Motril-Carchuna automates & remotely manages irrigation thanks to Wonderware technology
by Wonderware Spain

Goals:
• Promote Agricultural development through an exhaustive control of irrigation;
• Immediately detect irregularities in the system;
• Apply more efficient irrigation programming by centralizing all processes.

Challenges:
• It is difficult to supervise a large facility. The irrigation area of Motril-Carchuna-Cota 2000 (Granada) covers an area of 2,535 hectares. It includes 3,000 parcels and 2,400 water users.

Wonderware Solution:
• InTouch HMI;
• Wonderware System Platform.

Results:
• Remote control has been achieved in the entire irrigation distribution network without affecting the operators;
• The Wonderware solution helps monitor the state of the network in real time, making the detection of breakdowns faster;
• Wonderware’s ease of use makes it possible to easily change, add or delete any parameters;
• Consumption is optimized in accordance with water resources and demand.

“We use Wonderware technology because of its great versatility, robustness and ease-of-use.”
José Rodríguez,
President, Irrigation Community, Motril-Carchuna
**Motril, Spain** - The community of Motril-Carchuna has implemented a complete solution based on Wonderware technology that manages its irrigation by remote control. All the control functions are automated and this provides great reliability and major saving in costs.

**Making the Most of Natural Resources**

As a result of the global climate change during the last few years, the state of the environment greatly worries society today.

Spain has a semi-arid surface area and over two-thirds of these are great extensions of irrigated land. However, there is a lack of water resources in Spain and supply is irregular.

Increase in water consumption, inadequate management and prolonged periods of drought have led to the implementation of control measures to manage water supply. This was done in order to stop low water supply from having an even greater impact on the agricultural and service sector economies.

Many of the irrigation communities in Granada had ‘extremely precarious’ irrigation networks in 2007. This made the government activate projects that would modernise the irrigation system in communities like Motril-Carchuna-Cota 2000. The irrigation area of Motril-Carchuna-Cota 2000 (Granada) covers an area of 2,535 hectares. It includes 3,000 parcels and 2,400 water users. It recently adopted a wireless consumption network supplied by Wonderware to control and manage the irrigation system.

The automation and management of irrigation systems is one of the measures that many companies are adopting to enable optimum water resource management in agriculture. This helps to optimise the recording and distribution of water usage. The establishment of pressure irrigation networks supervised through centralised remote control systems helps to provide a balance in work conditions. This makes irrigation-on-demand possible in areas with sufficient water resources.

**Complete Remote Management Solution**

The irrigation community of Motril-Carchuna decided to implement a HIDROBUS-RF system, which is a complete solution for irrigation. The system involves the design of remote irrigation terminals using Wonderware software. Communications are carried out through an optimised wireless network (ULP). Low-cost alkaline batteries power the remote terminals.

The Wonderware System Platform was used with Google Earth 3D visualisation. This combination provided great precision in the supervision and control of the facility. It also provides a flexible visual environment for geographically distributed applications with high number of nodes.

The HIDROBUS platform is comprised of the following elements: Wonderware System Platform at the core. It also includes the Wonderware Historian. Clients, with whom the operators interact, receive updated and historical information from the Wonderware System Platform and Wonderware Historian. The OPC server (OLE for Process Control) helps sending the information to the other control and management programs.

The implementation of this system achieves three main goals:
1. To promote agricultural development through an irrigation control system;
2. To immediately detect possible irregularities in the systems;
3. To apply more efficient irrigation system by centralising all the processes.

In the words of José Rodríguez, president of the irrigation community of Motril-Carchuna: “We opted for Wonderware software because of its great versatility, robustness and ease-of-use.”

**Implementation Challenges**

Motril-Carchuna is a collective network making system implementation very difficult. To overcome all obstacles, it was necessary to establish a centralised management system to remotely...
supervise and control the water connection on thousands of parcels based on the needs of users, the availability of water resources and crop type.

Manuel Morales, secretary of the irrigation community of Motril-Carchuna, comments: “It is essential to use solutions like those from Wonderware in modern and environmentally sustainable systems today because it helps to manage the extensive irrigation networks”.

Remotely managed irrigation systems require the establishment of communication between the control centre and the thousands of nodes in greatly dispersed irrigation points. Each node reads consumption, pressure, volume and the control of valves.

Ingeniería y Control Remoto (ICR) S.A. is the company in charge of responding to all these challenges. As Technical Director, Lucas Galán explains: “We already had experience in Wonderware software. Before beginning implementation, we still had to conduct tests on new specific parts of the solution such as the integration of Google Earth.”

**Main Benefits**

The benefits were realized not long after system implementation. Remote control has been achieved in the entire irrigation distribution network without affecting the operators. The Wonderware solution also helps monitoring the state of the network in real time, making the detection of breakdowns faster.

Moreover, it is now far easier to make changes to the solution. Wonderware’s ease of use makes it possible to easily change, add or delete any parameters.

Remote control and updates of the software and firmware of all the elements making up the control system can be made without much difficulty.

José Rodríguez, president of the irrigation community of Motril-Carchuna, confirms this and notes that: “Added to all these advantages are cost savings in pump operation. We are able to optimize consumption in accordance with water resources and demand.”

There are huge advantages provided by Wonderware technology for Ingeniería y Control Remoto, S.A.

According to Galán, “Wonderware provides great flexibility and this makes it easier to do changes in the future. There is greater integration with other systems and the driver development tools are easy to use. The software helps in standardisation as well.”

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