

HELIOSHADE

A kinetic Architecture proposal by:
King Tang, Jeremy Katich, Jesi Carson, Jennifer Chung & Jordi Vilanova

The purpose of the Helioshade system is to limit the amount of solar radiation on West and East facing facades while providing unobstructed views and harnessing reflective northern light.

Although static vertical louvers have long been a proven strategy for low angle shading, they are often inadequate, requiring structurally implausible depths or sacrificing views.

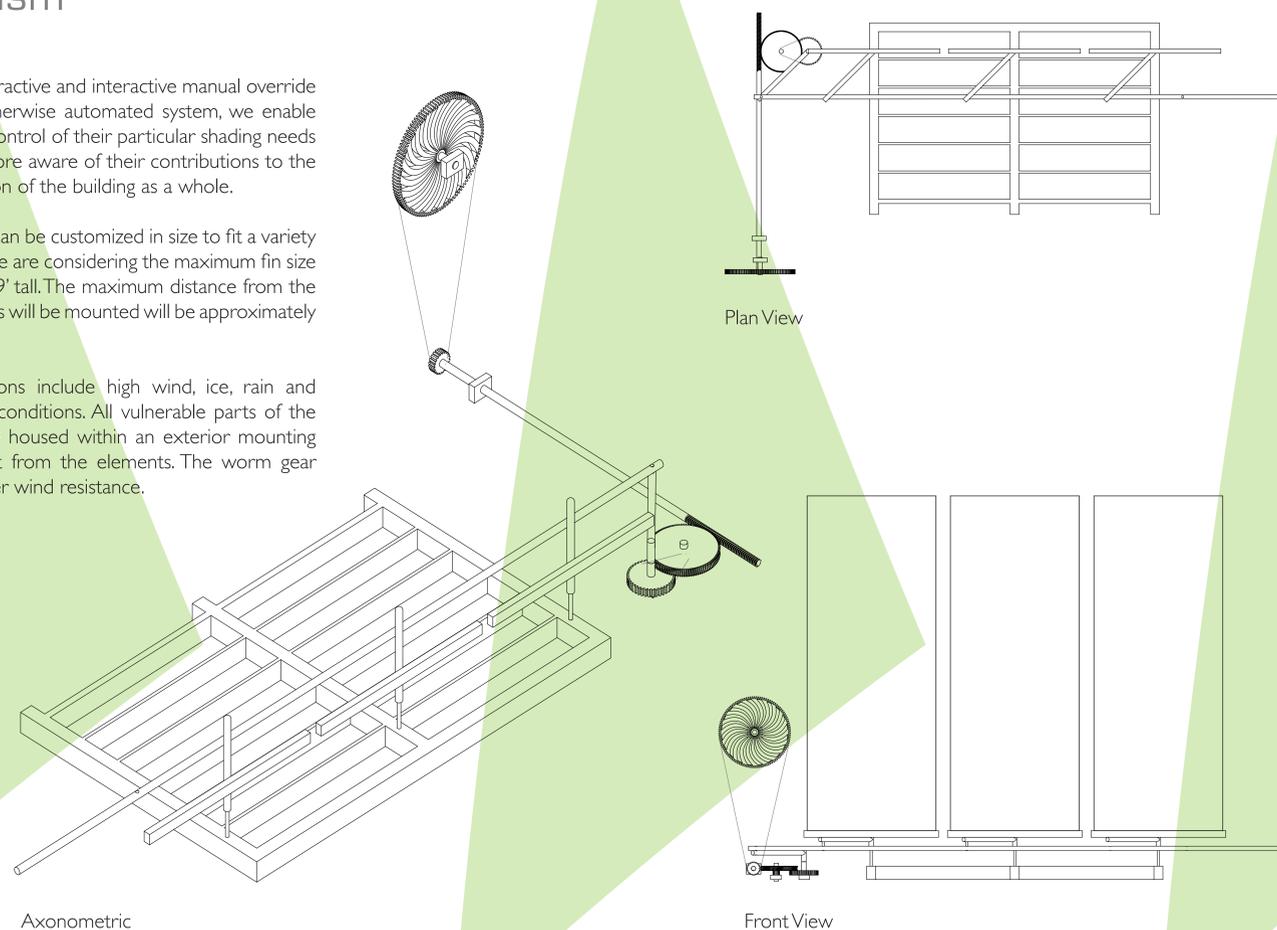


Mechanism

By providing an attractive and interactive manual override option for this otherwise automated system, we enable the user to be in control of their particular shading needs as well as being more aware of their contributions to the energy conservation of the building as a whole.

While the system can be customized in size to fit a variety of building types, we are considering the maximum fin size to be 2'5" wide x 9' tall. The maximum distance from the building that the fins will be mounted will be approximately 2' - 3'.

Other considerations include high wind, ice, rain and extreme weather conditions. All vulnerable parts of the mechanism will be housed within an exterior mounting bracket to protect from the elements. The worm gear drive enables higher wind resistance.



Materials



Transolair Levalor Ripstop



Stainless Steel

In addition to providing unobstructed views from the interior, the exterior grade fabric must also be highly weather resistant with the ability to withstand winds in excess of 80 mph. Building owners may want to capitalize on advertising potential, therefore a fabric which allows for graphic printing is an asset. Flexibility is another factor, as the system will also be subject to repetitive motion.

The metal components of the system can be composed of chromium nickel-plated stainless steel which is highly resistant to corrosion.

Energy Information



A simple display screen alerts the user when solar gain is reaching high levels. The colour threshold display changes from green to yellow to red as it calculates the amount of harmful light based on the time of day, season, geographic location and room size. This data calculation could potentially be powered by the Autodesk Ecotect program.

The system also calculates daily energy savings based on changes in temperature, measured in Kilowatt Hours (kWh). According to BC Hydro, one degree of temperature savings equals approximately 2.2 kWh per day. Therefore, the system can display an energy savings in dollars based on standard BC Hydro rates of 8.78 cents per kWh.

The display also shows the users actual fin position, and suggests a recommended position based on the above information to maximize savings.

Shadow Study

