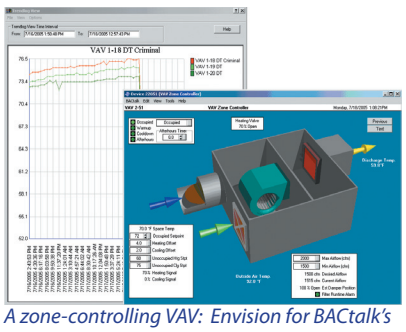
ADA COUNTY COURTHOUSE I CASE STUDY

Ada County rules in favor of Alerton system for energy efficiency and sustainability inside new courthouse

Ada County, Idaho encompasses 1,154 square miles including Boise, the state's capital and largest city as well as the hub of commerce, banking and government for the state. In January 2000, the county broke ground on a new courthouse that would consolidate three buildings and an administration facility inside a mixed-use, pedestrian-friendly mall. The new five-story, 350,000 square-foot courthouse was designed from the onset to meet the stringent criteria for energy efficiency and sustainable construction. An Alerton building automation system (BAS) was an important component.

The previous Ada County courthouse was a 60-year-old building. When its chillers failed, temperatures inside the courthouse fluctuated wildly—sometimes by as much as 10 degrees. The county occupied two other buildings and decided to consolidate county services from all three buildings under a single roof. The consolidated courthouse would be less costly to operate and maintain and the increased energy efficiency would go a long way toward reducing operating costs. Centralized services also would make it easier on the public to use the court system. For example, instead of having to go to one building for a hearing and then another location to pay fees, visitors could address everything in one building.



A zone-controlling VAV: Envision for BACtalk's detailed views offer real-time, pinpoint accurate data readings.

ATS Inland NW (ATS), Alerton's Boise-area dealer, provided Ada County with a new BACnet-based BAS that exceeded the county's expectations for cost and energy efficiency.

The aging Ada County courthouse was not energy efficient and required the facility manager to manually maintain the heating or cooling load. This made Monday mornings particularly difficult because after two days of non-use, temperatures inside the building dropped below 60º and everything—chairs, carpets and walls—required heating for a comfortable environment. The manual system required extensive staff training simply to maintain the building's indoor air temperature. The new BAS had to provide quick responses to heating and cooling needs, improve operation efficiency and be easy to use.

For security, none of the courthouse windows open, so the BAS has to maintain a certain amount of fresh air coming in

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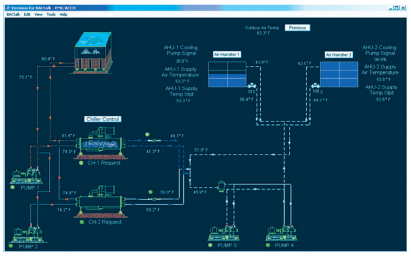
When judges were trying to schedule court times, it was critical to get the new system installed and operating on time and on budget—and it was. The courthouse was available when it was needed.

Dave Logan, Director Ada County Operations Department, Ada County, Idaho



Courthouse chillers: Envision for BACtalk offers comprehensive maps to quickly identify problems that may occur.

at all times. Incoming air also must be filtered against pollen and other contaminants for the health and safety of staff and visitors.

Finally, the commissioning plan identified more than 350 items needed to improve building performance and occupant comfort. These included, for example, enabling tenants to adjust temperatures in their individual spaces.

ATS provided a stand-alone BAS that delivered the new courthouse's energy efficiency. The project included a cooling tower, chillers, a geothermal heat exchanger, air handling units, variable frequency drives (VFDs) and fan-powered variable air volume (VAV) boxes. Operator workstations manage all the courthouse's functions through Alerton's native BACnet system, BACtalk®.

ATS tied in the heating, ventilating and air conditioning (HVAC) functions to a geothermal heating system and a cooling system made up of chillers, VFDs and the cooling tower. In a geothermal heating system, water from an underground aquifer—a subterranean layer of water-yielding earth, gravel or porous stone—circulates through a closed-loop ground-source heat exchanger connected to a forced-air heating system inside a building. Water subsequently returns to the aquifer though an injection well. The geothermal system provides heat without significant impact to the environment.

In the winter, the geothermal system extracts the ground water's heat to raise the temperature of the courthouse's heating loop. During the summer, chillers cool the building water to use in air conditioning. Geothermal energy is an ideal solution because it reduces the use of electricity and subsequently reduces operating costs; it's locally available and renewable.

By consolidating the functions of three buildings into a single building, Ada County operations staff can more easily monitor the system and immediately address any problems that might occur. The Alerton BACtalk system is easy to use, with graphical interfaces that provide views of the entire system at once as well as each piece of equipment and its status. BACtalk also simplifies maintenance and training with its ability to monitor and override functions from a single workstation. New operators can view displays without having detailed knowledge of each individual component.

To handle indoor air quality behind the courthouse's sealed windows, the HVAC system incorporates two 150,000-cfm air handlers, which can generate a complete change of air inside the building in as little as 10 minutes. The system enables occupants to adjust their thermostats anywhere between 68 and 74 degrees with a two-degree offset.

The Ada County courthouse is energy efficient, cost efficient, secure, comfortable and attractive. The geothermal system reduces heating costs by as much as 70% compared to an all natural gas solution. The single building uses 22% less electricity per square foot than the three buildings in their prior, separate configuration. Compared to similar buildings in the Boise area, the consolidated Ada County courthouse now uses 40% less electricity per square foot and generates annual savings of nearly $160,000.

The Ada County courthouse exceeds the state's new energy code requirements. In May 2005, the courthouse earned silver certification in the Leadership in Energy and Environmental Design (LEED) Existing Building (LEED-EB) pilot program—the first building in Idaho to do so. With its new cost and energy efficiency as well as effective implementation of the county-wide indoor air quality plan, the courthouse now serves as a model for other county projects.

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6670 185th Avenue NE
Redmond, WA 98052
Telephone: **(425) 869-8400**
Fax: **(425) 869-8445**
Web site: **www.alerton.com**
Email: **sales@alerton.com**