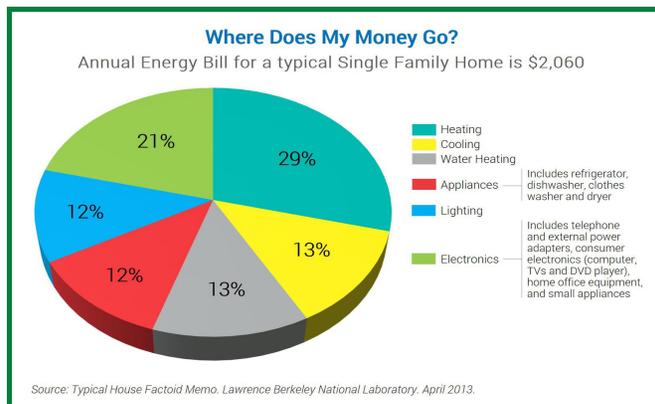


Electrochromic Windows: Return on Investment Analysis

In recent years, sustainability in construction has become a topic of undeniable interest. With sustainability certifications becoming more prominent and desirable, members of the construction industry have begun to seek alternatives for standard systems to keep up with market trends. One of the main issues that the construction industry faces is accessibility of technology. While there are new products and technologies being released frequently, members of the construction industry lack knowledge on the specific details and implications of working with newer systems. One piece of technology that was recently introduced is electrochromic glass, or smart glass. Electrochromic windows analyze sunlight and heat exposure in their surrounding environment and change their opacity accordingly to better utilize the natural environment to increase indoor environmental quality. This report will explore the advantages, accessibility, and feasibility of utilizing electrochromic windows, ultimately concluding in a Return on Investment (ROI) analysis. There currently is limited data on the usage and/or effectiveness of this technology as it is relatively new, having only appeared in the industry 12 years ago. Through material data analysis and conducting an interview with a smart glass supplier, the current effectiveness and implications of electrochromic technology have been analyzed in this report.

Key Words: Sustainability, Return on Investment, Technology, Glazing, Indoor Environmental Quality



The graphic on the left depicts percentages of money spent on annual energy bills for a single family home in Berkeley, CA. Note that heating, cooling, and lighting make up more than 50% of energy bill spending. Electrochromic systems have the ability to reduce energy consumption in these three sectors by better utilizing natural light and heat.

https://www.energystar.gov/products/where_does_my_money_go

Significance

Electrochromic glass is a relatively new technology in the construction industry. Due to this, the industry does not have much experience in using the product, or its effectiveness after installation. Electrochromic glass is a fantastic alternative to standard glazing systems that has the ability to increase indoor environmental quality while reducing building energy consumption. But is the technology worth the extra cost?

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Methodology

- Conduct interview with smart glass supplier to obtain product data and details.
- Complete a Return on Investment Analysis of electrochromic products.
- Give an, objective, analysis of electrochromic technology's effectiveness and current market feasibility.



Screen Capture taken from Halio Glass website. Note the various levels of tinting on the glass.
<https://halioinc.com/>

Research Points

- Pricing of electrochromic systems and the Return on Investment for utilization of newer technology.
- Importance of sustainability in the construction industry, and how its growing role plays into building design.
- Feasibility of electrochromic products and the current state of the technology's effectiveness.