

Cost

Construction: \$4,800,000

MEPT Construction: \$1,200,000

Owner

DE-PC Properties

Cedar Rapids, Iowa

Jim Russell, President

319. 841.1944

Team

Principal in Charge

Dwight Schumm, PE, LEED AP

Project Manager

Jim Russell, PE

Mechanical Engineer

Justin Opperman, PE, LEED AP

Electrical Engineer

Marc Foster, PE, LC

Architect

OPN Architects

Cedar Rapids, Iowa

Bradd A. Brown, AIA, LEED AP

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Project History

Design Engineers all-new, two-story 28,000 square foot office building is a state-of-the-art showcase of sustainable technology and with a beautiful and inspiring open-plan design. The project achieved LEED Gold certification, including the maximum 10 points available for the optimization of energy performance plus 1 additional innovation point.

Mechanical Design

The mechanical scope of work includes a water-efficient plumbing system with waterless urinals, dual-flush sensor-operated water closets and low-flow sensor-operated lavatories. The entire facility is protected by an automatic sprinkler system. The HVAC system consists of a network of water to air heat pumps connected to a vertical ground heat exchanger, an energy recovery unit to provide outdoor air for ventilation and fully networked direct digital controls (DDC).

Electrical Design

Energy-efficient lighting with integrated day lighting controls and occupancy sensors with building-wide low-voltage lighting controls resulted an average lighting power density of 0.4 W/sf as compared to average 1.7 W/sf for a similar building. In addition to a structured cabling plant for telephone and data, the telecommunications scope of work includes access control and burglar systems as well as AV systems for conference rooms.

Sustainability Achievements

The completed building uses 55% less energy than a code compliant building. The water conservation features will save over 30% of the water of a standard building.





Photovoltaic Array

6,500 square feet

360 modules

102.6 kW peak output

CO² offset = 122 acres of forest

Design Engineers Photovoltaic Array

Our 102.6 kW grid-tied photovoltaic system runs without direct management, silently collecting sunlight and converting it to usable electricity. The system supplies power back to Alliant, offsetting Design Engineers' usage and billing. This symbiotic approach allows DE limitless access to power any time, while contributing to the grid's daytime capacity and reducing the peak demand on central power plants.

The low-slope roof uses a ballasted installation, saving the roof membrane hundreds of screw holes. The south-facing and relatively flat angle of the panels optimizes total annual production across seasons without additional tracking equipment to maintain. The low angle also minimizes wind loads and reduces visibility of the modules.

By offsetting current usage, DE is responsible for reducing emissions at the power plant by 212,652 pounds of carbon dioxide, 438 pounds of sulfur dioxide, and 240 pounds of nitrogen oxides. Add it up and that's 142 tons of CO₂ equivalent. We're preventing the combustion of 68 tons of coal, annually, for at least 25 years.