



SageGlass®

DARE TO BE DYNAMIC:
SUSTAINABILITY IS COOL!


SAINT-GOBAIN

WORLD'S MOST INNOVATIVE GLASS

GLOBAL REACH AND LOCAL FOCUS



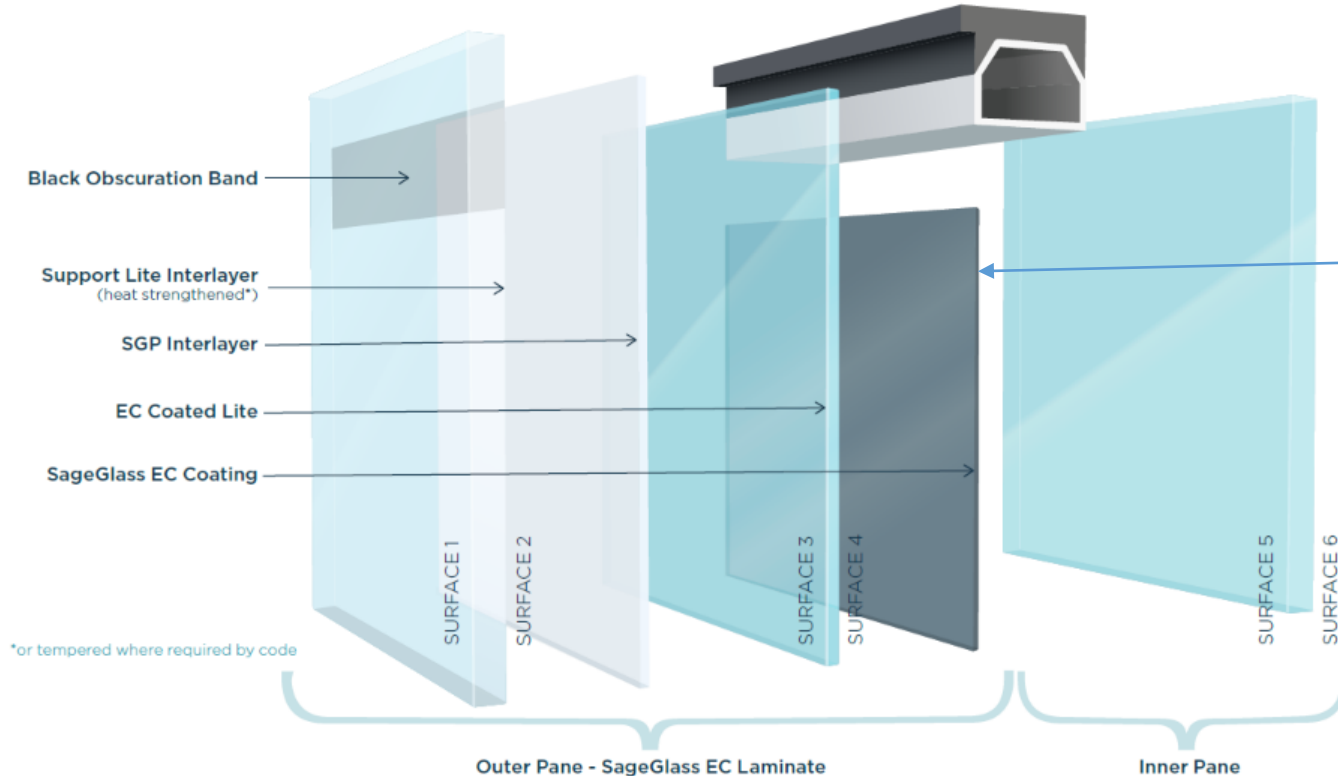
SageGlass®

350+ year heritage
#2 glass producer globally
180K team members in 67 countries

>600 patents
>1,000 projects
Installed in 27 countries,
and growing!

A SageGlass® IGU

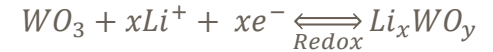
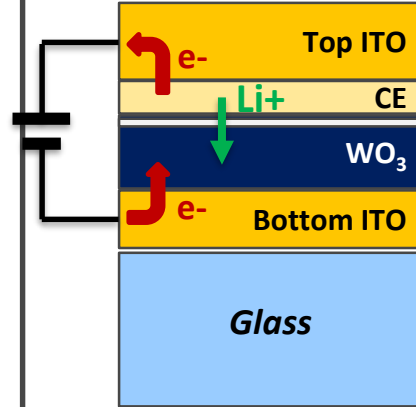
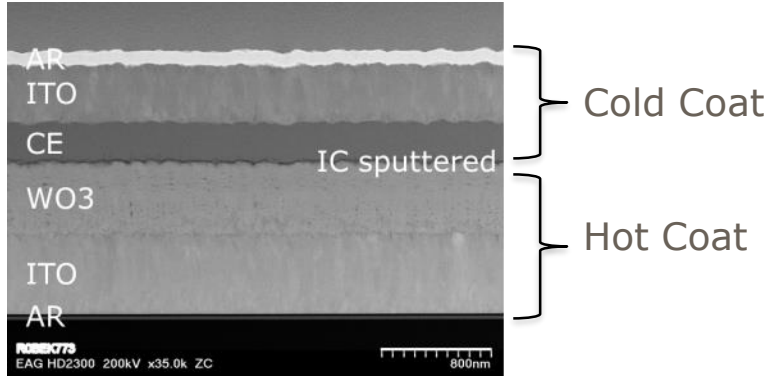
Made like other IGUs, but with a twist



The “special” EC coating comes courtesy of our 2 custom designed Buhler Coaters!

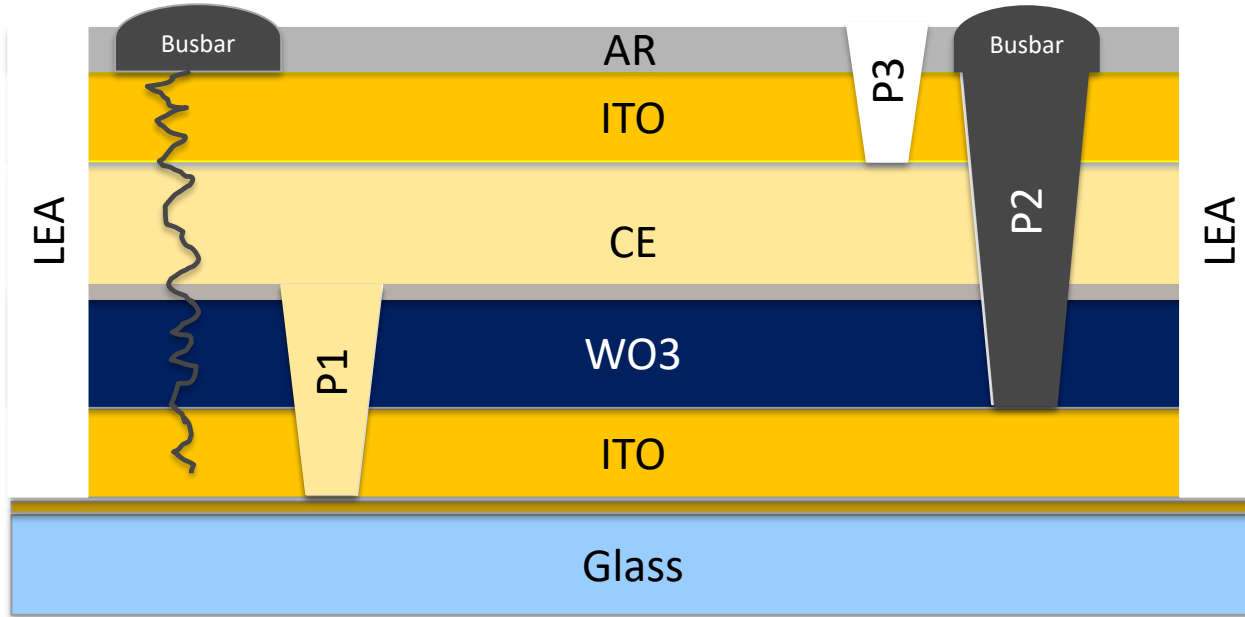
SageGlass®: How it works.

Cross-sectional SEM image



- The layers are deposited onto 2.2mm float glass using our Buhler **vertical magnetron sputtering** process
- To **tint**, we apply a positive voltage to the Stack that drives lithium ions into the WO_3 cathode
- To **clear**, we apply a negative voltage, moving the lithium back into the CE
- The **Reaction is reversible and very stable** thanks to the all-inorganic coating (# cycles >> 10.000)

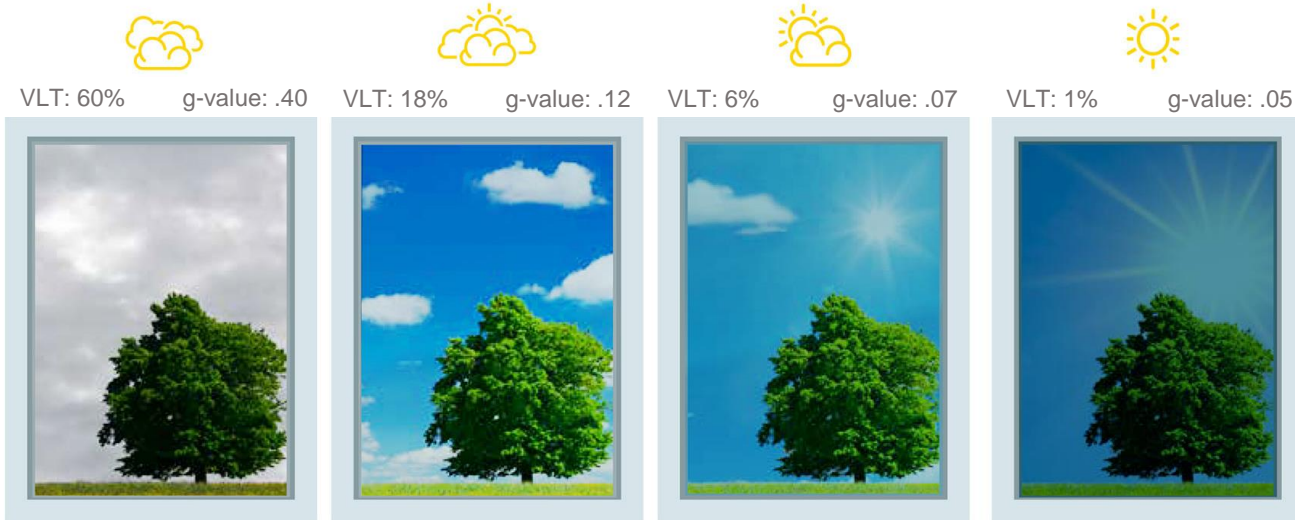
SageGlass®: Electrically connecting to the Stack



- **Laser scribes and busbars** are used to connect to the top and bottom ITO
- The **busbar material penetrates** the stack therefore our P1 scribe requires a **vacuum break** between the WO₃ and CE deposition

MULTIPLE TINT STATES

For Optimum Occupant Comfort

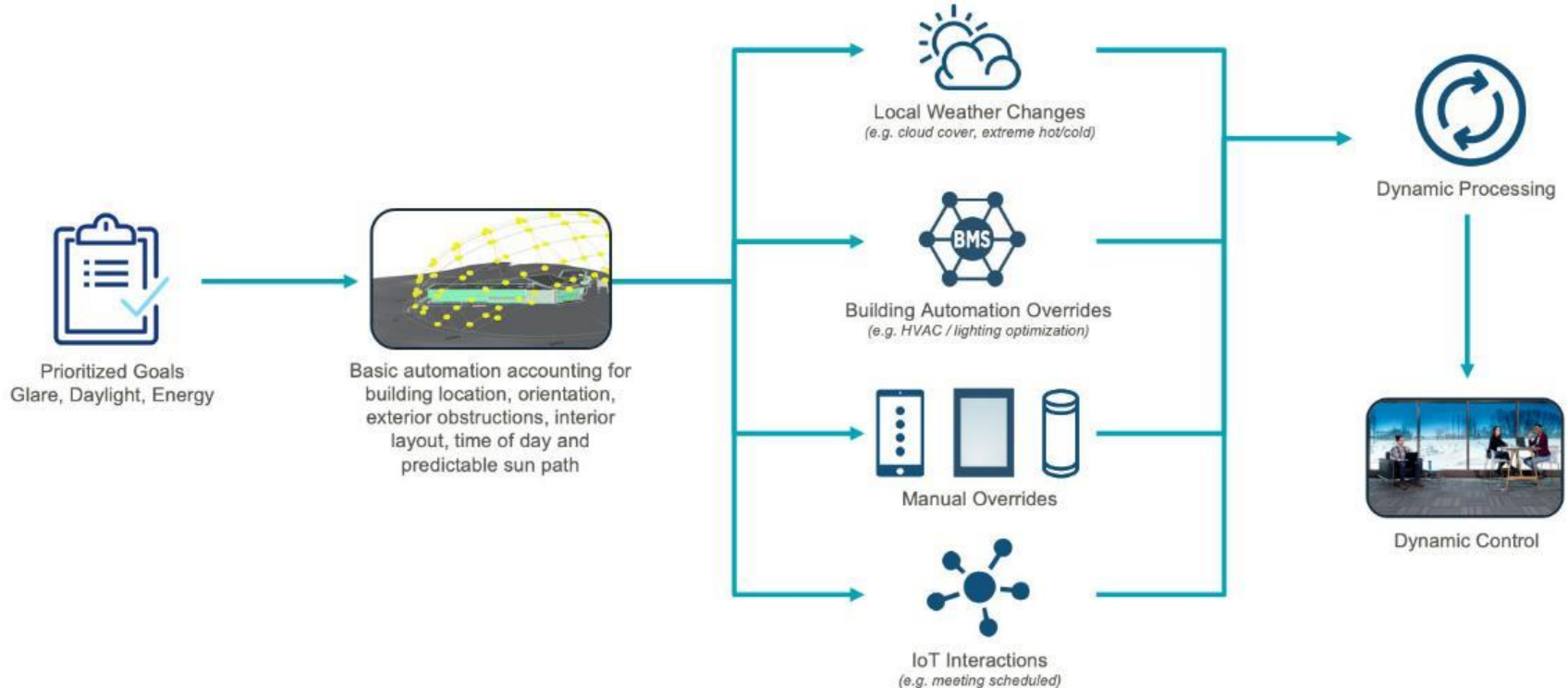


Electrochromic glass tint levels are a dynamic response to sunlight, tinting when needed to optimize daylight and energy performance and keeping occupants visually and thermally comfortable.

- Gets darker when it's bright, lighter when it's dark
- Different tint levels ranging from moderate to severe glare control
- Maintains a “daylight set-point” just like a thermostat maintains a “temperature set-point”

NOT JUST GLASS THAT TINTS...

...an Intelligent Glazing System

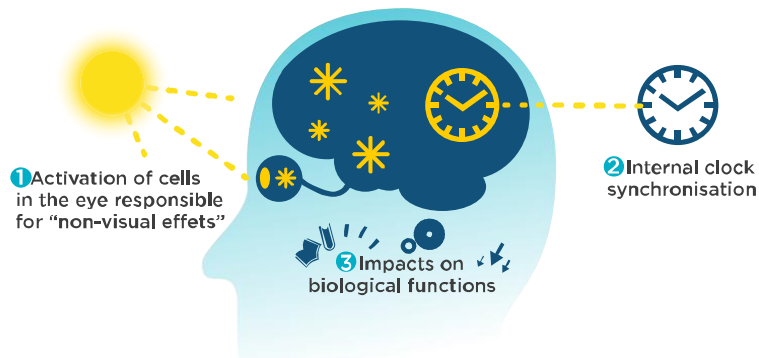


ENABLING COMFORT & PRODUCTIVITY

People Benefits Enabled by SageGlass®

WHY DAYLIGHT?

Daylight is dynamic and has the richest light spectrum:
better adapted to human eye



WHY OUTDOOR VIEWS?



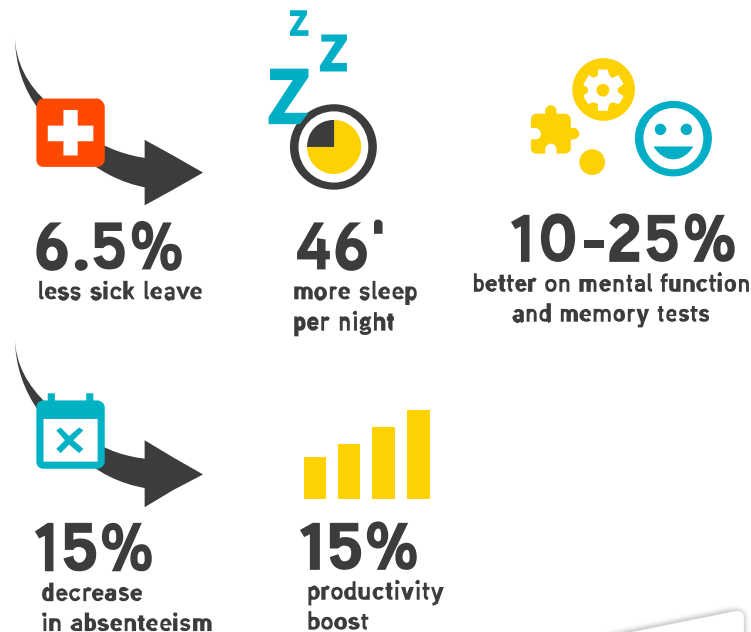
RELAX
THE EYES



SATISFY OUR NEED
FOR ESCAPE



STAY CONNECTED
TO THE WORLD



PEOPLE BENEFITS

“Real Data”:

Glatt GmbH HQ Occupant Survey

- 50%** said SageGlass® **SIGNIFICANTLY** enhances general well-being
- 80%** said SageGlass® **ENHANCES** **satisfaction** across *all* criteria
- 91%** said SageGlass® **ENHANCES** **ability** to concentrate

SUSTAINABILITY

Energy Savings enabled by SageGlass®

- Reduce overall energy by **up to 20%**
- Reduces peak energy **by 26%**
 - More on this later...
- **HVAC downsizing** for Capex savings
- Fully tinted, SageGlass® **blocks 91% of solar heat;**
 - high-performance conventional glass rarely blocks more than 75%



Net-Zero and Passive House Buildings with SageGlass®



SUSTAINABILITY

City Gateway Net-Zero Project

SageGlass® VS. Standard Glazing:

- Annual energy savings: 17%
- Peak energy reduction: 24%
- HVAC downsizing: 20% or 70 tons of cooling

The SageGlass logo is a yellow square with the text "SageGlass" in black. The background of the entire slide features a blue-toned cityscape at night, overlaid with a network of white dots and lines. Various circular icons are scattered throughout: a Wi-Fi symbol in the upper left, an airplane in the upper center, a speech bubble in the upper right, a smartphone in the middle right, a computer monitor in the lower left, and an envelope in the lower right. Concentric circles resembling signal waves are also present.

SageGlass®

All very COOL, but...
...how might SageGlass®
impact the “Future of Mobility”?

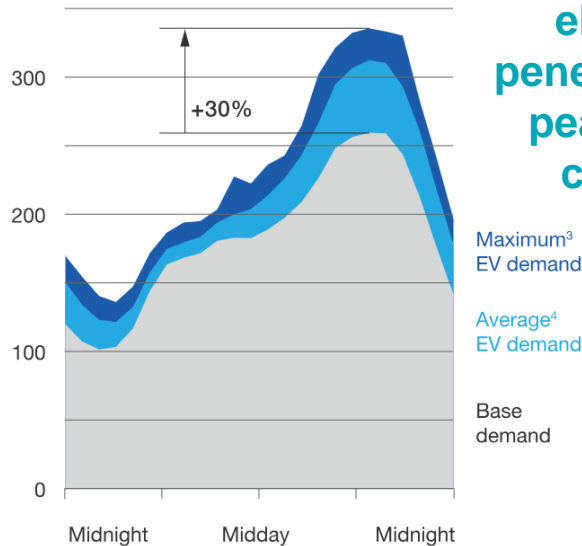
The Saint-Gobain logo is located in the bottom right corner. It consists of a stylized red and blue line graph above the text "SAINT-GOBAIN" in black capital letters.

SAINT-GOBAIN

One example: Electric Vehicles are cool but..will create Peak Load Problems

- Peak load is already a problem
- 25% EV penetration could increase peak demand by 30%
- Our EV future could be a net negative for the environment if we don't address peak demand!

Feeder circuit load,¹ 150 homes with 2 vehicles per household,² with 25% electric-vehicle (EV) penetration, kilowatts



¹Load shape for a typical feeder with 150 houses at 8 megawatt-hours per year; example shown for Midwestern US on typical September day.

²The average US household owns 2.1 vehicles.

³Statistically expected maximum EV demand—"peak day."

⁴Statistically expected average EV demand—"typical day."

CLOSING

- SageGlass® delivers healthier and more sustainable built environments
- The Future of Mobility is closely linked to the Future of Buildings
- Smart solutions for peak management are needed to ensure the Future of Mobility is a sustainable (and COOL) one

The SageGlass logo is a yellow square with a subtle pattern of small white dots. The text "SageGlass" is written in a white, sans-serif font, with a registered trademark symbol (®) at the end.

SageGlass®

The background of the slide is a photograph of a modern, open-plan office. Several people are seated at long desks, working on computers. The office has large windows with black frames, letting in natural light. A large potted plant is visible in the foreground on the left. The overall atmosphere is professional and collaborative.

THANK YOU

[sageglass.com](https://www.sageglass.com)

The Saint-Gobain logo features a stylized graphic of a building or structure made of colorful lines (red, orange, yellow, green, blue) above the text "SAINT-GOBAIN" in a blue, sans-serif font.

SAINT-GOBAIN