

CASE STUDY

Las Brisas Elementary School,

Deer Valley School District Glendale, Arizona USA

Facility Type: Elementary School

Circon System Integrator: MPBAS Building Automation



THE CLIENT

Las Brisas Elementary School, part of the Deer Valley Unified School District, is a K-6 elementary school located in a fast growing community of Glendale Arizona. Situated within the Sonoran Desert, the Deer Valley USD has grown from one school in 1934 to 37 campuses (29 elementary schools, 3 middle schools, and 5 high schools; plus an online high school program and an alternative program site). Early Childhood Education opportunities are offered through 13 Preschools, and 5 Head Starts. District facilities include District Office, Support Services Center, Transportation, and Administrative Services.

THE CHALLENGE

Facing the demise of the state of Arizona's excess utilities override program, Deer Valley School District made a decision to target its least energy efficient schools for the implementation of energy saving retrofit solutions. Las Brisas, built in the 1990s, was identified as one of these schools due to its poor performance, and was chosen for an energy retrofit. The school was originally built with a proprietary building automation control system but due to age and availability of parts and service, the system was obsolete and not functioning correctly. The main issues for the customer were lack of access into their system (including scheduling, alarms, and overrides), inconsistent temperatures throughout the school, and lack of service and support for their existing system.

THE SOLUTION

In order to achieve energy savings, a team was formed with MPBAS and Valley Schools Management Group. The Certified Energy Managers employed on each team determined that the both the mechanical systems and BAS needed significant upgrades and improvement. For the mechanical systems, MPBAS retrofitted the existing control with 2-way, pressure independent control valves and modified the central pumping system from a constant flow to a variable flow using new variable frequency drives on the system pumps. To address the BAS, an open protocol LonWorks energy management system was chosen to replace the existing proprietary BAS. With an open system, the District realized that by implementing a technology rather than a manufacturer, they would have the freedom of choice for service and support, and would future-proof the school against obsolescence.

"A large portion of the energy savings is due to efficiently operating the central plant equipment and extending the operation of the existing water side economizer" - **Mark Franz** Project Manager for MPBAS

As a result of the retrofit project, Las Brisas Elementary now performs better than 75% of all schools in the Phoenix area and the school was awarded an Energy Star rating in February 2010. Deer Valley is projected to recover their expenditure for this retrofit in 6.4 years through realized energy savings.

THE DETAILS

HIGHLIGHTS

- Delivered a full featured, open and interoperable Building Automation System
- Implemented local and global scheduling, alarm and trend management through the District IT servers
- A single LonWorks® network
- Provided a cost effective networked solution
- Circon fan coil, network management and graphical user interface software control products
- Provided a control system platform that facilitates future expansion and integration
- Multi-vendor control products
- A flexible and adaptable design

HVAC CONTROLS

- Integrated multiple vendor LonWorks components into one open system
- Provided efficient energy usage
- Optimized central plant operation; variable flow chilled water system
- Pressure Independent control valves; water side economizer
- Delivered intelligent monitoring and control

Circon HVAC controllers control the individual fan coil units, with Smart Controls programmable controllers controlling the water cooled central plant. All HVAC controls are integrated onto a single, distributed network.

SYSTEM MANAGEMENT

- Centralized graphical user interface for monitoring and control
- Enhanced centralized monitoring and control
- Energy Monitoring
- Global scheduling
- Ethernet backbone

The implementation of Circon's Visual Integrator software enabled the BAS components to be represented through a customized graphical user interface for the owner. The software is installed on the District IT servers and services all Deer Valley schools as one interoperable energy management control system.

SYSTEM COMPONENTS

- Circon Terminal Unit Fan Coil Controllers
- Loytec LIP33-ECTB FT10/IP Routers
- Belimo Pressure Independent Control Valves
- Circon Visual Integrator & Network Integrator Software
- Smart Controls EC-240 Programmable Controllers
- Neurologic Energy Meters

If you would like further information on this case study, Efficient Building Automation Corporation (EBAC), or more on our products and services, please refer to the contact information below.

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