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Economics, energy efficiency work together in RTJ Building

By NW Natural

A year ago, Tom Kelly was quoted as saying, "We suspect that energy costs are going to go up, so building a really efficient building now is good business."

Shortly after the RTJ Building celebrated its grand opening in June of this year, energy analysts were astonished by increases in fuel prices — particularly spikes in electricity that brought nearly \$1000 a megawatt hour on the wholesale spot market. RTJ Corp.'s awareness of energy costs, coupled with a commitment to sustainable development, appears to be paying off.

RTJ Corp. is a partnership between three individuals representing major players in Oregon's construction industry: Kelly, president of Neil Kelly Company; Ray Derby, president of Blazer Development and John Godsey, president of Consulting Engineering Services Inc. Blazer Development served as general contractor for the project.

With Kelly's zeal for sustainable development and the hands-on construction knowledge of Derby and Godsey, RTJ Corp. succeeded in completing an earth-friendly



Energy efficiency was a driving motivation in planning the RTJ Building. The building's architects, Thompson Vaivoda & Associates, in cooperation with Blazer Development and Enron's EarthSmart, incorporated an array of energy saving techniques, ranging from the simplest to the most cutting-edge. Photo by Greg Giesbrecht.

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The building combines the solid energy efficiency advice of the EarthSmart design with the simplicity and economic advantage of natural gas space heating. The natural gas water heater supplies plenty of affordable hot water for washing and cooking demonstrations in the first floor Neil Kelly Showroom.

Photo by Greg Giesbrecht.



15,000-square-foot building that respects budget constraints and can serve as a model for other commercial structures. All three companies share space in the new building.

HOME TO A NEW SHOWROOM

The Neil Kelly Company, a Portland-based interior design and remodeling firm since 1947, needed a new location for its suburban outlet. Nearly four years ago, Kelly was driv-

ing through Lake Oswego on I-5 during his search for a showroom site, when he remembered an open lot immediately next to the Metropolitan Homebuilders headquarters - an organization Kelly had been active in for many years.

The site at 15573 Bangy Road — visible from the freeway, nestled into a wooded hillside, and close to the growing Lake Oswego/West Linn market — offered Kelly a

perfect showroom location, plus the opportunity to put his commitment to sustainable development into practice.

Kelly is a long-time supporter of The Natural Step, a Swedish-based organization dedicated to building an ecologically and economically sustainable society. A life-long Oregonian, he is intensely aware of the impact of a fast-growing population on the delicate Northwest environment.

The Neil Kelly Co. has been a leader in promoting low-impact building products, like carpets made from recycled material. The RTJ Building put the Natural Step guidelines to the test through design and construction of a three-story office building.

GOING GREEN, CONSERVING ENERGY

Energy efficiency was a driving motivation in planning the RTJ Building. The building's architects, Thompson Vaivoda & Associates, in cooperation with Blazer Development and Enron's EarthSmart, incorporated an array of energy saving techniques, ranging from the simplest to the most cutting-edge. A low-interest loan from the Oregon Office of Energy, plus energy efficiency tax credits, along with the promise of reduced energy costs, provided incentives for investments in new, efficient technology.

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tions in the first floor Neil Kelly Showroom.

Architects created a long, narrow building with large windows at the south and north to concentrate daylight inside the structure. Windows throughout the building allow light into work spaces. A zoned internal lighting system responds to available daylight, raising or lowering the intensity of the lamps accordingly. The lights also respond to motion sensors, turning off automatically if the building is vacant and lighting up when a person enters one of the zones.

Two of the parking lot lights are powered by photovoltaic (PV) cells, which convert solar energy into electricity. The Oregon Office of Energy said that the two PV-powered lights will save more than 1,200 kWh of energy every year.

IN THE ZONE

Dividing the building into six zones also ensures that the heating and cooling system uses only as much energy as needed — when it's needed.

The building's three floors are divided into two zones, each with its own, efficient natural gas furnace. If an eager employee comes into work on a Sunday in January, in addition to triggering the lighting system the motion sensors will let the heating system know that it's time to warm up a particular zone. The air conditioning unit can cool one zone at a time. When the sensors detect lack of activity for an extended period of time, the system responds by reducing the heating or cooling function.

A key to designing for energy efficiency is to be wary of the standard recommendations for most commercial buildings. "When planning an HVAC system, mechanical engineers

routinely design for the extremes — the very hottest and the very coldest days on record. So the equipment in most buildings has much greater capacity than necessary," architect John Hieli of Thompson Vaivoda said.

"Not only are we saving money on our energy costs," Kelly said, "but we actually spent less on the HVAC system than we would have using a standard system."

After one summer with some 90-plus degree days, employees report the building remained comfortable, regardless of the weather.

MORE THAN ENERGY CONSERVATION

For Kelly and his partners, sustainable building meant more than designing for lower energy demand. Elements of the RTJ Building are intended to be easy on the earth — forests, soils, water and air.

"Indoor air quality is a critical consideration," Kelly said. "We've seen studies that link employee health and productivity to emission levels in buildings." So surfaces in the RTJ Building are coated with paints and varnishes that are low in volatile organic compounds (VOCs). Carpet adhesives also are low-emission.

Neil Kelly employee Heidi Bruner said, "It doesn't have that new building smell. To me, that means it's a healthier place to work."

Many of the products used in building construction also are featured in the Neil Kelly Showroom on the building's first floor. These include carpeting produced with recycled material and a vinyl substitute made from organic matter, similar to the linoleum found in many 1950s kitchens. Kelly is promoting Wheatboard, created from wheat

chaff, as a substitute for traditional wood fiberboard.

"It takes formaldehyde to create a solid from sawdust and woodchips," Kelly said. "But wheat chaff sticks together without toxic chemicals. And it's really durable. We threw conventional fiberboard and Wheatboard into a bucket of water. The wood product lasted one night, but the Wheatboard held up for three weeks."

Most of the wood in the RTJ Building comes from forests certified as managed using sustainable forest practices, and bamboo flooring is an attractive alternative to hardwoods. The frames of Anderson Window products featured in the showroom use reclaimed scrap material from the Anderson factory.

"Most of the 'sustainable' features we incorporated in this building didn't cost much more than conventional materials. Low-emission paints are only slightly more expensive than other products. And, of course, the more businesses that use these green alternatives, the more the prices will drop," Kelly said.

"We did have to draw a line somewhere," he admitted. "If it looked like a product was going to be 10 or 15 percent higher than the traditional alternative, we took the lower cost route," Kelly said. He admits that sometimes his advocacy for the sustainable choice might have led to less-than-optimum outcomes.

"Ray and John knew what they were talking about in terms of efficiency, cost and practicality," Kelly said. "All in all, we made the right choices for our needs."