

Project Profile



USG Corporate Headquarters

Application/Building Type:

Commercial high-rise

Project Name:

USG Corporate Headquarters

Location:

Chicago, IL

Architect:

The Environments Group



usg.com

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A Focus on Good Design and a Flexible Work Environment Reduces Energy Costs and Environmental Impact for USG Corporation

When USG first began to design their new headquarters space in 2003, the objective was a flexible, healthy and productive workplace for employees, and their focus was good design. Now three years after their move, USG not only met those objectives, but they have also reduced energy use, costs and other environmental impacts. Additionally, the company has registered their headquarters with the hope of being awarded a LEED CI (commercial interiors) Gold space, the U.S. Green Building Council's voluntary rating standard for green design and construction of tenant improvements of new or existing office space.

“We thought about what's best for our employees first, not necessarily green certifications or rating systems,” says USG's Richard Master, AIA, manager, USG Architectural Systems. “But that occupant-first thinking naturally resulted in sustainable benefits and a more environmentally responsible space at a lower cost per square foot than our former headquarters.”

Even though the square footage of the USG space increased from 263,000 in its old location to more than 330,000 at its new headquarters, the company has reduced its energy costs by more than 20 percent per square foot. Each of the 12 floors is electrically sub-metered so the company can track electrical efficiencies by floor.

USG, a building materials company, has consistently led the industry in offering customers innovative products and services used for the construction of high-performing sustainable spaces that require fewer resources to build, operate and maintain. Currently 600 employees work at the USG headquarters, which opened in March 2007 in Chicago's west loop. USG occupies 12 of the glass and steel building's 18 floors.

Energy Efficiency and Indoor Environmental Quality Lead to Sustainability

The sustainable features of the USG headquarters (interior pictured above) include less operational energy and water usage, and superior indoor environmental quality, including increased use of natural light and improved acoustics. Lighting typically accounts for about 45 percent of operational energies of a building, and that's where USG has reduced most of its energy consumption. Nearly all of the USG employees have natural light or daylight views.

USG maximizes natural and indirect light with lower workstation walls and more glass to separate spaces. USG also used their own brands of ceiling panels to provide high light reflectance, which has enabled the company to improve both the quality and quantity of the natural light by distributing more of it throughout the space. Building windows have low-energy glazing with a shade system designed to improve comfort, reduce sun glare by 80 percent and allow for refracted light to penetrate deeper into the space. The shade mats, which employees raise and lower manually, are made with 60 percent recycled content.



For installed lighting, the company uses low-voltage fluorescent offerings. Office occupants control their light levels individually with a choice of two settings that let them choose the light level needed for the task, as well as the option to save energy. These lighting strategies have enabled USG to reduce its lighting power by 27 percent from the Chicago Energy Code, which has stricter requirements than LEED and other industry standards.

Appliances and other equipment account for the second largest energy consumption in office buildings, about 30 percent. USG drastically reduced the amount of equipment used, such as printers, fax machines, scanners and copy machines by nearly 95 percent, going from about 700 pieces to less than 50. That equipment reduction saves USG about \$6 million a year in equipment, energy and related costs. Nearly 100 percent of the company's appliances and equipment are EPA Energy Star rated, including snack machines and cafeteria equipment, and the company's two kitchens use only natural gas.

HVAC cooling, mainly due to occupant-generated heat, is the final major portion of an office's operational energy use. In the new USG headquarters, the company has significantly improved temperature control because it installed 24 fan-powered boxes per floor compared to the 14 to 16 used at the previous headquarters.

Material Selection Key to Indoor Environmental Quality

While temperature control and lighting are also important elements of occupant comfort and indoor environmental quality (IEQ), building material selection is critical. USG selected products that did not contain or produce VOCs (volatile organic compounds) or other emissions after the products were installed.

USG established improved acoustical performance as another IEQ priority. They designed their floor plan to foster more interaction and collaboration by reducing the average square footage per occupant by 36 percent and increasing public spaces by nearly 300 percent. Yet, the new USG headquarters is actually quieter than its former closed-office setup. The company installed its own HALCYON™ CLIMAPLUS™ and MARS™ CLIMAPLUS™ ceiling panels (seen above in the Executive office space) which absorb and block significant amounts of sound, as the centerpiece of their acoustical performance efforts. As a result, USG increased its Noise Reduction Coefficient from 70 percent in its former location to 90 currently.

Above the ceiling, USG installed a state-of-the-art sound-masking system. The company's third sound-control strategy was to surround offices on three sides with a gypsum soffit system that reflects open-area noise back to the sound-absorbing ceiling.



Reduce Waste and Use Regionally Produced Products

USG recycled and diverted nearly 70 percent of construction waste away from landfills during the space's construction. Most of the USG product lines used in the new headquarters, such as the ceiling panels, flooring and wallboard, were transported from nearby manufacturing locations, including the company's East Chicago, Indiana and Walworth, Wis., plants, both within 500 miles from the building site.

"USG offers some of the most environmentally friendly building products available today. Most of our products are high in recycled content and emit no or low levels of VOCs," Master said. "Products such as SHEETROCK® brand gypsum panels are extremely low in embodied energy, which is the amount of energy required to extract, manufacture and transport a building product."

Because USG is the primary tenant in the building, the company demanded several additions and changes be made to the building's design to improve sustainability, including a green roof (pictured above). USG paid for this addition in which more than half of the roof is covered with drought-resistant vegetation. Green roofs help conserve energy and moderate temperature inside buildings while also absorbing storm-water runoff. Inside with low-flow, low-flush lavatories and sinks, USG uses 25 percent less water per person than when it occupied its previous headquarters.

"Going forward, we intend to continue to operate a sustainable headquarters space by staying on track with our original design intent, which is to focus on the needs of our employees while they're at work in our office," says Frank Palermo, CFM, Manager of USG Office Facilities. "The design requirements and solutions we selected for our new space were based on occupant function, but the results have been positive for both our bottom line and environmental footprint."

Jones Lang LaSalle currently manages the building and requires all of their buildings to be registered with the EPA's Energy Star program. Energy Star-qualified facilities meet strict energy performance standards set by the EPA and typically use 25 percent less energy and generate 35 percent fewer greenhouse gas emissions than their peers. Buildings that qualify meet an EPA baseline rating of 75 out of 100. The baseline rating for the building where USG rents was established at 83 in 2008 and has increased to a current rating of 89. That rating puts the building in nearly the top 10 percent of Energy Star-certified buildings in the United States.

Immobilien-Investment GmbH, a German firm, owns the building. The USG interior build-out architect was The Environments Group, now part of Perkins+Will, and DeStefano+Partners was the base building architect.