

Case Study: Genentech

Location: San Francisco, California

Project Type: Commercial Office New Construction

Window Attachment Type: Automated roller shades

Genentech, a biotechnology company with ambitious sustainability goals, set out to design a high-performance office building focused on energy efficiency and indoor environmental quality. With support from the Lawrence Berkeley National Laboratory (LBNL), Genentech, its construction partner Webcor and architecture firm Perkins + Will sought to identify building façade designs that would maximize energy savings and human comfort to achieve LEED Gold and WELL Building certification.



LBNL and Webcor used the FLEXLAB testing facility to identify lighting and shading products and controls that would meet the Genentech project's needs. Testing revealed that daylighting controls reduced lighting energy use by 46 percent for the east facade, 34 percent for the south facade and 35 percent for the west facade over a 30-foot deep perimeter zone between 7 AM and 7 PM local time at the autumn equinox. Occupancy controls would further reduce lighting energy use, though they were not implemented for the test. Based on FLEXLAB's recommendations, Genentech selected Mecho's automated shading system[i] with a three percent open, dark grey shadecloth [ii] for the following reasons[iii]:

- **Automatic movement.** SolarTrac, Mecho's automation system, uses a proactive and reactive methodology. The design team selected the system because it is proactively modeled to deploy shades when occupancy comfort is compromised and raises them as soon as the condition has passed. It simultaneously utilizes roof-mounted radiometers to track real-time sky conditions. Automated systems represent a vast performance improvement over manually-operated shades.
- **Glare reduction.** Automation maximizes daylight while reducing glare.
- **Thermal comfort.** Testing indicated that the shades would meet the ASHRAE 55 thermal comfort threshold[iv] around 80 percent of the time.



- **Energy savings.** The automated roller shades help reduce incoming heat from the sun while also integrating with LED lighting controls to maximize daylighting and reduce artificial lighting.

Genentech's selection of a dark grey shade cloth with a three percent opacity supports the project's performance goals while still enabling outdoor views even when the shades are down.

Results: LBNL conducted a follow-up 30-day study^[v] after commissioning in 2015 to evaluate whether the shades met the performance goals. Researchers confirmed that the shades helped to keep discomfort glare within the "imperceptible glare" range for occupants looking at computer monitors and that thermal conditions near the windows were "slightly cool to comfortable."

Backed by researchers from a distinguished national laboratory, Genentech and Webcor designed a beautiful, sustainable, energy-efficient, and employee-friendly office building overlooking the San Francisco Bay.

"By creating an environment that supports health and wellbeing, we believe our employees will operate at their best. This is good for our business and ultimately good for the people who need our medicines."

- Carla Boragno, Vice President, Site Services, Genentech

^[i] Mecho, SolarTrac Automated-Shade System; ^[ii] LBNL, High Performance Building Mockup in FLEXLAB, 2014.; ^[iii] Mecho 1570, Shadow Grey, 3% open; ^[iv] ASHRAE Standard 55 – Thermal Environmental Conditions for Human Occupancy; ^[v] LBNL, April Burn-in Testing Report, 2015.

Energy Rated. Added Comfort.