

## METASYS INTEGRATION WITH S-E SMARTSTRUXURE AND BACNET: N2 ROUTER

### ABOUT THE CUSTOMER

Schneider Electric Norway had a very [successful project](#) last year. Using the value proposition of the S4 Open:BACnet-N2 Router, and the case study created for that earlier project, they leveraged their success to win another energy performance contracting project for the public buildings, schools, and nursing homes within the Orkdal municipality.



Orkdal municipality in Sør-Trøndelag County, 40 km from Norway's 3rd largest city Trondheim, has a population of 11,906 people. Orkdal was established as a municipality on 1 January 1838 . On 1 July 1920, the port of Orkanger (population: 1,715) and the southern district of [Orkland](#) (population: 1,760) were separated from Orkdal to form separate municipalities. On 1 January 1963, the municipalities of [Orkanger](#), [Orkland](#), and [Geistadt](#) were merged with Orkdal to form a new, larger municipality of Orkdal.

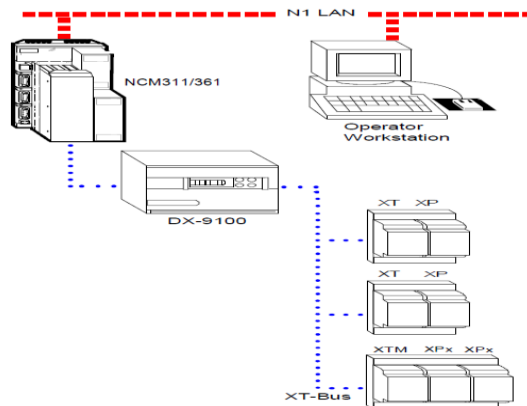
Joran Bugten, Service Engineer working on the project reported, "After the first one, this project became a lot easier. I could use my experience on this, and we solved it with more efficiency, less working hours also."

### Project Requirements

A primary requirement was to deliver a uniform Building Management System for all the public buildings in the municipality in order to improve operational efficiency through uniform training and procedures for all municipal buildings. Consistency and ease of operation help generate energy savings - which was the primary goal for the overall project. Automation and energy management and monitoring technology, along with the requisite training and support services, were required to maximize energy savings

Two of the municipality's buildings contained legacy JCI Metasys® systems and were included in this project phase. The project scope involved heating zone control- and ventilation systems at Orkdal nursery, and heating and zone

Control at Rianmyra Kinderkerten.



These buildings contain the Metasys® legacy N2 field bus technology. A project requirement was to bring these two buildings into the uniform user interface implemented for the entire municipality. Energy performance contracting for the entire municipality. The goal was to get one uniform Building Management System for all the public buildings in the municipality, which in turn will give them energy savings.

The savings are measured in an Energy Operation system from Schneider Electric that was included as part of the technology upgrades delivered to the municipality.

## IMPLEMENTATION

Enterprise Level Automation was provided by a Schneider Electric StruxureWare Enterprise Server. Building level automation was provided by Schneider Electric StruxureWare Automation Servers at each location. The savings are measured in an Energy Operation system from Schneider Electric.

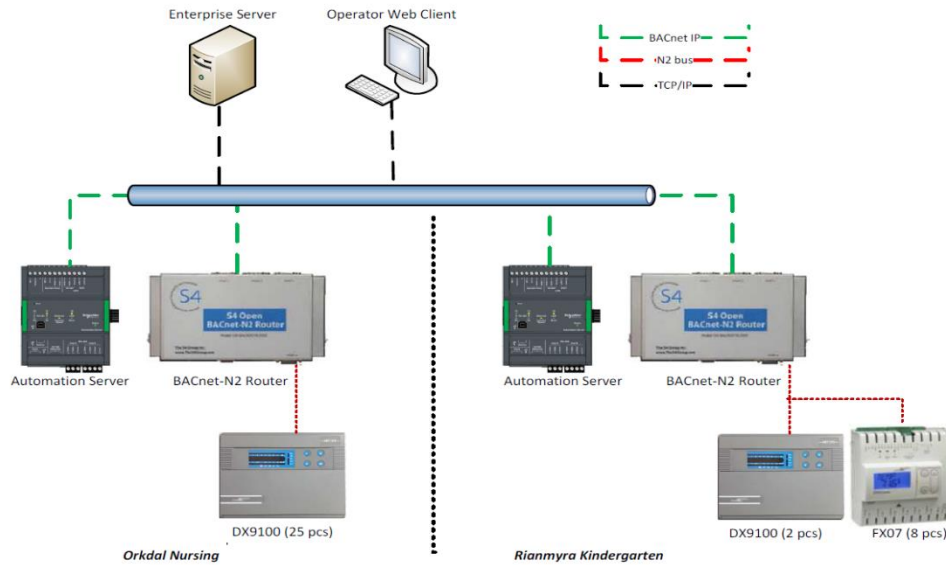
Before selecting an integration with the S4 gateway as the technical solution, the Schneider Electric team initially considered replacing the legacy Metasys® DX-9100s and FX07s with current Schneider Electric controllers and field equipment.

However, the cost of new equipment, installation, and commissioning was deemed too high, even when considering the energy savings that could be gained. Inspection of the legacy system found that even though it was aged, the N2 bus was within manufacturer specifications and all N2 devices were fully functional. The optimal solution for these buildings was determined to be integration to the legacy JCI Metasys® system provided by an S4 Open: BACnet-N2 Router in each building.

Because the building operator wanted to completely replace the Metasys® user interface and it was determined that the small amount of time required to perform the integration would not adversely affect the comfort of building occupants, the decision was made to decommission the Metasys® NCM supervisory controllers and Metasys® Operator Workstation as part of the integration process. Because of this decision, the unique ability of the BACnet-N2 Router to co-exist between the legacy Metasys® head end and the SmartStruxure Automation Servers was not required or used on this project. Instead, one of the integration tasks was to move all scheduling, global variable support, and other services and functions of the NCM supervisory controller to the Schneider Electric Automation

## CASE STUDY: PROVIDING ORKDAL MUNICIPALITY IN NORWAY A UNIFIED BAS INTERFACE

Server in each building. Because most of the legacy Metasys® N2 controllers were application specific devices they continued working with last known good values of global variables minimizing the impact on building occupants.



The Configure Wizard built into the S4 Open Management Console (the user interface for the BACnet-N2 Router) accurately discovered the N2 devices and assigned the appropriate S4 device templates that provided the BACnet point mapping. When the Configure Wizard completed its task, the discovered N2 devices were automatically

published as emulated BACnet devices to BACnet under a virtual BACnet network. Point lists were automatically assigned by the Configure Wizard for N2 devices that were application specific controllers. Since the DX-9100 systems are each custom programmed, the Schneider Electric team used the S4 Open Metasys® Configuration File Conversion Utility to generate custom Device Templates exactly matching the point assignments for each DX-9100. The integration team then assigned the custom Device Template to the device object in the BACnet-N2 Router for each DX-9100.



The BACnet-N2 Routers are BACnet servers and the StruxureWare Automation Servers are BACnet clients. At this point, the standard BACnet discovery process in the SmartStruxure systems was utilized to bring the information into the new SBO environment. In the future, as Metasys® N2 field devices need to be replaced, they will be migrated to Schneider Electric MS/TP devices on a new field bus that brings them directly into the SBO environment.

## OUTCOMES

Outcomes were measured through interviews with the client after the integration of these two buildings was completed and the user interface was provided via Schneider Electric's SmartStruxure. The building operators observed that they can operate their installations in an easier way than with the legacy system and, as a result, use less time for inspection. The goal of a single, uniform building management system for all buildings in the municipality has been achieved.

Schneider Electric worked very closely with the customer throughout the project, having several conversations with the owner/manage and operators during the project. By presenting the goals prior to the start of the project and revisiting the goals several times during the project the customer was not surprised to find all of the systems collected to one platform and the system graphics very easy to understand and read. The customer is very satisfied with the results and the ease in which they control the building systems.



The two gentlemen in the picture are in charge of facility operations at Orkdal nursery. The person to the left is name: Jan Arild Solberg, and the person to the right is: Terje Ebbesen.

## ABOUT SCHNEIDER ELECTRIC

Schneider Electric is a global leader in energy management and automation. For more information about this project, or to discuss your needs for similar projects, contact: Energy Engineer [ola.kolven@schneider-electric.com](mailto:ola.kolven@schneider-electric.com) or Joran Bugten Service Engineer at [joran.bugten@schneider-electric.com](mailto:joran.bugten@schneider-electric.com)