

Building GREEN in Greensburg

BTI Greensburg John Deere



Credit: Rachel Sullivan, NREL

BTI-Greensburg is a 4th generation John Deere Dealership in Southwestern Kansas. BTI was started in 1944 by Ralph Estes and has since grown to serve four Kansas locations: Bucklin, Greensburg, Ness City, and Pratt. BTI stores have large parts departments, service shops, and merchandise sales sections in all four towns to better serve the region. After the tornado completely destroyed the Greensburg, Kansas, dealership, the Estes family decided to rebuild the store in an environmentally friendly way. The building design team used the U.S. Department of Energy's EnergyPlus energy modeling software to adapt a typical metal building design into a U.S. Green Building Council Leadership in Energy and Environmental Design (LEED®) Platinum building that is expected to last 30 years or longer.

ENERGY EFFICIENCY FEATURES

- **Insulated wall panels** with an R-value of R-16 eliminate the need for thermal breaks typically used in metal building construction to prevent heat loss
- **Well-insulated high-bay doors** have an R-value of R-14 to prevent hot and cool air from escaping
- **Well-insulated roof** with an R-value of R-38 incorporates thermal blocks to minimize heat loss
- **Radiant heating** under concrete slab minimizes heat loss during the frequent bay door open and close cycles
- **High-efficiency heating and cooling system** with a seasonal energy-efficiency ratio (SEER) of 16
- **Skylights** provide lots of natural light to the service shop and reduce electricity consumption (24 total skylights)
- **Light tubes** bring natural light to the retail area to reduce the need for electrical lighting (12 total tubes)
- **Recycled waste oil** is used for heating water and offsets natural gas use
- **Occupancy sensors** turn off lights in vacant rooms to reduce electricity consumption
- **Energy-efficient lights** save energy on electrical lighting
- **Energy-efficient office equipment** saves energy used for administrative tasks.

RENEWABLE ENERGY FEATURES

- Two **wind turbines** (4.2 kilowatts and 1.9 kilowatts) produce electricity for the building, offsetting an estimated 8% of the building load.

WATER EFFICIENCY

- **Stormwater runoff and water collected from the dynamometer** will be stored in a pond and used for irrigation
- **Low water usage** toilets, faucets and other appliances are used throughout the building
- **Native plants** are used whenever possible to reduce the need for irrigation.

SUSTAINABLE MATERIALS

- **Sustainably harvested wood** is used for the interior and wood furniture and is certified by the Forestry Stewardship Council
- **Recycled steel** was used in the metal structure of the building
- **High fly ash concrete** (a by-product of coal manufacturing) was used in the concrete mix because it is more sustainable than traditional concrete
- **Crushed concrete** was used for the parking and equipment lot areas.

AIR QUALITY AND INDOOR ENVIRONMENT

- A **demand-controlled ventilation system** monitors air quality based on occupancy and helps to ensure proper CO₂ levels within the building
- **Nontoxic materials**, such as paints with low levels of volatile organic compounds were used to eliminate noxious gases.

LEED RATING ACHIEVED

- Platinum



Credit: Lynn Billman, NREL