



Control Network Solutions

OPENING NETWORK FRONTIERS

June 2015

IMPERIUM BRINGS NIAGRA ENOCEAN® WIRELESS CONTROL TO HIGH END LONDON PROPERTY.



[cns-enocean™](#), the revolutionary wireless energy harvesting device network solution for Niagara from [Control Network Solutions](#) (CNS) has brought extra control to a high-end residential property in the borough of Kensington & Chelsea in London. Imperium Building Systems Limited, the specialist building technology contractor, used CNS's innovative Niagara EnOcean Ethernet solution to install an EnOcean wireless control system that fully integrated with the existing building systems into a seamless control solution.

[Imperium Building Systems Limited](#) was tasked with designing and implementing a system to take control of the radiator heating and air conditioning control throughout the property. The new system was also required to link to an existing AV home automation system, all whilst causing minimum disturbance to the building owners and the fabric of the building.



“This high-end residential project presented some unique challenges,” comments Steven Crocombe, Director at Imperium Building Systems Limited. “The property has over twenty rooms across five floors, each with one or more radiators, which were controlled by Thermostatic Radiator Valves and are enclosed in radiator boxes. Being enclosed in the radiator boxes prevented the thermostatic radiator valve heads from accurately sensing the room temperature, and due to this, control of the room temperature was sporadic and rarely would the rooms feel comfortable to live in. On top of this, the property owner could not easily adjust their individual room

conditions via his home AV system, which would be the primary window into controlling the system.”

Before Imperium upgraded the system, the property had multiple control solutions, a Niagara system controlling the base HVAC plant, an air conditioning control system and an AV/Home Automation solution with none of them interacting with each other. This meant it was time consuming for the homeowner to programme and control everything and also led to a lot of energy wastage. What was required was a system that could link all the elements together so they could communicate as one. The solution also needed to be wireless so it would cause minimal disruption to the homeowner and the building.

“The solution that presented itself best was that based upon the EnOcean wireless network protocol, [cns-enocean for Niagara](#) and associated devices,” continues Steven. “cns-enocean is able to allow direct integration within the existing Niagara controllers and installation would require minimal disturbance to the building fabric or décor.”

As the system needed to be wireless, Imperium carefully investigated the battery power, range and communication reliability of various options and finally selected a number of EnOcean products, available from CNS, to address the complete control system requirements. Imperium chose the solar powered EnOcean Wireless Mini Temperature/Humidity Sensors, which are able to accurately sense the temperature and humidity within a room space and report back to the Niagara system with minimal maintenance requirements. Battery powered [Thermokon Wireless Actuators](#) were also installed, they communicate directly with the Niagara system and control the heating system.





Imperium also chose the [cns-enocean Wireless connectivity kits for Niagara](#), which provide seamless Ethernet connection between the EnOcean wireless device network and the Niagara control system.

Steven adds, "We conducted tests so we could place the **cns-enocean** connectivity kits in the right places and ensure the system would operate correctly. Once the **cns-enocean** connectivity kits were adequately positioned, the thermostatic radiator valves on every radiator were replaced with the EnOcean wireless control actuators. The Niagara system was then updated so the room temperature could be accurately

controlled. The air conditioning and AV system was also interfaced into the existing Niagara solution at the same time using BacNet, so everything could work in harmony."

The room temperature and active set point are sent from the home automation system directly to the Niagara. Using the room temperature sensor and control set point obtained from the air conditioning control system a PI loop within the Niagara controller is used to modulate the radiator output. Where there was not a room sensor available from the home automation system, a new EnOcean wireless mini temperature and humidity sensor was installed in the room and used to control the heating.

Now the project is complete, the property operates as one seamless system and is easier for the homeowner to control. By using a Niagara native wireless solution, an estimated £25K has been saved compared to using a traditional wired system. The homeowner has saved on the installation cost as well as reaping the energy and cost savings associated with an integrated control system.

For more information on the CNS's **cns-enocean** offering, visit www.control-network-solutions.co.uk and for more information about Imperium Building Systems Limited contact info@imperium.systems or visit www.imperium.systems .

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