CASE STUDY: **GREEN BUILDINGS – CENTRAL REGION**

Hunt Utilities Group Campus

By Kathleen McCarthy, UMN Regional Sustainable Development Partnerships • February 2008

The Hunt Utilities Group (HUG) research campus has been described by some as a "playground for energy geeks." Turning into the driveway, folks are greeted by two different styles of wind turbines, spinning happily in the breeze. Further along the gravel path are a small cottage and two large buildings, all with sustainable building components. The largest is prominent, sporting over 60 solar thermal panels and a large greenhouse along the south wall. Not visible from the driveway are ten miles of piping under the building that tie into the solar thermal hot air panels to heat it sustainably.

But what is this "research campus" exactly? It's hard to say. Paul and Lynn Hunt, founders of HUG, are interested in researching sustainable living, including renewable energy and high efficiency sustainable housing. They combine traditional building methods with state of the art technologies with a goal of learning how to build houses that heat and cool themselves without fossil fuels, help feed the occupants, and have zero sewage effluent. Their research campus is where they put learning into practice. The long-range view of the campus is to create 'living labs' with the structures used for residence, commercial or retail space, and business incubators for small industry. These structures will be built with indigenous materials such as straw bale and cob. "Currently, only two buildings on campus are straw bale and cob, and future buildings won't necessarily be built with these materials. The larger manufacturing building is actually made of Structural Insulated Panels (SIPs) and future buildings may use different materials altogether," explains Nolita Christensen of Happy Dancing Turtle, a non-profit located on the campus. The Hunts' research campus is an example of the evolving knowledge on building materials.

CAMPUS BUILDINGS

The first building erected on the 60 acre property was an approximately 4,000 square foot building now used for offices, storage, and classroom space. The building was constructed to utilize passive solar heating, with lots of southern exposure and a heat storage sink to collect, store, and distribute air warmed by the sun. Another unique property of the building is the materials used in construction. It is made of large straw bales that each measure 3'x3'x8' and weigh approximately 600 pounds. These straw bales are coated in an earthen plaster called "cob", a very old building material made of sand, clay, straw and water. Cob has great versatility and durability and is still used all over the world today. These properties allow the cob to be moldable. Because the cob is plastered over three feet thick straw bales, the wall is an excellent insulator.

A larger building was later constructed using the more common construction materials of Structural Insulated Panels (SIPs). The 17,000 square foot manufacturing building contains a greenhouse, 10 miles of tubing to distribute hot air, and about 65 hot air solar collectors. According to the HUG website, "the building is designed so that even on its coldest day it should be able to gather enough heat to last five days with only an input of five hours of sunlight. It has a living roof with ½ million tons of dirt on top so they used a lot of extra metal for structural integrity. There are eight inches of soil atop six other layers to capture water and minimize runoff." The greenhouse will provide lots of fresh fruits and vegetables during the winter, once it is up to capacity. Nolita explains that "the greenhouse is part of the heating system with the tubes all tied together in the greenhouse. It will be growing plants for landscaping as well as fruits and vegetables. It will also be a site for wastewater processing experimentation."

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CAMPUS ORGANIZATIONS

In addition to research and innovative architecture, the HUG campus is home to three organizations that practice sustainability in unique ways. First is the for-profit Hunt Utilities Group, LLC which as previously explained focuses on buildings and building systems. They aim to use "waste" as resources, while focusing on energy efficiency with buildings that heat and cool themselves without fossil fuels, help feed the inhabitants, and have zero sewage effluent. The Hunts are also interested in permaculture and how their practices hook into the local community.

Second, Rural Renewable Energy Alliance (RREAL) is a non-profit energy group located on the HUG campus. They install solar systems and are utilizing the manufacturing building to construct their own solar hot air collectors. Once these panels have been approved by the Solar Rating and Certification Corporation, they will be used in RREAL's Solar Assistance Program, which helps low income families in Minnesota decrease their dependence on the State's Fuel Assistance Program by heating their homes partially with solar hot air. This grassroots organization seeks to be a permanent solution to energy poverty and the cycle of energy dependence. RREAL started manufacturing their own panels in 2007, with the first batch going up on the HUG manufacturing building. The next batch will go out to the families signed up with the program, once the certification comes through.

Another major organization located on the HUG campus is the non-profit Happy Dancing Turtle with a mission to "Promote sustainable living." They hold community classes and workshops, organize special events like an Eco Fair as part of the local county fair, host field trips and tours, collaborate with other like-minded organizations addressing everything from renewable energy, to healthy local foods, to strong local economies, and experiment with building materials and systems. They have had great success in the past bringing in the community to learn about sustainable issues.

According to the Happy Dancing Turtle February newsletter, "as of February 4, 2008, the cottage in the south field of the HUG campus was ready to occupy. The cottage is the first experimental, sustainable, residential-scale structure to be completed on campus. Goals for the building include: heating and cooling itself year-round with little or no fossil fuels, helping to feed the occupants, and recycling water within the building - all with comfort and aesthetic appeal. Graham Wright, of Wright On Sustainability, will be living in the cottage for the next year to record and report the performance of its experimental systems and how it actually feels as a home."

COMMUNITY FOCUS

Located in Cass County, where citizens care about water and land use, the HUG campus has gotten a positive response from the surrounding community. For a healthy community and ecosystem, folks at HUG aim to "shorten the loop". This includes practices that: "Strengthen your local economy, use local construction materials, use local energy sources...preferably the sun, raise much of your own food, and recycle much of your water".

For more information about this great group of people, please visit their websites at www.hugllc.com, www.rreal.org, and www.happydancingturtle.org.