EFFICIENCY IS IN THE AIR AT WOODBURN MEMORIAL AQUATIC AND FITNESS CENTER

Since 1995, the Woodburn Aquatic Center has welcomed swimmers of all ages to dive in for enjoyment or more serious exercise. The facility includes a 25-foot by 25-meter lap pool, spa, wading pool with fountain, plus other features for fun, fitness and competitive swimming. The air-handling system could not provide enough circulation for good air and water quality, and the facility suffered.

"We initiated the energy study process because we had a serious indoor air quality problem," said Jim Row, community services director, City of Woodburn. "Our system didn't bring in outside air so the air inside was humid and re-circulated chemicals that corroded the building. Since we had to replace the failing system, we wanted to look at saving energy, too."

The aquatic center hired Abacus Resource Management to prepare the design and complete the installation. The contractor's solution was to install a high-efficiency air-handling unit with heat recovery for the natatorium. By bringing in significantly more outside air, the system keeps humidity levels down, helps regulate the temperature and reduces the amount of condensed air that can settle on equipment and cause corrosion. The system also includes a plate-style heat exchanger and heat pump reclaim system that uses excess heat to warm the air or water as needed. The automated system controls enable pool operators to see real-time interior climate data and simplify adjustments. They can also preset temperatures and humidity readings, and the system will maintain them.

"The cost to run an aquatic center is significant and we are seeing improvements," said Row. "We needed to accomplish better air and water quality, and we definitely have done that. The energy efficiency is a bonus. The incentives were a solution that made this project more viable for us."

As part of the contract, Abacus monitors the system for a year, reporting performance and efficiency. To date, the new systems are meeting energy savings expectations with a significant improvement in indoor air quality.

To learn more, visit **www.energytrust.org** or call **1.866.368.7878**.

PROJECT-AT-A-GLANCE

Project Benefits

- Reduced energy costs
- Better air quality
- More control over indoor climate
- Eliminated condensation and reduced humidity

Equipment Installed

- High-efficiency HVAC with heat recovery
- Plate-style heat exchanger
- Direct digital control system
- Heat pump reclaim system
- Ductwork

Financial Analysis

- $249,681 project cost
- $74,689 cash incentive from Energy Trust
- Applied for Business Energy Tax Credit pass-through from Oregon Department of Energy
- $58,100 estimated annual energy cost savings
- 128,415 estimated annual kWh energy savings
- 49,006 estimated annual therm savings

ENERGY SAVINGS MAKE A BIG SPLASH

COMMUNITY AQUATIC CENTERS INVEST IN ENERGY EFFICIENCY

Community pools are hot spots for cooling off, having fun and getting some exercise year round in Oregon. Residents of Dallas, Hood River and Woodburn are fortunate to have local aquatic centers that invest in functional facilities and energy efficiency. Swimming pools typically consume enormous amounts of energy, but these three have installed systems that save money on energy costs while improving guest comfort and enjoyment.

HOOD RIVER SOAKS UP SOLAR SAVINGS

Beneath what looks like a large white tent is the Hood River Aquatic Center, welcoming about 43,000 people a year to swim laps, take classes, compete and have fun. Like any pool, water and air temperatures are critical, so heating equipment must be up to the task. When it was time to upgrade the pool's aging heating system, the Hood River Valley Parks and Recreation District hired consulting engineers Abacus Resource Management to conduct an energy audit of the entire facility.

Abacus recommended installing a solar water heating system along with a new condensing boiler. The solar system includes 2,300 square feet of solar collectors installed on a portion of the facility roof; another part of the roof can be removed during warmer summer months. When the system was installed in 2006, it was one of the largest solar water-heating arrays in the Northwest.

Energy Trust of Oregon 851 SW Sixth Avenue, #1200, Portland, Oregon 97204 1.866.368.7878 503.546.6862 *fax* **energytrust.org**

EnergyTrust of Oregon

Dallas Aquatic Center is a water lover's dream with activities for both serious swimmers and recreational users.

PROJECT-AT-A-GLANCE

Project Benefits

- Reduced energy costs
- Increased comfort for guests
- More control over air and water temperatures

Equipment Installed

- Drain-back solar water heating system with 48 roof–top collectors
- High-efficiency condensing hot water boiler
- Hot water pumps, piping, plate and frame heat exchangers
- Direct digital control system
- Variable frequency drives on supply and return fans
- Damper actuators

Financial Analysis

Solar Water/Condensing Boiler Heating Systems and Controls

- $194,000 project cost
- $15,821 cash incentive from Energy Trust
- $64,500 Business Energy Tax Credit pass-through from Oregon Department of Energy
- $17,000 estimated annual energy cost savings
- 13,814 estimated annual therm savings

Air Heating Upgrades

- $36,020 project cost
- $10,893 cash incentive from Energy Trust
- Applied for Business EnergyTax Credit from Oregon Department of Energy
- $13,141 estimated annual energy cost savings
- 65,729 estimated annual kilowatt hour savings
- 8,650 estimated annual therm savings

Hood River soaks up solar savings, cont.

From March through October, solar is the primary (and often the only) heating source for the 281,000-gallon recreation pool. After September, the solar system is turned off and drained, and the new high-efficiency condensing boiler takes over. These improvements save about $17,000 in energy costs per year.

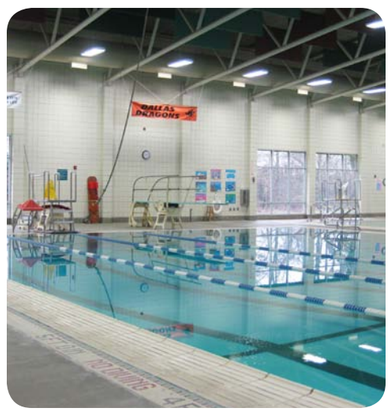
Pool deck air temperature is just as important as the water temperature, so the aquatic center also tackled its air heating system. Contractors insulated the single-wall ductwork from the HVAC system. By replacing the damper actuators and installing variable frequency drives on the supply and return fans, the center gained better control over air coming in and going out of the building. Previously, the fans were either fully on or completely off. Now, the system conserves energy by regulating air turnover to meet the specific needs of the building at different times of day or seasons of the year.

"It is especially important for publicly-supported institutions such as ours to take a lead role in energy conservation," said Scott Baker, assistant director, Hood River Valley Parks and Recreation. "It requires leaders to take a long view. These projects demonstrate that solar heating and energy-efficiency upgrades pay for themselves over time, and conserve our natural resources immediately."

> **"In addition to the significant decrease in natural gas use, our upgraded solar and boiler system requires far less maintenance than the aging boiler it replaced, saving me thousands of dollars and countless headaches."**
>
> Scott Baker, assistant director,
> Hood River Valley Parks and Recreation

> **The fact that we can reduce our operational costs and improve service to our patrons is a benefit all the way around.**
>
> Jason Locke,
> community development director,
> City of Dallas

Thanks to investments in energy-efficiency upgrades, Dallas Aquatic Center has reduced its electric and gas bills by nearly 50 percent.



PROJECT-AT-A-GLANCE

Project Benefits

- Reduced energy costs
- Better regulated air and water temperatures
- More comfortable humidity levels

Equipment Installed

- Nine high-efficiency pool pumps
- Two condensing boilers
- Heat exchangers
- Heat recovery for the locker rooms
- Direct digital control system
- Variable-speed pumping and airflow
- Solar water heating system with 80 roof–top collectors
- 40 T5 fluorescent lamp fixtures

Financial Analysis

- $681,729 project cost
- $173,508 cash incentive from Energy Trust
- $159,806 Business Energy Tax Credit pass-through from Oregon Department of Energy
- $86,000 estimated annual energy cost savings
- 470,448 estimated annual kWh energy savings
- 45,942 estimated annual therm savings

DALLAS DIVES INTO ENERGY EFFICIENCY

With five different pools attracting 130,000 patrons a year, the Dallas Aquatic Center consumes enormous amounts of energy to keep the air and water temperatures just right. Jason Locke, the city's community development director, was looking for ways to maintain the center's appeal while managing costs for electricity and natural gas. "Prior to making any upgrades, we were spending more than a quarter of our budget, or $250,000 a year, on natural gas and electricity," said Locke. "Our small, local government operates on a tight budget so these costs were not sustainable."

The aquatic center contracted Abacus Resource Management to conduct an energy audit and recommend conservation and facility improvements. Abacus was hired to implement the extensive modifications, manage incentives and tax credits and guarantee the energy savings. The contractor also monitored and reported monthly energy use during the first year after completion. After 10 months, the aquatic center realized energy savings of $75,300, which exceeded the annual guaranteed energy savings of $56,800. That success will shorten the estimated payback period from six years to around four years.

The facility installed two condensing boilers, variable-speed pumping and airflow, a building automation system, high-efficiency lighting, heat reclaim for the locker room and a solar heating system. "We've had nothing but positive feedback from patrons and staff," said Locke. "Next year, we're proposing to budget $150,000 for all utilities, $100,000 less than in previous years."