REMOTE DATA MANAGEMENT FOR SAFE, EFFICIENT OPERATION OF COPENHAGEN METRO

Ansaldo Trasporti Sistemi Ferroviari

"The system is fully operational and reacts promptly and effectively to requirements. Atos Origin had already worked with our company successfully in the setting up of the SCADA system for Birmingham Light Railways. Thanks also to Atos Origin's support, we have been able to set up Europe's most modern light railway system. Atos Origin has proved to be a partner capable of providing advanced and reliable systems, confirming its expertise in this field."

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The Copenhagen Metro project was developed on the basis of a detailed plan, whose initial phase consisted in starting up 12 stations as well as the depot and the control center. Covering a surface area of 11,000 square meters, the center houses the control room, the emergency room and all the tools and machinery required for regular operation and maintenance activity on trains and stations.
The project's second phase has seen the addition of six new stations.

BUSINESS CHALLENGES

ATSF (Ansaldo Trasporti Sistemi Ferroviari) SpA is a leading engineering company in the transport industry and is a part of the Finmeccanica group. Its market is primarily rail transport, particularly metro and light railways systems.

In 1996, it signed a contract with the Ørestad Development Corporation for the construction of the Copenhagen Metro system: the first system in the world to comply with community safety directives for passenger safety. It is therefore likely to become the reference point for all future European metropolitan transport systems. The very ambitious project has seen ATSF organization, led by Sante Roberti, committed simultaneously on several fronts for the design and construction of a completely automated, driverless system.

SOLUTIONS

The turn-key solution developed by Atos Origin produced the Supervision Control and Data Acquisition (SCADA) system, which enables central control room operators to control station and tunnel components as well as on-board components. Areas continuously and accurately monitored and controlled within the stations themselves include power supply (low- and medium-voltage switches) and building automation systems, i.e. emergency ventilation, escalators, elevators, fire detection systems, etc. Along the line and tunnels, traction power systems (third rail systems, cut-off switches, insulators) and emergency ventilation systems are subjected to similar supervision and control. There are also alarm systems for on-board components on the trains.

Operators at the control center can check the functioning of all these components and manage them via remote control. Switches and insulators can, for example, be remotely activated, the emergency ventilation system can be started up and escalator motion can be reversed. Alessandro Bevilacqua, Project Manager at Atos Origin, notes that this project has not only made safe and efficient operation of the Copenhagen Metro system, but has also enriched Atos Origin's know-how and expertise in this field.

"It has been a great challenge for us to be able to take part in the implementation of a modern, driverless, rail system for which safety and high levels of integration are essential parts," states Bevilacqua. "We have gained considerable benefits in terms of image, experience in this sector and business. As a result of the Copenhagen project we have gone on to land other important commissions in the same segment, both in Italy and abroad."

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BENEFITS

Atos Origin succeeded in providing ATSF with a complex system that integrates functions at the highest technological levels. Over recent years, Atos Origin has worked alongside its clients in the realization of numerous successful projects thanks to its consolidated experience in transport and continual investment in the implementation of advanced technologies and high-potential systems (e.g. on-board diagnostics systems for vehicles and active supervision systems). As regards peripherals, Atos Origin designed and constructed the RTU (Remote Terminal Unit) cabinets located in the stations. These cabinets contain Programmable Logic Controllers (PLCs), digital input and output boards and analogical input boards.

Atos Origin staff developed all the software for the Control Center and for the PLCs and directly executed all in-station installation, field test stages and commissioning. The PLCs are connected by Ethernet interfaces to the transmission system used for communication between control center and peripherals. Stations located underground are also provided with operator workstations that can be set up to control the single station or the entire line.

The Control Center communicates with the RTUs via the network equipment connected to the FO double ring, while Ethernet connections facilitate communication between the servers and the workstations in the Control Center itself. The system is fully redundant and the equipment in the Control Center are located in physically separated rooms, the first being the Control Room and the second being the Emergency Room. The architecture is of the client-server type with two hot-backup servers and several client workstations. In addition, a Network Management workstation has been provided for the monitoring and setup of all network nodes.

Atos Origin is an international information technology (IT) services company. Its business is turning client vision into results through the application of consulting, systems integration and managed operations. The company's annual revenues are more than EUR 5 billion and it employs 45,000 people in 50 countries. Atos Origin is the Worldwide Information Technology Partner for the Olympic Games and its clients include ABN AMRO, Akzo Nobel, Alstom, BNP Paribas, Ericsson, EDF, Euronext, Fiat, France Telecom, ING, KPN, Philips, Renault, Royal Bank of Scotland, Saudi Aramco, Schlumberger, Shell, Standard Chartered Bank, Telecom Italia, UK Department for Work and Pensions, Unilever, Vivendi Universal and Vodafone.
For more information, please visit the company's web site at http://www.atosorigin.com
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