

Grass Valley School Solar Project

By Sarah Hall

Overview

The “Science of Light” installation in the main stairwell of the school merges the ancient art of stained glass with cutting edge technology to produce a transformative window wall. It gathers energy from sunlight in a visible and interactive way – as solar energy is gathered a glass spiral located in the stairwell is illuminated.

Goals

In an elementary school specifically designed with various green features the intention in the window wall was to demonstrate renewable energy in an imaginative and beautiful context. By creating a positive school environment we felt this communicated a message of hope. The artwork was designed to delight, to teach, and to inspire. Delight coming from the transformation of sunlight into patterns and colors throughout the stairwell – and visible energy showcased in the LED lighting fixture. Inspiration and the teaching is accomplished through the innovative use of the solar cells embedded into the windows – offering an ongoing lesson in science, ecology, and the positive use of technology.

The first principle of Nature is “**Nature Runs on Sunlight.**” Renewable energy through the sun’s light enhances children’s ability to see connections between themselves and the natural world.

Process

The project was initiated by DOWA Portland architects Barry Deister and Keith Johnson who were designing a public elementary school which showcased green technologies. There was a roof garden, windmills, a community garden and they wanted a highly visible “teaching” project regarding solar. An international collaboration between myself (the artist), the school board, a community group, the architects, a solar engineer and a German glass fabricator brought this project

into reality. After preliminary meetings with all of the above I began design work to encompass the main stairwell of the building. Embedded in two panels are arrays of photovoltaic cells (thin silicon and metal squares that convert light into electricity). The energy is taken directly from the solar cells by the highly visible orange cord to a LED lighting fixture I designed for the stairwell. When the sun is shining the light is on. Christof Erban, an electrical and solar engineer, determined the design of the array. Once the design was finalized, I collaborated with Glasmalerei Peters GmbH in Germany to fabricate the painted and laminated art glass panels. Peter Kaufmann, the US rep at Glasmalerei Peters provided a wonderful link between all of us.

Additional

In addition to the solar cells I used a grid pattern of laminated dichroic glass to enhance reflectivity and colour projection in the stairwell. This creates an ever-changing flood of colour in the main stairwell throughout the day and in every season. Under the main landing a sitting area was made for children, parents and staff to enjoy the transformative colour and light.