is part of the Sias group and, together with Astm, represents the motorway sector of the Gavio Group.

S.A.L.T.: the story of a motorway

This important communication route, built in 1964, crosses an area distinguished by an especially difficult orography, since it runs between the sea and the mountains. This characteristic led the motorway designers to dig out a good 24 double-bored tunnels and 5 regular tunnels, each one representing a critical point in terms of traffic. Despite this complex situation, the A12 is currently one of the most advanced motorways in Italy, and the management of S.A.L.T. S.p.A. decided to use some of the most innovative IT tools to guarantee the safety of the over 54 million vehicles which drive through it every year. The conditions of the road surface, which we all think about when driving on the motorway, are in fact just one of the aspects on which those who take care of the daily and unscheduled maintenance have to focus on every day. In the light of these needs, S.A.L.T. S.p.A. decided to rely on the collaboration of Sinelec, which is part of the SIAS Group and specialises in the design, building, installation and maintenance of advanced systems for transport and mobility.

Light in the tunnel

The decision to rely on a company specialised in solutions for mobility and transportation comes from the need to guarantee the safety on a motorway that, having many tunnels, requires the adoption of high standards of automation.

As a matter of fact, each tunnel is fitted with a series of technological systems in charge of guaranteeing the best possible conditions of visibility and air circulation for the drivers, i.e. avoiding the risk of ‘temporary blindness’, which can cause accidents. Accordingly, a series of last

generation lighting, air conditioning, smoke detector and ventilation systems have been installed. Obviously, each one of these systems requires constant and preventive maintenance, in order to guarantee the perfect functioning with a low impact on the traffic in the event of maintenance operations.

All this leads to the ability to automatically switch on and off the systems according to the real necessities, thus minimising wear and tear and, consequently, cutting down energy costs. All this without neglecting the importance of safety and, therefore, providing a set of alarms designed to immediately alert the technicians or the rescue teams in the event of a fault.

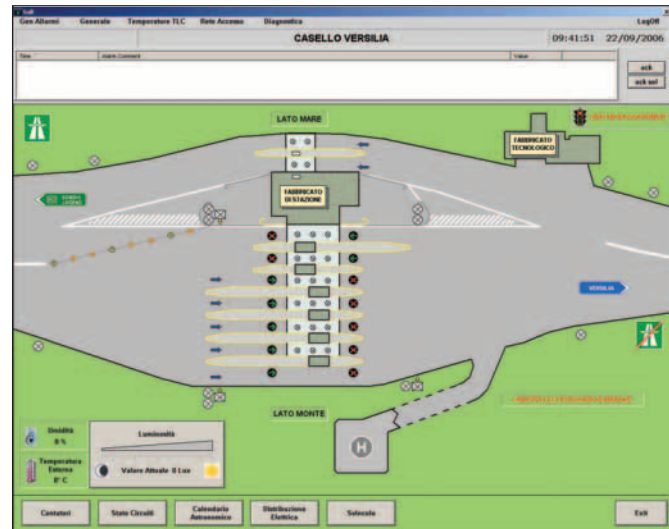
This delicate task, assigned to the Sincro system by Sinelec, was engineered to manage any anomaly in the best possible way, and it is entirely controlled from a single unit.

This goal can be achieved by using the Wonderware products, namely Wonderware Application Server and InTouch HMI (Human Machine Interface) software, which allow the operators to visualise in real-time all the different situations, thus immediately planning any rescue operations in the event of an accident.

Furthermore, this solution enables the interaction with the systems, controlling their activation or deactivation remotely, as well as setting their operating parameters. The entire system will be implemented by the Solution Provider Giordano, a company based in Cuneo which specialises in industrial automation.

SCADA with a view...of the motorway

As the project manager of Giordano & C. Silvana Pettiti explains, the especially complex monitoring and planning system is based on the gathering, analysis, filing and processing of thousands of data. All the data captured by each Plc are transmitted to and processed by the central IT system in real-time. The central IT system also has to make the necessary comparisons with the history files, based on the Wonderware Historian (formerly known as IndustrialSQL Server or InSQL) database as well as to



Toolgate overview

anticipate future progress.

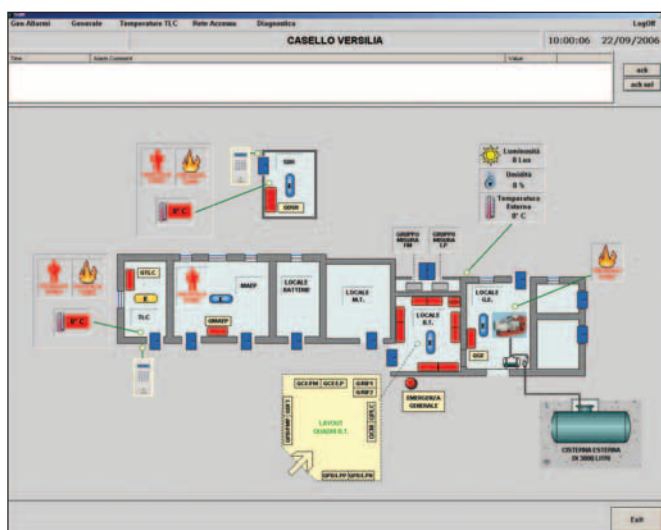
One of the essential strengths of this complex and delicate task, the correct accomplishment of which has a direct impact on the safety of the vehicles, is its reliability. A characteristic which led the company management to choose an international leader such as Wonderware, which offers solutions currently used in the most diverse industries, demonstrating the adequate flexibility and safety to operate even in the most strategic sectors.

The SCADA system built with the Wonderware technology comprises of a network of Wonderware Application Server with six client PCs, 3 of which in Terminal Services. This structure permits to process and file the data that are captured directly along the 130 km of motorway by 31 Plcs installed in each tunnel as well as at the motorway exits.

It's not easy to change a bulb

Several reasons led to investing in such an advanced technological system; saving money is only one of them. As emphasised by Eng. Roberto Giordano, Director and Technical Manager of Giordano & C. S.p.A., in fact, the correct monitoring of all the technological infrastructures has an immediate impact on their maintenance. As an example, we could think of the thousands of bulbs required to light the tunnels. The system that guarantees their correct lighting, according to the weather and traffic conditions, enables a considerable energy saving, but it doesn't prevent them from wearing out, thus a regular replacement is needed. A similar intervention necessarily involves labour and equipment, with bottle-neck lane merging and immediate repercussions on traffic.

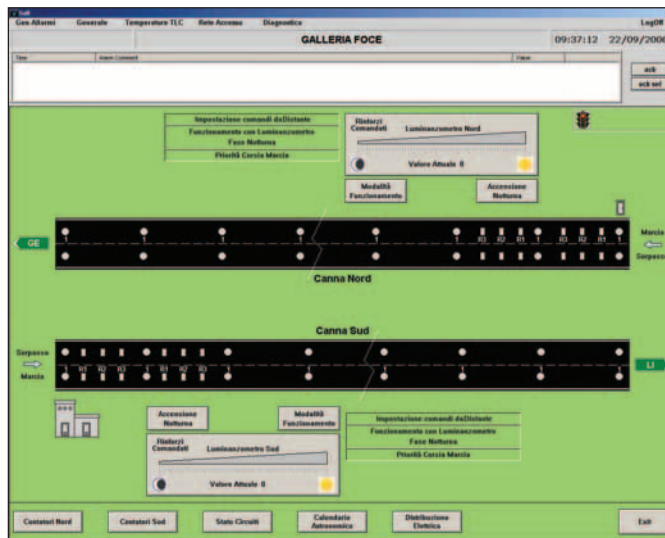
InTouch HMI and Wonderware Historian provide information on the number of hours each light bulb has been on for, indicating when it needs to be replaced. At the same time, they detect any damaged bulbs and gives accurate estimates on the remaining life of the other



Toolgate heating system

Transportation & Storage

InTouch HMI, Wonderware System Platform

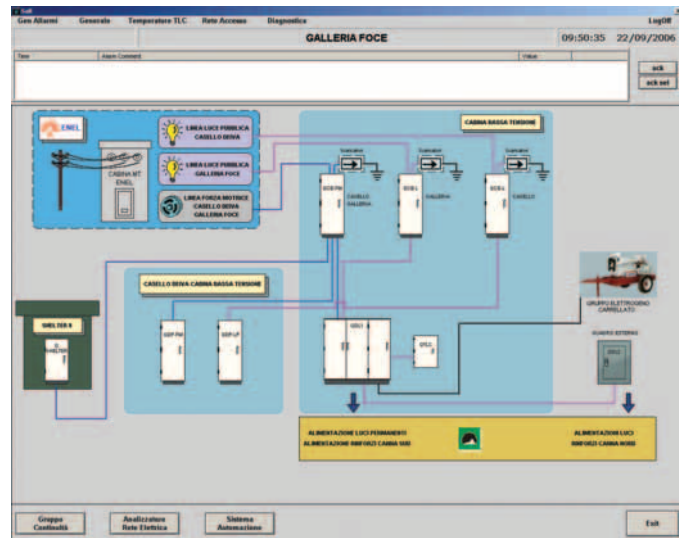


Tunnel lighting

light sources, providing a schedule of intervention. The impact on traffic is therefore drastically reduced, with considerable benefits also from an economic point of view.

Andrea Ballatore, the engineering manager of Giordano & C. says *“The entire system will be up and running in a few months, thanks also to the characteristics of the Industrial Application Server by Wonderware. This provides a series of especially innovative functions, based on intuitive programming, the principles of which we learned during a practical and theoretical course especially organised at the Wonderware facility in Italy. So, the information originating from the technological systems created by each individual specialist company is gathered simply and automatically, without the operators having to write anything down”*.

Eng. Giordano also underlines that this is just one of the advantages of Wonderware technology. The availability of information as detailed as immediate to gather and to use is not limited to consulting and operational aspects,



Tunnel electrical system

but it also helps the company management to make strategic decisions.

Furthermore, the Wonderware software allows the central control system to use the large amount of information gathered to run a series of simulations which, without having any direct impact on daily operations, permit to reliably anticipate the repercussions of each choice, and combine safety and money saving. At the same time, some specific information can also be transmitted to third parties. All this is feasible while guaranteeing the control of strategic data without unnecessary waste of time or negative impacts on daily operations.

These are all features that Wonderware has demonstrated to be able to guarantee in an industrial context and that are currently being successfully used in large public infrastructures.

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