PPC
Power Plus Communications

Siemens and Karahmaa

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KAHRAMAA كهرماء
المؤسسة العامة القطرية للكهرباء والماء
Qatar General Electricity & Water Corporation

Staying cool in Qatar

Modern Middle Eastern cities use a lot of water, for everyday cooking and hygiene and above all to support massive demand for air-conditioning. To manage this huge throughput of water Doha, one of the fastest growing cities in the region, needed an army of meter readers to perform monthly readings.

With its population soaring as fast as its dozens of new skyscrapers, the city's utility Kahramaa knew that they could not cope indefinitely with the ever-increasing workload.

Their vision was for an automated metering system where readings could be collected at the touch of a button. In a joint project with Siemens Infrastructure & Cities, PPC's Broadband Powerline (BPL) communications provide the metering infrastructure a turnkey solution in a project worth ten million euros.

> *""Uncomplicated data transmission over Broadband Powerline represents a crucial development for us and our customers. This is a very important milestone for us, and for Kahramaa."*
>
> Junaid Mohammed
> Project Manager, Siemens

Because of Doha's rapid growth (predicted to rise to as much as 15 per year) and 200-year history, mapping the metrical network was a challenging exercise. Meters could be either embedded in the garden wall of a small family home or high on the roof of one of the 50 new towers built in the last decade.

These rooftop meters, sometimes 10 per building, exist in particularly harsh physical conditions, exposed to many hours of unbroken sunlight and searing heat.

To build a communications infrastructure for this unique and varied network, a specialist solution was needed that could survive the harsh conditions, reach meters in many and varied locations, and keep the need for new infrastructure to a minimum.

50°C in summer in Doha is not unusual

Staying Cool

In a city where air conditioning is a necessity, not a luxury, no customer wants to face a power outage for any length of time, so PPC installed the BPL infrastructure in a series of looped networks, so that no planned outages were needed during the installation.

"Uncomplicated data transmission over BPL represents a crucial development for us and our customers. This is a very important milestone for us, and for Kahramaa." said Junaid Mohammed Project Manager for Siemens.

BPL was particularly suited to this project because;

- It uses existing powerline infrastructures
- Unlike wireless solutions, it can reach and decode signals from clusters of devices in diverse and hard-to-reach locations
- The critical devices are installed in the substation rather than on customer premises
- Installation in a meshed network could be achieved without down time

The BPL installation forms part of Siemens' citywide installation of 28,000 smart power and water meters. Overall an estimated 100,000 measurement points will be available to Kahramaa's AMR system.

Technical Details

Installation methodology

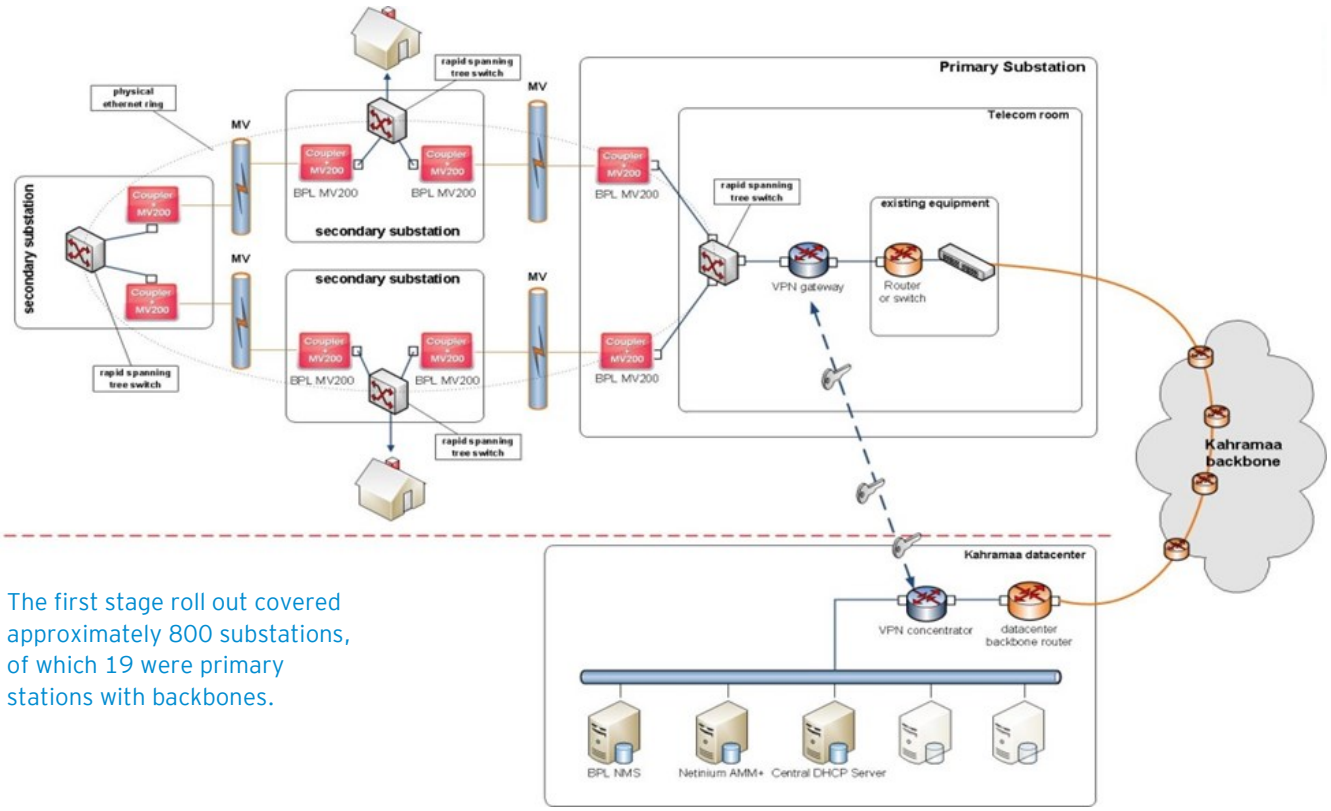
The BPL installation in the 12kV medium voltage network was carried out in a series of 'loops', each connected by a medium voltage link.

Each section of the loop was isolated for installation without interrupting the power supply. The 3-phase DC Electricity Meters are connected via 66/11kV Primary Substations end to end using BPL as the backbone.

The resulting broadband data availability, combined with Siemens EnergyIP software, means large volumes of data from Smart Meters can be automatically read, processed and submitted for billing, demand planning and future customer-facing applications.

BPL was the ideal choice because of its potential to carry real-time, two-way data traffic.

Project Summary	
Customer	Siemens for Kahramaa
Goals	Modernise the city's metering systems to meet massive population and infrastructure growth manual meter readings no longer viable
Solution	BPL Meshed network connecting 800 MV/LV substations, connecting more than 88,000 households and 17,000 water meters to be read remotely via a Network Management System
Challenges	Meters in locations not readily accessible and exposed to extreme conditions
Products	Medium Voltage BPL Modems with 12CC Capacitive Couplers
Results	Middle East's most extensive Broadband Powerline installation



The first stage roll out covered approximately 800 substations, of which 19 were primary stations with backbones.

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