



## Real time monitoring & control for Italian oil pipeline

Ponti Radio PR  
Italy





As part of a SCADA modernization project for an oil pipeline in Italy, Mimomax was selected to provide a network of highly reliable, ultra-low latency links for IG O&M S.p.A by their system integrator, Ponti Radio PR, Italy.

## CHALLENGE

Hampered by a technologically obsolete radio network which had very low-speed FSK links and was unable to support any new applications on their network, the oil pipeline was undergoing an upgrade to the telecommunications system which underpinned their SCADA system.

The addition of new pumping stations, valves and a leak detection system as part of a 180km extension project

created additional requirements for communications links, combined with a need for higher data capacity than could be achieved at FSK. Challenged also by limited access to spectrum, sourcing a solution which offered excellent bandwidth efficiency combined with ultra-low latency for rapid feedback was critically important.

## SOLUTION

Working in collaboration with Ponti Radio PR, Mimomax designed a network comprised of Point to Point and Point to Multipoint Digital Links which would replace the old analog technology. The new links needed the following attributes:

- Spectral-efficiency – with high volumes of over-IP SCADA traffic combined with a large number of out-stations spread over a wide geographic area, the new network was required to optimize the data throughput in narrowband UHF channels;
- Low latency – near real-time monitoring was required for the SCADA traffic to ensure rapid feedback on the state of the pipeline;
- Utilization of existing infrastructure – the project demanded the use, where possible, of existing radio towers and antennas in order to minimize the overall cost of the project;
- Ease of implementation – incorporating a managed soft migration from the existing system to the upgraded one, thereby guaranteeing uninterrupted service delivery;
- High reliability – with hill terrain and some long-distance links to contend with, it was imperative that the radio network was immune to fading phenomena caused by weather conditions.

“The high data throughput we have been able to provide with our full duplex radios has resulted in a system capable of supporting each SCADA system independently - with no negative impact on either system and all within a single 25kHz channel.”

**DOUG MCCONNELL** | CHIEF TECHNOLOGY OFFICER - MIMOMAX WIRELESS

## RESULTS

- Offering a data throughput of 320 Kbps on a 25 KHz channel and ultra low latency (sub 10 milliseconds), the Mimomax solution has successfully provided the ability to constantly monitor the oil pipeline in near real-time for improved efficiency and far greater reliability of service. The level of data throughput provided has resulted in a system capable of supporting each SCADA system independently, with no impact between systems.
- By positioning Base Radio Units (BRUs) in existing radio towers and linking new telemetry points from the same towers, Mimomax was able to minimize the quantity of BRUs required. In addition, all existing antenna were re-used, further increasing the overall cost-effectiveness of the solution.
- The radio network was also setup with a back-up power system, guaranteeing communication links remained in operation even during power outages.
- Required to cope with links up to 45 kilometers long, the new communications system benefitted from the superior propagation qualities offered by lower UHF frequency ranges.



## KEY BENEFITS

- High data throughput to cope with large volumes of IP SCADA traffic from multiple outstations
- Near real-time monitoring for rapid feedback due to ultra low latency
- Lower overall project cost through use of existing infrastructure for antennas
- Detailed path planning and testing to ensure high availability of links

## About PONTI RADIO PR

Ponti Radio PR is an Italian System Integrator, specializing in Private Radio Networks.

**Location:** Italy

**Industry:** Oil

**Services:** Ponti Radio PR focuses on System Integration, RF Planning, Structural Engineering Assessment in addition to Installation and Commissioning primarily in the Oil and Gas market in Italy.

## ABOUT IG O&M S.P.A

IG O&M has 40 years' experience in the operation, maintenance and servicing of oil and gas pipelines.





# mimomax

## About Mimomax

Mimomax develops wireless communications solutions for narrowband channels which enhance visibility and control - right to the edge of our customer's networks.

Our award-winning radios utilize Multiple Input, Multiple Output (MIMO) technology combined with full duplex communications and ultra-low latency to provide our customers with communications solutions which optimize data throughput and provide rapid feedback and control of their mission-critical assets.

Winner of the 2018 UTC IMPACT Award for Mimomax Tornado Radio.



**Le génie du savoir-faire.\***  
**Engineering the how.\***

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