

VG SmartGlass
World's Smartest Glass System



SOLVING THE PROBLEM

VG SmartGlass is developing a film-based light and heat control window insert called INVISIBLIND that could reduce the energy required to light and cool perimeter spaces by 30% compared with spaces without heat and glare control. A potential advantage of INVISIBLIND is a 75% cost reduction relative to other solutions on the market, along with ease of retrofit into existing buildings. In addition, the technology offers other value propositions in the privacy and window branding markets.

THE IMPACT:

Heating, cooling, and lighting represent the three largest energy end uses in commercial buildings. Next-generation windows and building envelope technologies can provide substantial energy savings, but current solutions such as electrochromic glass face barriers to adoption, notably high cost. There is a need for cost-effective commercial building window technologies to provide tunable heat control while ensuring visual comfort for occupants.

HOW IN² IS HELPING:

VG SmartGlass requested design assistance to optimize INVISIBLIND performance, and test and validate the product through demonstration. Additionally, the company sought guidance integrating their system with commercial building facades and lighting control systems. NREL support took the form of a product feasibility assessment. First, simulation using Radiance and OpenStudio software determined the energy impact potential of the current product version across a variety of buildings types and climates. Guidance on strategic applications given future design improvements was provided. In parallel, the NREL campus served as a demonstration location for the INVISIBLIND unit, enabling VG SmartGlass to evaluate product fabrication, installation, and ongoing maintenance in multiple window types and for different use cases.

TIER 1: Bench Scale

- Concept development stage
- Develop plans for prototyping & testing
- 3 – 5 years to market

TIER 2: Prototype

- Available for testing & validation
- Plans for development of final product
- Less than 2 years to market

TIER 3: Commercially Ready

- Models available in limited quantity
- Integrated demonstration
- Less than 18 months to market testing

ABOUT THE IN² PROGRAM

IN² is a technology incubator that fosters and accelerates early stage technology companies that provide scalable solutions to reduce the energy impact of buildings. Through a \$30 million program funded by the Wells Fargo Foundation and co-administered by the U.S. Department of Energy's National Renewable Energy Laboratory (NREL), sustainable building technologies are able to evolve and develop, contributing to the overall goal of a Smart and Connected Community that uses energy, water and other resources efficiently, reducing the negative impact on the environment.