



CASE STUDY

Museum

Facility at a glance

Name

Orlando Science Center

Location

Orlando, FL USA

Facility size

207,000 ft²

Issue

8 water cooled screw chillers operating since 1996 were failing, leaving visitors suffering from insufficient and unreliable cooling

Solution

Daikin Magnitude[®] magnetic bearing chillers, three 250-ton units

The award-winning Orlando Science Center

Magnetic bearing chiller technology becomes a working exhibit of innovation and energy savings at the Orlando Science Center

Issues

Eight water cooled screw chillers operating at the center since its 1996 opening were failing, leaving the center's visitors suffering from insufficient and unreliable cooling. At one point the center offered free bottled water to its visitors to make them more comfortable.

Solution

Three new 250-ton Daikin Magnitude magnetic bearing chillers replaced the aging chillers. These chillers can easily run on part-load capacity which extends the life of the chillers. The chillers were then integrated with a Siemens building automation system (BAS) using LonTalk[®] protocol.

Outcome

With operational efficiencies achieved with the BAS, the Daikin chillers are estimated to reduce the center's electric bill by 50% compared to the old system. Water utility costs were also greatly reduced by capturing the condensing water from the system's fan coils which are pumped into two new zero-bleed cooling towers. Additional savings were achieved by a solar panel system on the roof which creates enough hot water to eliminate the need for two natural gas boilers.

Visitors to the Science Center can see the actual chillers in operation and view a cutaway of the magnetic bearing compressor in the exhibit area. Signage and monitors explain the chillers' energy saving technology.

Energy Savings Summary



Daily Electrical Use before System Upgrade **17,000 kWh**

Daily Electrical Use after System Upgrade **10,000 kWh**

Energy Savings of Upgraded System vs. Previous System **Estimated 30%**

LEED[®] and Energy Star[®] certifications applied for



Visitors to the Science Center can view the mechanical room and see the working Daikin chillers behind a glass enclosure, complete with signage and TV monitors with information about the chiller technology.