SageGlass®
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SageGlass Algorithm Overview

What are Algorithms?

The SageGlass® system uses proprietary algorithms to determine the optimal tint states for windows, to achieve our customers' targets for daylighting, glare control, energy savings, and more. We think of algorithms as the "intelligence" of the system housed in SageGlass Maestro®.

What Types of Algorithms are Available?

SageGlass uses different algorithms to achieve different outcomes:

Glare Control

This algorithm adjusts the glass to the full-tint state to mitigate direct glare for building occupants. It's primarily used when the sun angle is low, but may be triggered at other times depending on the "glare box."

Daylighting & Energy Optimization

This is the default algorithm when not in a glare-risk period. It optimizes the interior light level, typically at the desk surface level.

Color Rendering

This algorithm provides vivid, true-to-life color rendering. This algorithm is best experienced with the SageGlass Harmony® product.

What Inputs do the Algorithms Consider?

SageGlass algorithms look at these and other factors to determine the tint state of a window:

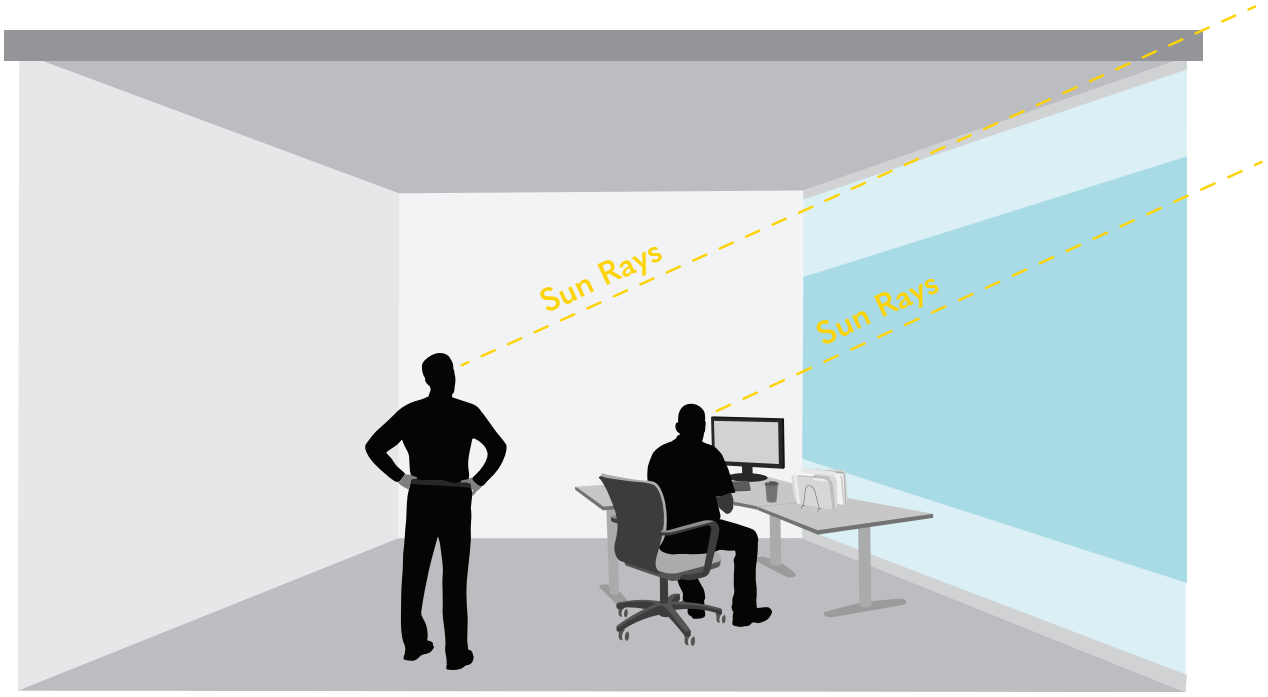
Input	Factor(s)	Source
Sun Position / Angle	Building Latitude / Longitude	Entered
	Season	Almanac
	Time of Day	Almanac
Sky Condition	Lux (light intensity)	Rooftop Sky Sensor
Exterior Light Level	N/A	Rooftop Sky Sensor Façade Sensor
Window Details	N/A	Entered
Occupant Position (Glare Box)	Occupant Distance from Window	Entered
	Occupant Orientation	Entered
	Occupant Eye Height	Entered

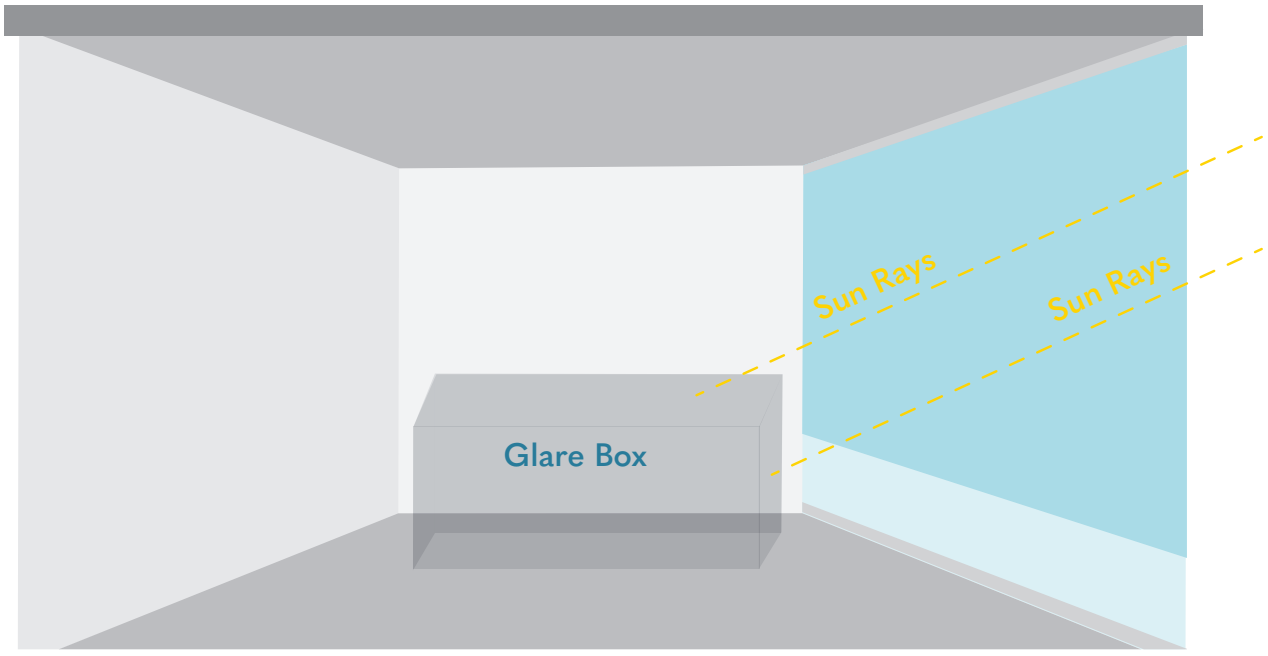
How are the Algorithms Initially Set?

As part of the commissioning process, your SageGlass Field Operations team will enter site-specific spatial information into the system. The algorithms use this information, and the windows respond to their environment—that's what makes this glass "smart."

Different spaces have different lighting needs. For example, a museum might need dimmer lighting conditions to provide a more comfortable viewing environment for patrons. In contrast, an office or education environment might need brighter conditions to support alertness for workers or students.

The SageGlass team will also work with you to determine where occupants will be located within your space. We enter that information into the SageGlass system as the "glare box:" the space that represents the building occupants' viewpoints (both seated and standing), which needs to be protected from direct sunlight glare.





Can the Algorithms be Adjusted?

We know that comfort isn't one-size-fits-all. At the initial setup, we'll work with you to configure your SageGlass system and create a lighting environment that fits your planned use, and that most occupants find comfortable. Of course, plans change, and that's okay. After you've had an opportunity to experience the system in real time, SageGlass can be adjusted further—whether you want to harvest more daylight, block more heat gain, or prioritize energy savings.

Your SageGlass windows can also be temporarily adjusted by individual occupants, overriding the system for a set period of time. Maybe a conference room is normally set up for greater daylight harvesting, but you want to show a presentation. By adjusting the window tint of specific zones, a room can be brought to its darkest state (1% sunlight entering), creating a comfortable viewing environment for sharing presentations. Occupants can make those override changes via the SageGlass wall touch panel (installed in a convenient common area) or via the mobile application connected to the on-site SageGlass system. Additionally, a building management system may be used to provide additional control options.

How do Multiple Algorithms work Together?

Some SageGlass algorithms control glare, by blocking excessive sunlight. Some algorithms maximize energy savings, by harvesting light and heat when it's cold, or blocking heat when it's hot. Some algorithms have other functions to maximize comfort. With so many algorithms—some that work toward conflicting outcomes—how do they work together?

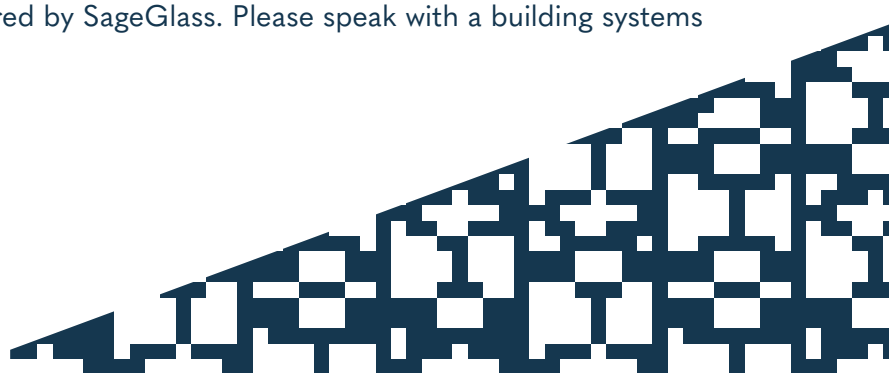
You and your SageGlass Field Operations team will work together to prioritize the algorithms in the order that makes sense for your space. In general, SageGlass prioritizes algorithms like this:

1. Building management system (BMS)/occupant override
2. Glare control
3. Daylighting and energy optimization
4. Color rendering

How does SageGlass work with a Building Management System?

SageGlass communicates with building management systems (BMS) via the BACnet protocol. Ask your SageGlass team for a BACnet Performance Implementation Conformance Statement (PICS), which provides details.

SageGlass supports integration with BMS by providing BACnet PICS. However, actual system integration work is a much broader function and not offered by SageGlass. Please speak with a building systems integrator for further details.



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SageGlass® is the world leader in smart glass. Our electrochromic glass tints and clears automatically to offer all the benefits of glass without the downsides of blinds and shades. Design gorgeous views that optimize daylight and comfort without excessive heat or glare. SageGlass solutions also improve building performance and reduce energy use. As a Saint-Gobain company, SageGlass is part of a group that spans 70 countries and 350 years of building science expertise.

To learn more about our product portfolio visit:
sageglass.com/products

Contact your local SageGlass representative at:
sageglass.com/contact

sageglass.com

Why SageGlass

30+
Years

1,500+
Installations

27+
Countries

MKT-341.0

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