

# BASF's new U.S. headquarters features sustainable construction

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International chemical giant BASF has opened its new U.S. headquarters building in Florham Park, NJ, and it also will serve as a demonstration facility for the company's technical prowess.

At 325,000 ft<sup>2</sup> (30,200 m<sup>2</sup>), it is one of the two completed facilities on a 268-acre site (108 ha) for sustainable technologies by the Rockefeller Group, a national operator of commercial complexes. This one, called The Green at Florham Park, is currently shared with the New York Jets football training camp, but other commercial buildings, a hotel, and residential area eventually will be added.

Construction began in August 2010, just a short walk from the company's previous headquarters. The design and materials were intended at achieving LEED (Leadership in Energy and Environmental Design) Platinum status, the highest rating in a building certification program developed by the U.S. Green Building Council. LEED covers energy efficiencies, of course, plus quality of interior environment, materials and resources, and innovation (including in the design process).

Natural light pours into 75% of the interior space. Compared with conventional construction, the building has 30% more ventilation and is projected to use 20% less energy, the latter from high-efficiency mechanical equipment, low-E glass (with building orientation east-west to maximize day lighting effect) and photovoltaic solar electricity.

The site and its preparation also are included in the LEED evaluation, with attention to landscaping, control of storm water, and reduction in erosion. The landscaping was chosen to require 85% less water.

BASF products were used wherever possible, some 30 of them including Elastospray SPF roofing and Elastocoat elastomeric roof coating. Also on the list is Green Sense concrete, which replaces 74% of the cement with industrial waste, such as fly ash from coal and slag from the steel industry—ingredients that actually can add strength as the concrete cures.

This concrete also requires less water. As an example, BASF pointed to the construction of the Freedom Tower at Ground Zero, where Green Sense concrete saved over 700,000 gal (2.6 million L) of water.

The BASF headquarters pavement is FilterPave, a porous polyurethane product that permits rainwater to drain through to the ground below to reach the water table. Although initially more expensive, it has high strength and the drainage characteristics make it competitive, BASF says.

In opening the facility May 4, BASF CEO and Chairman Hans Engel said the company is making major investments in automotive battery chemistry. He pointed to a plant in Elyria, OH, coming on stream to produce lithium-ion battery cathodes made of nickel-cobalt-manganese and incorporating a technology licensed from the Argonne National Laboratory. The Argonne design offers the potential for higher energy density and higher temperature stability.

Engle also noted the recent purchase of Novolyte Technologies of Cleveland, OH, a company with plants in the U.S. and China that make electrolyte formulations for Li-ion batteries. BASF also has an investment in Sion Power, a company developing lithium sulfur cells for mobile applications.

All these investments would seem to be disconnected from nickel metal-hydride, but BASF additionally has just acquired Ovonic Battery Co., the pioneering developer of NiMH batteries. Frank Bozich, Executive Vice President and President of the Global Catalyst Division, said BASF foresees the primary automotive future for Li-ion but also considers NiMH a "bulletproof" technology and believes there is a continuing market for advanced NiMH, both in mobile and stationary applications. Further, he said, Ovonic has advanced materials technologies in Li-ion.

Although BASF has been doing work with silicon photovoltaic cells, at the headquarters opening it also showed examples of research work in organic cells, which are light-absorbing dyes in the early stages of development. The cells are more expensive and less efficient than silicon at this time, but they permit ultralightweight application to many surfaces. The concept Smartfortwo, a BASF/Daimler development that was displayed at the 2011 Frankfurt Motor Show, also was featured at the headquarters opening. It has a roof covered with this organic dye film photovoltaic cell design, along with high-performance fiberglass-reinforced plastic wheels and other lightweight technologies.

Some 1300 employees now (eventually rising to 1400) work at the five-story management and training facility, but it does not include an R&D center. BASF's nearest R&D center is in Iselin, NJ, where the company's catalytic converter headquarters are located in BASF Catalysts, the former Engelhard Industries, one of many key acquisitions that has expanded BASF's technical portfolio.

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