Wessex Water, UK

Features and Benefits

- InfiLINK operates on 24 VDC, tying in to existing power infrastructure used across the company;
- InfiLINK low power consumption enables a sustainable approach for off-grid applications;
- InfiLINK can support Licensed and Unlicensed frequency band communications through a single platform, with remote software-switchable capability dramatically reducing maintenance and installation costs;
- InfiLINK can support LOS and NLOS radio links, making it ideal for remote solutions across difficult terrains or in urban areas;
- Through spare capacity and software-enabled capacity upgrades, Wessex Water's microwave network is future proofed for new IP applications such as IP CCTV or voice.

InfiNet Wireless Helps Wessex Water to Tap into Renewable Communications Technologies

Wessex Water is a regional water and sewerage business operating across the south and south-west of England, serving over 2.7 million customers across Dorset, Bristol, Somerset, most of Wiltshire and parts of Gloucestershire and Hampshire. It is currently in the process of delivering its largest and most complex project yet; an eight-year, £225M project to establish a water supply grid that includes the construction of more than 200km of new pipelines, twenty four pumping stations and twelve new storage tanks ranging from two to eight million litres.

As part of this huge infrastructure development, Wessex Water required a cost effective telemetry Supervisory Control and Data Acquisition (SCADA) solution to provide communications and control connectivity across their vast network of pipelines, pumping stations and reservoirs. They asked McKelvie Solutions - a telecom system integrator and an IP radio solutions specialist with over 30 years experience in radio networks - to undertake an assessment of suitable microwave technologies, in order to determine the best solution on the market for the project. This assessment also required consideration of wind and solar technologies for remote site powering solutions, as part of Wessex Water's move to utilise more sustainable forms of power.

Following a full assessment, of a number of vendor options available on the market, McKelvie Solutions selected InfiNet Wireless' technology as the optimal solution to meet Wessex Water's requirements. InfiLINK 2x2 LITE was chosen as the preferred radio platform, primarily because of its ability to operate across different frequency bands, providing the user with the flexibility to easily switch frequency bands through a simple software selection mechanism.

Challenges

•The ability to use microwave radio using both licensed and license-exempt spectrum;

• The ability to operate at 24 VDC input;

• LOS (Line of sight) & NLOS (non-line of sight) capability;

• Low power consumption, as some sites will be 'off-grid' as well as needing to operate from batteries fed through renewable energy technologies.

This was seen as highly beneficial to Wessex Water, since it offers the client a single platform to cover all deployment scenarios – reducing overall field maintenance and deployment costs - whilst offering the capability to easily switch between licensed and licensed-exempt frequency bands. This was particularly important because, in some regional coverage cases, the cost of using licensed frequency bands in different parts of the country can make it cost-prohibitive to use the licensed frequency spectrum.

InfiLINK 2x2 LITE also boasts an ultra-low power consumption of 7 W: this was also a factor which was particularly significant for Wessex Water, as the solution would, in some cases, be used in remote sites where power would be supplied through batteries fed by wind turbines and solar power. InfiLINK 2x2 LITE also utilises DC-to-DC PoE injectors, which can be easily integrated with the existing site power requirements of 24 VDC – again, an important factor for integration into Wessex Water's existing technology and power platforms.

The microwave IP broadband network was designed as a redundant ring network, with each radio base station configured as a router using OSPF protocol. This design assures resilience should a link fail, as telemetry traffic from the Network Operations Centre (NOC) can be routed in the opposite direction around the ring to its destination address. For increased redundancy from the NOC to the microwave SCADA network, there is also a dedicated leased line and a further microwave radio spur to the microwave ring network, increasing the IP network availability to the SCADA network.

As part of the deployment process, McKelvie Solutions provided site surveys, conducted Radio Path Profile Analyses (PPA), and installed and commissioned over 102km of 5.8GHz microwave links, which are now operational over two counties - Dorset and Wiltshire - with a further 97km planned. The radio links range from 2 km up to 36 km in distance between sites, providing between 9 Mbps to 26 Mbps throughput using a 5 MHz channel bandwidth. McKelvie Solutions also delivered an off-grid power solution using LE-300 small wind turbines from Leading Edge Turbines, as well as solar PV panels and seven days autonomous battery supply at remote relay sites.

Low power consumption of the InfiLINK 2x2 LITE solutions, combined with the wind turbine supplied by Leading Edge Turbines, has helped to create a sustainable, eco-friendly, low emission solution to powering the network. Wessex Water now has a wide-area microwave radio network that can operate and be maintained over remote communication environments, that dramatically reduces maintenance and deployment costs, and is highly cost effective compared with other telecoms solutions available in the market today.

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