USF Available Technologies

Technology Transfer Office

Variable Screening

Researchers at the University of South Florida have developed an adaptive solar shading technology that uses the properties of flexible materials to form a screen that changes shape to create openings that vary in size according to desired needs. These novel shades are made from materials such as wood, metal, polymers, textiles, and composites. They have the ability to stretch, bend, and twist to adapt to lighting needs and passive energy strategies, as well as furthering the enrichment of architectural space.

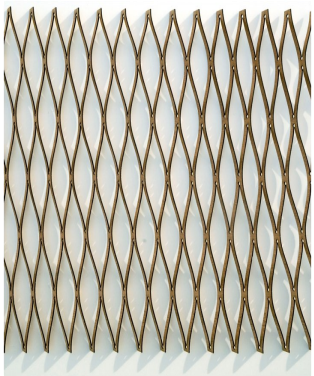
Solar shading is an essential component to good passive energy design for buildings. Conventional solar design has come in the form of static shading devices applied to building openings or in building forms which accommodate such strategies in their basic shape and orientation. New technologies have created adaptive solar shading that responds to lighting conditions, time of day, and the presence of building occupants. Although active shading systems currently exist, they tend to rely solely on mechanical solutions to architectural problems.

The technological basis for the USF invention is the flexural properties of the materials used to manufacture the adaptive shading system. System design and adaptive control allows for the material to change shape resulting in the desired light or fluid passage. In architectural applications it can be used as solar shading for enclosed or unenclosed buildings, an active photovoltaic device, a privacy screen, a light diffuser, an air diffuser, a wind screen, a protective barrier, or decoration.

ADVANTAGES:

- **Controlled passage of light, air, and fluids**
- **Allows windows to provide diffuse light while blocking direct light**
- **Protects from the damaging effects of wind**

Solar Shade which can Stretch, Bend, and Twist to Adapt to Lighting Needs and Passive Energy Strategies



Alternating Slitting Concept with Keyed Ends in a Laser Cut Laminated Cherry Veneer Prototype

(L) Screen Un-Stretched, (R) Screen Partially Stretched

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