



Sustainable HVAC Systems Support Oregon Zoo Case Study



BOSCH

Invented for life

Veterinary Center Needs Climate Change at the Oregon Zoo, Portland, OR

Background

The Oregon Zoo opened its new 15,000 sq ft Veterinary Medical Center in January 2012 following sixteen months of construction. The center includes a climate-controlled intensive care unit and provides medical care to all the zoo's animals. The \$9.15 million project, funded from a \$125 million bond approved by Oregon voters in 2008, came in under its projected \$9.46 million budget.

According to project engineer Wayne Starkey, the Veterinary Medical Center meets a critical need for zoo animals and staff. It provides comfortable, climate controlled spaces to support animals' health and well-being.

Veterinarians treat an amazing variety of animals in all shapes, sizes and species. As doctors conduct checkups and treat various ailments they need to adjust the conditions to suit the species of animal. The new facility accommodates each animal's special needs in comforting, custom-designed spaces where temperature, light and humidity can be adapted for each animal patient. The new building includes heated and rubberized floors and adjustable air and water temperatures. Vets can open rolling skylights to provide animals with fresh outside air and views of the sky.



Four Buderus wall-mounted GB162 condensing gas boilers saved valuable floor space.

Installation Summary

The new center is a LEED Gold certified building incorporating water and energy saving features for sustainability. The project team exceeded their goal of recycling 90 percent of construction waste. In order to meet LEEDS certification requirements, the Vet Center incorporated sustainable systems including:

- Four Buderus GB162/100 boilers with a 4000 series control, supplying radiant floor heat to animal holding areas, air handlers that serve the administration offices, medical/surgery rooms and animal holding areas having a demand based hot water set point reset strategy orchestrated by a centralized control system.

Buderus

► The Buderus design team and consulting engineers from MFIA Inc. used four Buderus SKS4.0 solar thermal panels to pre-heat domestic water for the animal wash-down areas.

► 20,000-gallon galvanized cistern to harvest and treat rainwater from the roof for reuse in restrooms and animal wash-down areas.

The building is naturally lit by 35 solar tubes. A variety of sensors adjust interior lights depending on whether rooms are occupied and the amount of ambient light from windows and solar tubes. Tap water is solar heated. Building materials are low in volatile organic compounds (VOCs). Interior building materials were all chosen for high recycled content.

Jackson Catrett, project manager for general contractor Skanska USA commented "The medical center is packed with equipment, including HVAC and systems for critical animal care." Fitting the equipment into the relatively small building required time and coordination. "The solar thermal system was easy to install, basically 'plug-and-play.' It was a challenging project, and I think we did really well," Mr. Catrett added.

Summary and Conclusion

As described by Mr. Starkey, "Heating and hot water systems are performing flawlessly, and PacWest provided support to address some issues early in the installation. The Zoo's veterinarians worked with architects and contractors at every stage of design and construction to develop a facility to provide world-class medical care while also keeping animals calm, reduce their stress and promote healing, all within an environmentally conscious environment."



Buderus SKS solar thermal collectors (top left) provide much of the building's domestic hot water (stored in Buderus tank, center), saving significant annual energy costs.



Photo by Michael Durham, copyright Oregon Zoo

Project Name:

► Oregon Zoo Veterinary Medical Center, Portland, OR

Architect:

► Peck Smiley Ettlin

General Contractor:

► Skanska USA Building, Inc.

Consulting Engineers:

► MFIA, Inc., Portland, OR

Application:

► Buderus solar thermal water heating, condensing gas boilers for hydronic radiant heat

Installing Contractor:

► Heinz Mechanical

Manufacturer's Representative:

► PacWest Sales, Inc., Portland

Project Completion:

► January 2012