



National Highway Traffic SCADA system

The Cogent Electric Co. Ltd. has succeeded in implementation of the second stage of traffic SCADA system along Taiwan 's No.2 National Highway, running from Seigi to Keelung. In order to maintain good traffic and road conditions, the traffic SCADA system has to improve the monitoring of traffic flow, as well as rush hour traffic management, safety signs and emergency alarm systems.

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INTRODUCTION

Cogent Electric Co. Ltd. is a professional engineering company. Apart from helping private enterprises to install SCADA systems, Cogent also is involved in major public construction projects. Recently, they have succeeded in setting up the second stage of a traffic SCADA system along Taiwan's No.2 National Highway, running from Seigi to Keelung. The project includes traffic lights, signboards, monitoring equipment for traffic flow and weather conditions, etc.

SYSTEM REQUIREMENTS

The No. 2 National Highway was completed less than three years ago and has already gained a very good reputation among drivers since it has taken the heavy load off of the No. 1 National Highway during peak hours. In order to maintain its good traffic and road conditions, the second stage traffic SCADA system was to improve the monitoring of traffic flow, as well as rush hour traffic management, safety signs and emergency alarm systems. After interviewing and evaluating highway supervisors, Cogent concluded that two key factors would achieve a higher system performance.

First, the SCADA system had to provide fast, reliable and high quality



data transferring solution over long geographical distances. In addition, the government requested to use optic-fibers and high speed Ethernet to link

the local units. This way, the local data could be sent back to Regional Control Center.

The second key factor was to overcome the harsh and mountainous area around the Taipei Basin. The Highway Bureau requested a wireless solution, since the installation costs of physical wiring would be too gigantic. Moreover, such type of wiring would demand too much maintenance.

SYSTEM DESCRIPTION

After winning the project, Cogent conducted a thorough market research of both local and imported products. Cogent management decided to use Advantech products to eliminate two bottlenecks situations in the project because these would offer a total solution from the local units to the regional control centers.

Local optic fiber network

In order to match the specification of at





Regional Control Center

Advantech's Industrial grade computer (IPC-610P) and Modular Industrial Controller (the MIC-2000 series) were chosen for data processing terminals. In order to cope with the huge data volume and real time request, the Mucha Regional Control Center set up 8 IPC-610 computers and 25 sets of MIC-2000 controllers.

Application Program

Since all Advantech products are PC-based and work on a Windows platform, they were able to provide a compatible solution for working with the system of the No. 2 National Highway. The actual system integration turned out to be quite easy.

CONCLUSION

The National Bureau of Highway Traffic was satisfied with the pilot-run results and within two months, Advantech engineers will bring out the new ADAM-4542 unit in order to keep the project on schedule. The plug & play idea makes the system much more user friendly and easier to maintain. ADAM communication modules and MIC controller provide a space-efficient solution.

The Highway Bureau is currently planning to expand this system to

least 10km distance and single-mode data transferring, Advantech designed a new ADAM-4542 15KM, single-mode optic fiber converter especially for this project. A total of 192 ADAM-4542 units were installed between the local control units and the highway devices to up- and download traffic information. The uploaded data would then be transferred through the Ethernet to the control centers.

Wireless transferring solution

8 sets of license-free ADAM-4550 2.4GHz wireless radio modems have been placed on 4 mountain peaks, along with 24 dB directional antennas. The 2.4GHz bandwidth has a higher quality of data transfer than the 900MHz ones. The ADAM-4550 units provided three channels to handle traffic information from different remote control units through interruption.

Taiwan's East-West cross-country highway, as well as the central and south sections of the No. 2 National Highway in 1999. ■

