Solar lighting for rooms without windows

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The paper will describe a research project evaluating consumer reaction of a new product designed to pipe sunlight into rooms lacking direct access to natural light such as basements, internal spaces, and dark hallways. The product, still in prototype, has three primary components; a sunlight collector fixed to the roof, flexible light guides designed to navigate wall and ceiling cavities, and internal light fittings. The product is novel in that it employs advanced nanotechnology to capture concentrated solar energy in coloured fluorescent sheets. The light can be transferred, sans heat, via optic cable to a point deep within the building. Between1500 to 1000 lumens can be delivered in days of bright sunlight depending on cable length.

Failure of sustainable technologies in the past can be due to the lack of understanding, and accounting for, subjective reaction to the unfamiliar. The research examined subjective consumer reaction to the system in a mock-up of a windowless study. The results were then compared to another set of subjects viewing a digital media presentation of the same situation. The purpose of this comparison was to evaluate the efficacy of a cost effective alternative to physical prototype testing for eliciting user choices and responses.

The outcomes of the study indicated a high level of acceptance of natural light in such situations. An interesting observation was an indication that consumers may prefer light fittings that were dissimilar to conventional fittings. It is possible that the semiotics of a traditional light fitting encourage subjects to make direct comparisons with artificial light rather than say sunlight via a window. Data comparing the virtual and physical test situations will be available mid 2007.

The paper will be accompanied by images of the solar lighting product, the test mock-up, and the virtual simulation.

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