

# NYSP2I Performs Greenhouse Gas Evaluation of SuperClean Glass' Solar Panel Cleaning Technology



## SuperClean Glass Inc.

SuperClean Glass Inc. (SCG) is located in Stony Brook, New York and is a member of Stony Brook University's Clean Energy Business Incubator Program (CEBIP). SCG has created a solar panel cleaning technology that aims to increase solar panel operating efficiency. Their patent-pending, self-cleaning technology utilizes an Electro-Dynamic Shield (EDS) to remove dust particles from solar panels, recovering up to 98% of lost energy due to dust, from the panels. To remove dust from the panels, a voltage is applied to the transparent electrodes deposited on the surface of the solar panel, a strong electric field charges the dust particles and repels them away from the panels.

## Challenge

SCG claims their EDS solar panel cleaning technology would have significant energy and GHG savings compared to a conventional manual cleaning approach. SCG sought to quantify the energy use and GHG impact of their technology compared to the manual cleaning method.

## Solutions

SCG requested the assistance of New York State Pollution Prevention Institute (NYSP2I) to analyze the energy use and greenhouse gas (GHG) impact of SCG's technology compared to the baseline cleaning method. The baseline process involved transport of processed water to and around solar panels while using automated equipment to manually clean each panel. NYSP2I conducted a high level comparative analysis of the energy use and GHG impact of the raw material extraction, manufacturing, and the product use phases of both SCG's technology and the manual cleaning process.

## Results

NYSP2I analyzed the energy and GHG impact associated with cleaning one

## Challenge

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## Solution

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## Results

- SCG's technology has the potential to reduce energy and GHG impacts as compared to the baseline by 98.9% and 99.9%, respectively.

square meter of solar panel for one year, for the SCG system as compared to the baseline. The results of the high level analysis suggest:

- SCG Energy Use: 8E-3 kWh/m<sup>2</sup>/year
- SCG GHG impact: 1.20E-7 kg CO<sub>2</sub>e/m<sup>2</sup>/year

By comparing these results to the estimated energy and GHG impacts of the baseline technology, NYSP2I found that SCG's technology has the potential to reduce energy and GHG impacts as compared to the baseline by 98.9% and 99.9%, respectively.

The estimated GHG emission impacts calculated by NYSP2I at RIT are based on information and claims provided to NYSP2I by SCG relative to their product and the baseline technology. It should be noted that this analysis considered main aspects of the raw material extraction, manufacturing and use life cycles phases. The end-of-life life cycle was not considered. Moving forward, SCG may consider a more comprehensive life cycle assessment to validate energy, GHG and other environmental impacts.

*"Working with P2I was really delightful and the final report was truly outstanding in its quality and thoughtfulness."*

**- Dr. Alex Orlov**

## SuperClean Glass Inc.

Dr. Alex Orlov  
Founder and CEO  
25 Health Sciences Drive #235  
Stony Brook, New York 11790-3350  
Phone: (631) 356-4675  
Email: ceo.supercleanglass@gmail.com

## Partners



## For more information please contact us:

585-475-2512  
nysp2i.rit.edu  
nysp2i@rit.edu

111 Lomb Memorial Drive, Bldg 78  
Rochester, NY 14623

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