



Base21 Siemens VIP Center

Innovation in action

Answers for infrastructure.

SIEMENS

A fast upgrade to wireless

The Spaceship Earth attraction at Epcot®, presented by Siemens, transports guests through the spectrum of time — from the caves to the cosmos — highlighting how each generation of mankind has invented the future for the next generation. Below the geodesic dome, the 4,800-square-foot Base21 Siemens VIP Center features interactive exhibits, including a transparent door, a “Magic Mirror” which boasts three-dimensional facial recognition, and building automation featuring wireless controls.



Client Objectives:

Base21 welcomes customers, employees, and other important visitors for relaxation, meetings, customer briefings, and special events. For Jim McCaskill, Director of Operations, an important aspect of delivering premium hospitality is the refreshing atmosphere an optimally performing building provides.

In February, 2010, McCaskill called in Siemens engineers to upgrade the hard-wired network. Issues to be addressed included:

- Improving comfort — Gain tighter temperature control in the Observatory, a space that is reconfigured based on the type of event; create an optimal room temperature, regardless of the number of occupants or the hot and humid weather conditions outside
- Implementing cutting-edge technology — Maintain the facility as a “learning” model

- Increasing energy-efficiency — Utilize wireless devices to help improve energy-efficiency and impact utility costs

From Obstacles to Opportunities:

Base21’s unique doughnut-shaped floor plan initially appeared challenging because it reduced the maximum straight line-of-sight between wireless devices. Above the ceiling line, Variable Air Volume (VAV) boxes were located behind steel I-beams, creating roadblocks for RF signals. These obstacles did not dissuade the Siemens team from implementing a mesh solution.

In the Observatory, one of two event spaces, a panoramic wall of windows offers a spectacular view of the theme park. Three wired room thermostats provided zone control, but not from the right locations. The thermostat by the windows would always report warmer temperatures,

causing it to continually try to supercool the area. When the afternoon sun came in, parts of the room would get too cold and others too warm. The flexibility of wireless sensors made them the perfect solution for this installation. With wireless, equipment can be easily positioned in exactly the right spot, saving on time, materials, and contractor costs.

The Siemens Wireless Solution:

A Wireless Field Level Network (WFLN) replaced traditional FLN cabling, forming a self-healing wireless mesh solution. Now mesh network topology ensures maximum reliability by creating multiple redundant paths of communication.

Six-foot high support beams and metal plates in walls necessitated the strategic placement of wireless transceivers, which meant moving them a few feet away from VAV boxes rather than on the controls



For less labor and less cost, this facility's hard-wired network was upgraded to wireless — in just three days.

enclosures. To create a robust mesh network, installers put in additional FLN device repeaters (FLNXs not connected to VAV boxes) to strengthen areas that were weak before.

With the mesh architecture in place, a Wireless Room Temperature Sensor (WRTS) can now communicate with any nearby router (FLNX) on its network — there is no single point of failure. The benefit of this is if the sensor is out of range, it will communicate through another FLNX. That FLNX will then route the message to the appropriate TEC. This ensures a robust network that provides tight temperature control. If one WFLN radio is lost, only its associated FLN device is lost. The rest of the network is unaffected.

In the Observatory, wireless sensors are now placed where they can provide optimal monitoring and energy management. While wireless sensors are monitoring temperature

spaces and being averaged, one temperature control setpoint controls the space for consistent comfort. If necessary, the wireless sensors can be easily moved without having to run cable.

Engineers now monitor from the building automation system's front-end graphics to determine wireless room temperature values, setpoint, and sensor battery strength. Although wireless sensors feature long-life lithium batteries, making them alarmable points provides facility engineers with ample notification when batteries need replacing.

Upgrading to Siemens wireless building automation devices, and placing them exactly where they are needed, has created a well-controlled and stable temperature scenario at Base21. Wireless devices were installed quickly and with less disruption to the facility, so guests remained unaffected during the project.

By using significantly less wire and cabling, this upgrade project was able to achieve a savings on installed costs — now and when reconfiguring space in the future. With more precise temperature control and a state-of-the-art system, this facility operates at maximum energy efficiency.

Product Highlight

Full-featured wireless sensors provide sensing, display, setpoint, and override for optimum consistency in the Observatory.



For 160 years, the Siemens name has been synonymous with cutting-edge technologies. Siemens was the first company to commercialize wireless mesh technology for use in building automation and introduced the industry's first wireless field level network in 2005. The reliable performance of Siemens wireless devices and our expertise in seamless integration of building automation systems ensures customers quickly achieve the delicate balance of a more comfortable and energy-efficient building environment.

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The information in this document contains general descriptions of technical options available, which are not always present in individual cases. The required features should be specified in each individual case at the time of purchase.

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