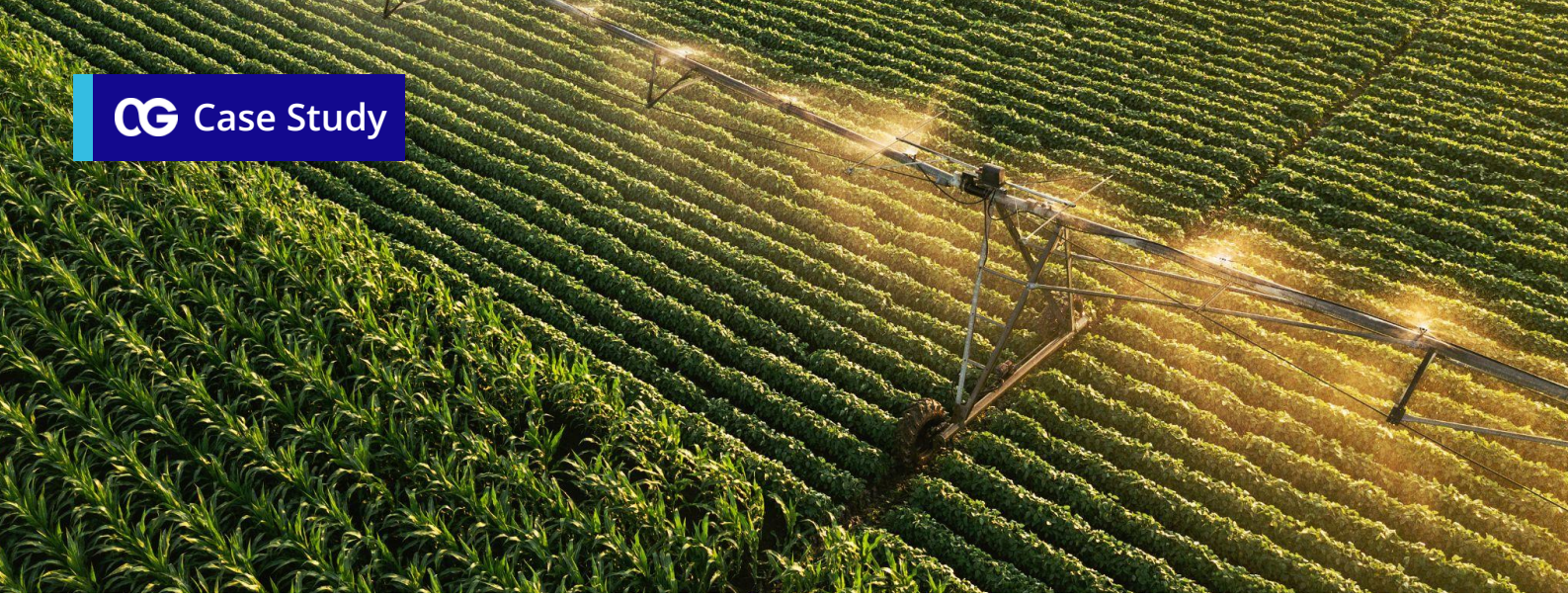

Case Study

Italy's Consortium of Bonifica della Capitanata and Hydro System Deploy 20,000 Sensors on EIT Smart's 0G Network for Smart Water Distribution to Optimise Water Delivery and Reduce Costs

The Challenge

The Consortium of "Bonifica della Capitanata" needed an efficient, cost-effective solution to improve water monitoring, distribution, and management across 150K hectares of agricultural land in Italy's Apulia region.

The Solution

Hydro Systems designed and implemented an automated, remotely monitored IoT water flow sensing solution, connected to the EIT Smart 0G Network, to manage water distribution more efficiently across Apulia's public irrigation systems.

The Results

The IoT-enabled water delivery system lets the Consortium:

- Monitor water distribution in real-time
- Make data-driven decisions on water distribution
- Reduce water use by approximately 25 percent annually
- Minimise the time and cost of manual water monitoring
- Conserve a precious resource.

0G Network Operator

EIT SMART is Italy's national IoT low-power, wide-area network operator and the reference company for creating simple and scalable IoT solutions on a massive scale.
https://eitsmart.eitowers.it/

Solution Partner

Hydro System Group is a leading solution provider that designs and implements mechanical, hydraulics, and electronic automation systems to improve operational efficiency across the naval, industrial, and oil and gas sectors.
https://www.hydrosystemsgroup.it/

Customer

The Consortium Bonifica della Capitanata is one of Italy's largest water management and land reclamation consortium.
https://www.bonificacapitanata.it/

Apulia, or Puglia, forms the heel of the famous "boot" on the map of Italy. It is known for hundreds of kilometers of picturesque coastline along the Adriatic and Ionian Seas, charming, whitewashed hill towns, and centuries-old farmland that produce over 80 percent of Italy's olive oil and support the nation's critical horticulture, cereal production, and viticulture industries.

Globally, climate change has caused significant water use restrictions for domestic and industrial consumption. Apulian farmers have moved swiftly to adopt innovative, sustainable agricultural techniques, including Internet of Things (IoT) solutions, that reduce the environmental impact of farming without compromising productivity or crop output.

The Consortium of "Bonifica della Capitanata" unveils plans to modernise water distribution across Puglia

Headquartered in Puglia, the Consortium of Bonifica della Capitanata operates a network of large-diameter water feeding lines across 1,300 kilometers and an irrigation water distribution network of 8,000 kilometers, supplying water to 150,000 hectares of agricultural territory across Puglia. Recently, it unveiled a project to modernise the Fortore district of Apulia with a remote-controlled, remote-sensing water delivery system.

The project, tested and funded by the Italian Ministry of Agriculture under the nation's National Recovery and Resilience Plan (NRRP) financial framework, involved installing 2,100 new IoT water delivery units over an irrigated area spanning 14,376 hectares across Apulia.

A water delivery unit is part of an irrigation or water management system designed to efficiently carry water from a source (such as a reservoir, river, or groundwater) to agricultural fields or other areas needing irrigation.

Hydro Systems and EIT Smart collaborate to connect a mass-scale smart water distribution solution to the 0G Network

Hydro Systems, a CMC Group company with over 30 years of experience in water management, designed and implemented the IoT-enabled Delivery Water System (DWS).

Compared to traditional water distribution systems, the DWS solution has consistently helped utilities save up to

25% **of annual water consumption**

The solution required fitting water delivery units across the Puglia region with an IoT sensor to remotely monitor how much water flows through each unit. A long-life battery powers each sensor, ensuring reliable operation for up to ten years without maintenance. The sensors connect to the EIT Smart 0G Network, powered by Sigfox technology, a public low-power, long-range network enabling low-cost, low-energy device connectivity for massive IoT.

Farmers use an access card to release water from each delivery unit to areas requiring irrigation. At intervals predetermined by the Consortium, the IoT sensors remotely monitor, capture, and share a wealth of operational data across the 0G Network to a central database. Examples of data include consumption, water flow rates, and the status of valves as open or closed. Additionally, the solution sends SMS alerts to three pre-programmed numbers if the sensors detect the unauthorised opening of the water delivery unit.

The Consortium uses information captured by the solution to create data-driven insights that improve the operational efficiency of its water distribution system, save money, and conserve Puglia's precious water. The solution lets the Consortium monitor how much water farmers use against pre-allocated endowments, detect unusual water flows early (often indicating leaks, abuse, or theft), and improve billing accuracy with invoices prepared according to precise consumption rather than historical use estimates. All at a mass scale, without the time and cost of manually monitoring water use across vast areas.

Why the 0G Network outperformed traditional networks for long-range IoT sensor connectivity

Early in the project, the remote IoT sensors communicated data via a GPRS modem, which quickly proved inadequate for two reasons. First, the high power consumption of GPRS modems added significantly to costs and became problematic in rural areas without readily available continuous power sources.

Second, traditional network coverage was often unavailable across remote countryside, causing disruptive interruptions in the solution's data transmission. Hydro Systems replaced the GPRS modems by integrating a module into each water delivery unit's control system to connect the IoT sensor directly to the 0G Network.

The Hydro Systems IoT DWS solution, connected to the EIT Smart 0G Network, has delivered significant benefits to the Consortium of Bonifica della Capitanata, including:

25% Reduction in Water Use: Improved management has led to more efficient water distribution across the network.

Optimised Water Management: Custom-designed distribution criteria tailored to the Consortium's unique resources and hydraulic features to ensure better water use.

Accurate Seasonal Water Allocations: Farms receive measurable and precise water distribution based on seasonal needs.

Real-Time Consumption Insights: Continuous monitoring against seasonal allocations enables quick responses to water waste, misuse, and leaks.

Improved Billing Accuracy: Customers are billed based on actual water consumption, eliminating the need for estimates based on past usage.

Time and Cost Savings: Field operators can focus on higher-value tasks as manual monitoring is minimised.

The IoT and the low-power, long-range, low-cost connectivity of the 0G Network means modernising the Bonifica della Capitanata Consortium's water distribution system and will accelerate over the coming years. In the coming years we aim to implement 20,000 IoT devices across approximately 150,000 agricultural hectares in Puglia to support more efficient, sustainable, and cost-effective irrigation by measurably optimising the use of an increasingly scarce resource.

Spokesperson of Consortium Bonifica della Capitanata

We choose the 0G Network for our DWS systems, used by Consortium, to manage waterways and ensure water is distributed efficiently and equitably for agricultural irrigation because connecting sensors is as quick and simple as "plug-and-play", delivering full network coverage of our region, even across isolated areas beyond the reach of cellular networks. The low power consumption of the IoT sensors removed the need and complexity of connecting a continuous power source and gave us the option to use long-life, low-cost batteries, ensuring reliable operation of the solution for a decade without maintenance costs.

Giuseppe Frino, Technical Manager of Hydro System Group

IoT projects connected to the 0G Network that align cost-effective solutions delivering real customer value and creating a positive impact on a mass scale to help people and organisations live more simply, smarter, and sustainably align directly with our company vision. It's exciting to be part of technological solutions that help solve some of modern agriculture's most persistent environmental and economic problems to contribute to long-term farming sustainability.

Antonio Preti, President of EIT Smart