



## Integration / Energy & Asset Management

### Chiller Integration in 77 Buildings - The United Arab Emirates

#### The Client

Our client's digital business unit is driving digital transformation by enabling enterprises and governments to become smarter through the use of the latest technologies like Cloud, Cyber Security, Internet of Things (IoT), Omnichannel, Artificial Intelligence, and Big Data & Analytics. Their digital unit brings together the best industry digital experts, assets and platforms with a unique service and operating model.

#### The Project

The chillers in 77 buildings have been integrated for the purpose of energy & asset management in the Middle East region - The United Arab Emirates and are inclusive of more than twenty thousand IO Points.

#### The Scope

- Integration of different manufacturer chiller units across U.A.E and connecting to client's Digital platform.
- Supply, Installation and T&C of NEO, I/O Module and the Router.
- Discovering and mapping the chiller points and pushing the data to the client's Digital platform via 4G network as BACnet.
- Completed system validation:
  - Design qualification (DQ)
  - Installation qualification (IQ)
  - Operational qualification (OQ)

#### System Controlled / Monitored

Carrier chillers integrated via CCN protocol, Trane, SKM, and York chillers integrated via modbus protocol.

Finally, all the chillers are connected to the Control Command Center - CCC via BACnet protocol.

## The Solution

Keeping the challenge in mind of our client, we designed and provided a solution to the customer.

Our team gathered 77 buildings information, inclusive of the type of chillers (air cooled, water cooled, absorption type), chiller manufacturer and model. Worked on a solution where we designed an intelligent controller to extract parameters from chillers, irrespective of any manufacturer model.

Discovered the parameters, mapped and exposed the data in a unified BACnet protocol format.

Fine tuned the controller in such a way that the parameters discovered, reaches the client's software platform cloud in real time.

Exposed the parameters to our client's cloud and made sure to get the confirmation from their subject matter expert, that all the parameters are being received properly.

Confirmed the change of COV (change of values) happening in real time.

The system was successfully handed over after the complete system validation was done which included Design Qualification (DQ), Installation Qualification (IQ) and Operational Qualification (OQ).

## The Challenge

Building chillers are the single largest energy-using component in most institutional and commercial facilities. In many facilities, more than 50 percent of the annual electricity use can be attributed to the building chillers. So proper operation and maintenance of the building chillers should be a high priority in any facility energy management program.

It is surprising, however, to see just how often chillers are operated or maintained inefficiently or ineffectively, resulting in higher energy costs, lower system performance and reliability, and decreased equipment life. While many factors contribute to decreased chiller efficiency, the most common ones include: poor operating practice and ignored or deferred maintenance.

### Poor Operating Practices

Poor operating practices not only can decrease chiller efficiency but also chiller life. Most such practices are the result of one of two situations: trying to get a chiller to do something that it was not designed to do or not understanding the consequences of a particular action.

For example, one common practice when trying to provide more cooling water to a facility is to increase the rate of chilled water flow through the chiller. The belief is that with a higher flow rate, more cooling water will be available.

In reality, however, increasing the flow rate through a chiller beyond the manufacturer's recommendation actually reduces the operating efficiency of the chiller. Equally important, flow rates higher than those recommended increase the rate of erosion in the chiller's tubes, leading to early tube failure.

The problem with poor operating practices is that their impact on chiller operation generally goes unnoticed. Chillers continue to operate, meeting various building loads under a range of conditions. Soon, however, poor operating practices become accepted as a standard operating procedure, and one day, a problem in the chiller's operation might become obvious, or the chiller might not be able to satisfy a cooling load that previously had never been a problem. When that occurs, technicians often blame the weather or the chiller itself, not the way the chiller is being operated and maintained.

### Ignored Maintenance

Although good maintenance practices are important for the efficient operation of all building equipments, there are few areas where this is more evident than in the maintenance of building chillers.

Good chiller maintenance begins with keeping a chiller operating log. Recording chiller operating parameters regularly can provide maintenance personnel with a valuable diagnostic tool. Most chiller problems develop slowly over time. By tracking chiller data and reviewing it regularly, operators can identify trends in chiller performance, helping maintenance personnel pinpoint the underlying cause. While it is common for most facilities to maintain chiller operating logs, it is less common to find that someone regularly reviews them, which is essential. Refrigerant leaks, air leaks, tube fouling and other problems can be identified through a thorough review of operating logs.

Another important element in chiller maintenance programs is the performance of regularly scheduled inspections. These inspections — performed daily, weekly, monthly or annually — help to identify the health and operating efficiency of the chiller.

Since the end-user was managing multiple assets all over U.A.E they looked for a system that can integrate all the chillers to a single software platform which upon integration provides more analytical information about the chillers, supports them to operate and maintain the chillers more effectively and efficiently.

Our client was looking for a solution that can integrate into multiple vendor chillers and push the chiller data to their analytical platform in a unified protocol format in real-time.

The end-user contacted Netix Controls with this challenge and we proposed the NETIX advance intelligent controls to be used along with the client's Digital platform.

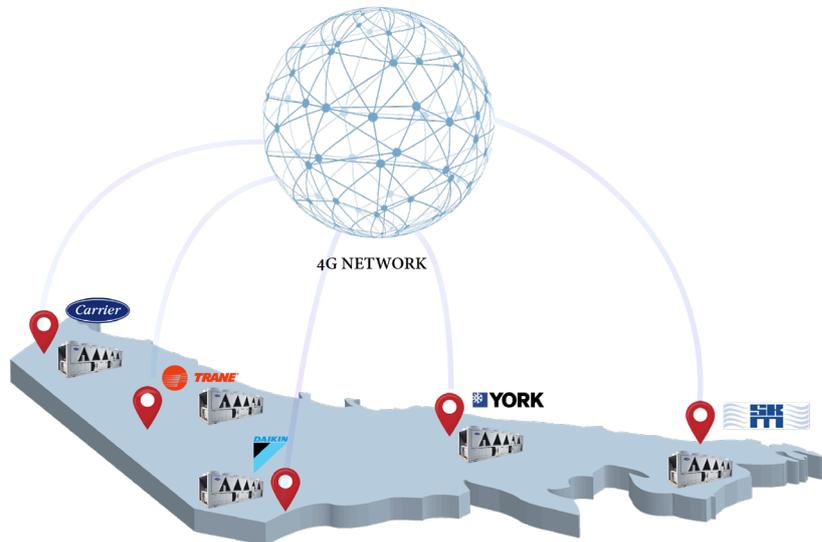
## End User Feedback

### Few lines about NETIX Controls system

We have done multiple integration projects with NETIX Controls - integrated building management system and the experience gives us the confidence that NETIX Controls has a truly open platform that is very flexible for customizations and at the same time is very robust with regards to performance.

Netix controls have a deep understanding and sensitivity that is needed for critical integration projects, their excellent commissioning skills, commitment towards quality have impressed us.

## Network Diagram





**About Niagara Framework:** For decades, Niagara Frameworks has led the world in business application frameworks - advancing truly open environments that harness the power of the Internet. A truly open environment, connecting diverse devices and systems, it enables you to connect and control devices, while normalizing, visualizing and analyzing data from nearly anywhere or anything. From building and data centers to manufacturing systems and smart cities, the Niagra Framework improves strategic decision making, allowing for optimised performance and cost reductions that can help businesses be more competitive and profitable.

#### **About NETIX Controls:**

NETIX Controls is a vendor neutral automation solutions provider who uses technology to provide sustainable solutions that will transform facilities and buildings to energy efficient and sustainable edifices. Built on the principles of Internet of Things (IoT) and being a Master Systems Integrator, we are dedicated to focusing our energies towards intelligent buildings and combine our design and engineering skills and extensive knowledge about the needs of the automation systems and their management to help create innovative solutions for any requirements.

Key reference projects for NETIX Controls include Waterfront Mall in Oman, JLL Office, HDFC Bank, Alembic Pharmaceuticals, IIT Roorkee Datacenter in India, The Accelerator Building, Masdar City, City Walk and Mazaya Business Avenue in Dubai, U.A.E to name a few.

In the Middle East, NETIX Controls is part of the SB Group - a regional power house catering to the construction business and includes ODS Global, Exenture Global and the regional operations of Teknoware Middle East.