


Privetek®

# EVERYWHERE YOU CAN USE SMART GLASS

The Complete Applications Handbook

form ®

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# INTRODUCTION

Smart Glass, also known as privacy glass, switchable glass and Light Control Glass (LCG), is a revolutionary technology growing in demand across modern building designs. With the push of a button or the wave of a hand, Smart Glass changes from opaque to varying degrees of transparent within milliseconds. Recognized for its ability to provide the option for instant privacy or openness and act as a contemporary shading or light control solution, Smart Glass is now used in innumerable applications in architecture and interior design, including offices, hotels, retail stores, hospitals, luxury apartments complexes and high-end homes.



## How Does Smart Glass Work?

Smart Glass works by altering the amount of light transmitted through the glass so that it can appear transparent, translucent or opaque by utilizing a low-voltage electrical current that arranges molecules in a layer of liquid crystal (LC) particles or suspended particle devices (SPD). When the current is turned on, the liquid crystal molecules form a pattern that make the glass transparent allowing light to pass through. When it is turned off, those molecules return to a random pattern, causing the light to diffuse and the glass to become opaque. As a result, the glass changes appearance within a matter of seconds, instantly transforming a space from open to private.

## Where is Smart Glass Used?

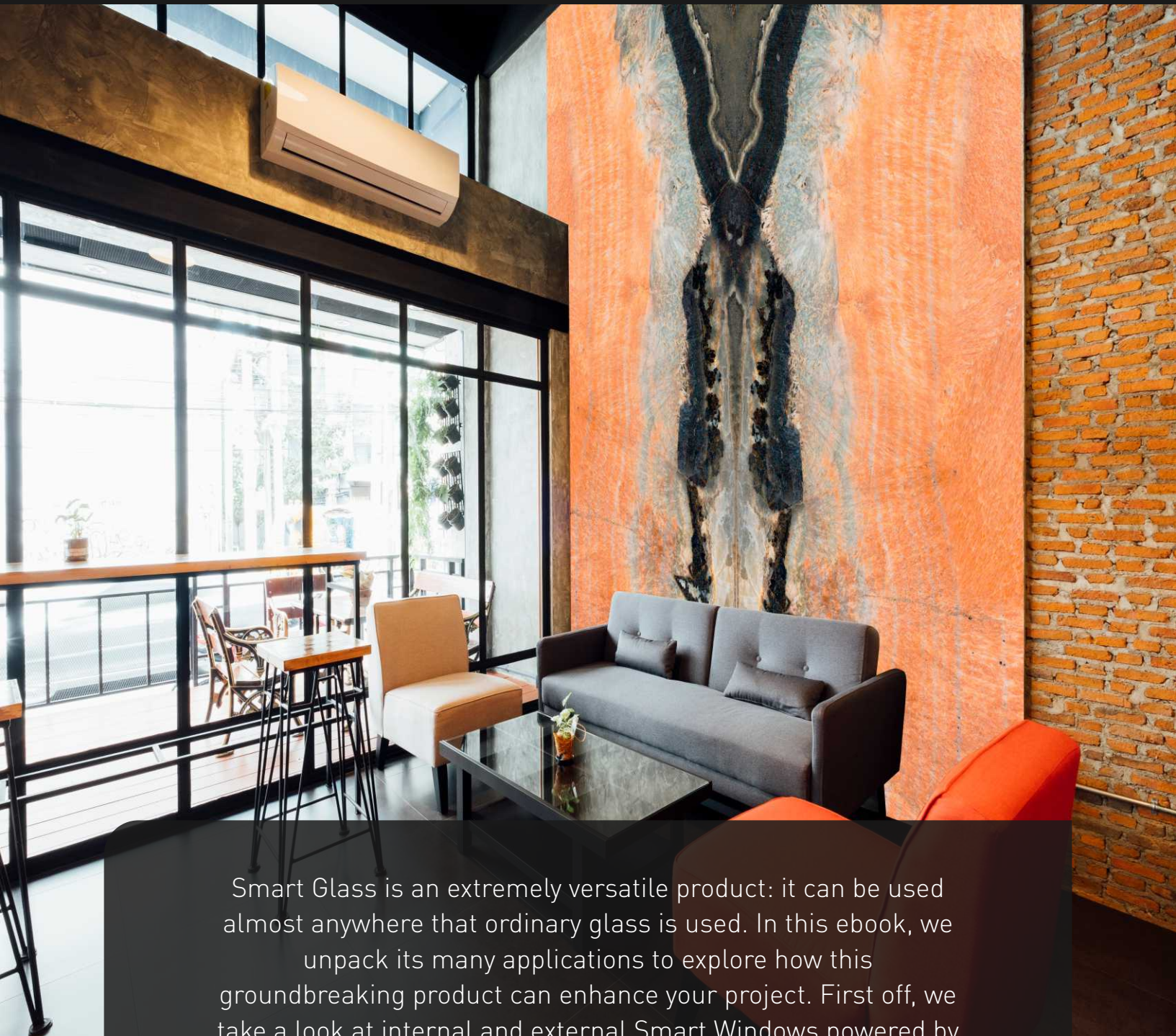
One of the most remarkable qualities of Smart Glass is its versatility: it can be used almost anywhere that ordinary glass is used. As Smart Glass technology continues to develop, so do its applications. This handbook will help you learn more about this groundbreaking product and the many ways in which it can be a valuable resource for your project, whether you're an architect, interior designer, general contractor or end user.

In this eBook, we will discuss the following Smart Glass applications:

- Windows
- Doors
- Bathroom Enclosures
- Skylights
- Projection Screens
- Office Partitions and Dividers
- Whiteboards
- Hospital Partitions and Surgery/Patient Rooms
- Retail Shop Windows and Advertising
- Home Offices



# CHAPTER 1: Smart Glass Windows



Smart Glass is an extremely versatile product: it can be used almost anywhere that ordinary glass is used. In this ebook, we unpack its many applications to explore how this groundbreaking product can enhance your project. First off, we take a look at internal and external Smart Windows powered by Smart Glass technology.



## Smart Window Design

The advantage of Smart Windows is that they dynamically change opacity to provide outdoor views, create privacy and enhance comfort. Smart Windows, powered by Smart Glass technology, provide unparalleled control of light and energy use while eliminating the need for traditional window treatments such as blinds, shades or shutters.

The terms "smart windows," "switchable windows" and "switchable smart glass windows" can all refer to PDLC switchable glass installed in a window application. PDLC, or polymer-dispersed liquid crystals, can be engineered into windows to provide both privacy and energy efficiency. PDLC has the ability to change its transparency when electricity is applied by a switch, light sensor or building automation system.

Smart windows are extremely versatile, offering an effective solution to a wide range of needs and presenting a world of possibilities to create interiors that are both functional and attractive. Here are some examples:

## Smart Windows: Doors, Internal & External Applications

### Windows In Doors

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Smart Windows can be used as vision panels, the small window in a door which allows people to look through without opening the door. They are generally used in commercial spaces for safety, particularly in the event of a fire, making them ideal for offices, hospitals and schools. The use of Smart Glass transforms a door window panel into a means of creating privacy at the push of a button. Likewise, someone wanting to enter a room can simply press the button and peer in without interrupting its occupants, which can be especially useful in healthcare settings.

### External Windows

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Produced so that the embedded PDLC layer is completely protected from the external elements such as wind, rain and moisture, smart outside windows offer increased insulation and UV protection along with IR reflection, all while allowing flexibility for views or privacy depending upon need. Smart glass windows can be incorporated into IGU units.

### Internal Windows

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There are many practical and aesthetic reasons to incorporate interior windows in design, whether in an office, hospital or luxury residential environment. While the primary reason is to bring more natural light to a room, particularly one that does not have any exterior windows, they also serve to create more air circulation, make a room appear more spacious and provide a dynamic decorative look. They may be used as an additional feature of a partition, or to bring more light and a sense of space to a staircase area, which is often dark and narrow. But the incorporation of windows into an interior space presents a privacy issue, which is easily solved with the use of switchable privacy glass.





## Why Smart Glass is a Better Choice for Windows

There are many reasons to incorporate Smart Glass technology into your project, whether it's an office or other commercial space, retail store, health care facility, hotel or high-end home. The primary advantage is the ability to instantly transform the space, creating privacy without the need for blinds or curtains. Smart Glass also creates a sleek, modern aesthetic and is easy to clean and maintain. In addition, its transmittance, or level of transparency, is adjustable, so you can create the ambience that suits your needs.

There are other advantages as well:

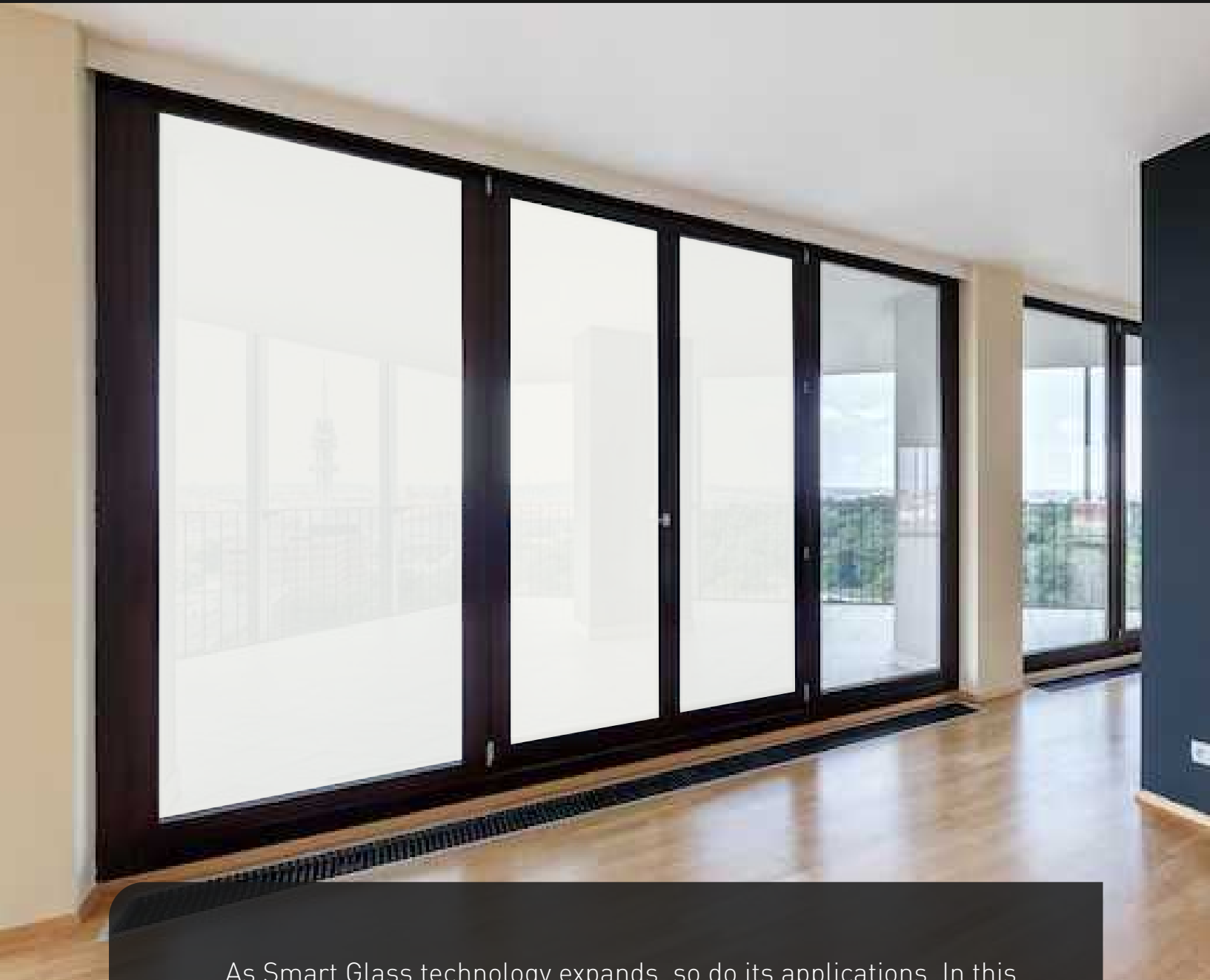
- Immediate access to panoramic views
- Enhanced Security
- Glare Reduction
- Efficient Use of Space in the Built Environment
- Reduction of Carbon Footprint
- Longevity
- Blocks Damaging UV Rays
- Easily customizable to accommodate many shapes and sizes

### The Bottom Line

Dynamic and multi-functional, Smart Glass windows are an excellent choice in virtually every type of structure. In addition to its aesthetic appeal, privacy glass can solve a multitude of design issues, especially balancing privacy with the biophilic need for access to views of nature. Smart, practical, maintenance free and easily customizable, switchable glass windows for the interior or exterior of any space is an investment to be proud of.

Smart Glass is a rapidly emerging technology impacting every built environment. It's possible applications are growing day by day, but there are common ones it pays to know about. Next in this ebook we look at Smart Glass doors.

## CHAPTER 2: Smart Glass Doors



As Smart Glass technology expands, so do its applications. In this ebook, we unpack the many ways this groundbreaking product enhances the spaces we spend our time most. Last chapter, we looked at Smart Glass Windows. In this chapter, we'll explore Smart Glass Doors.

Smart Glass technology (also known as switchable privacy glass) allows for a light filled space while in private mode making it an ideal choice for both interior and exterior glass doors. It can be fashioned into a wide array of sizes and shapes to fit any type of door, from sliding doors in glass office partitions to the front doors of ultra luxury homes to door inserts, windows and panels in commercial and industrial buildings.

Perhaps most importantly, doors fitted with Smart Glass technology solve the age-old downfall of glass doors – they don't allow for privacy. More traditional privacy applications such as fabric shutters and curtains get stuck and are difficult to maintain. They are also an inconvenience as rolling shades before opening a door is time consuming. As we move toward technologically-advanced building and spaces, Smart Glass Doors are set to become the door of choice for architects and interior designers.





## Smart Glass Interior Doors

While it's possible to construct doors entirely from glass, glass doors are also usually combined with metal or wood frames, for visual, safety, and functional purposes. With the addition of Smart Glass doors, fixed glass walls or glass partitions can become flexible openings, free from visual barriers, allowing for a fully uniform appearance. When used as a stand alone door and not part of a full glass partition, Smart Glass doors provide complete privacy by becoming opaque within a matter of seconds but give flexibility for full transparency when needed. Smart Glass can be used in all styles of interior doors when paired with the correct hinges suitable for smart glass wiring including:

### Hinged Doors:

The most popular internal door, they have hinges on one side, allowing them to swing open and closed. Hinged doors, either framed or unframed, are very popular as shower doors because they open out at least a full 90 degrees, providing a wider space into the enclosure. The entire door can be made with Smart Glass, allowing for complete privacy or openness depending on preference.

### Sliding Doors:

Used for aesthetics or space saving, they slide open and shut, moving in a horizontal motion. These are a perfect application for the use of Privacy Glass in a small bathroom or as part of a sliding door glass partition system, that don't obstruct light and connect to adjacent bedrooms or living spaces in a coherent way.

**Bi-folding Doors:** Ideal for closets or areas with limited space, they fold into two portions when pulled open. As patio doors, they can open up a home to indoor-outdoor living, enhancing views, blocking harmful rays, and with the flexibility to alter the size of the opening to control airflow. A qualified installer and special installation is recommended to install Smart Glass into bi-fold doors. This ensures the wiring works according to specifications as the doors fold in and out. This is a more complex installation and may take additional support and customization from a manufacturer.

**Bypass Doors:** Used to create more space in a room, they slide on a track along the upper portion of the door, overlapping when slid to the side. They can be used instead of a door to close off spaces between two rooms, which makes them a great choice for Privacy Glass to allow for light when transparent and privacy when opaque.

**Pocket Doors:** Used to save space, they are built into a contiguous wall or separate crevice, into which they can “disappear.” Useful in creating separate rooms that can be joined as needed, they can be in a closed position while still providing light or privacy when appropriate, blocking out unwanted sounds and views and saving space.

**French Doors:** These usually come in pairs and open at the center. They are almost always paned. Used as either entry patio doors or interior doors to separate two spaces, Smart Glass will allow them to let in light, while providing privacy when separating spaces as needed. Panes are great as they give lots of opportunity to cover smart glass bus bars and wires.

**Pivot Doors:** Pivot doors have a unique hinge in the center of the door frame, allowing the door to pivot on the hinge to open in either direction. Because they can be larger than regular doors, they can make an impressive statement in hotels or corporate towers. They allow for a larger opening to accommodate everything from bicycles and baby carriages to wheelchairs for ADA compliance. Smart Glass will add all its advantages while also creating a beautiful, memorable look and feel.



## Smart Glass Exterior Doors

Privacy Glass can be used in the most common types of front and patio doors, including sliding doors, common hinges doors and French doors. It offers unparalleled functionality when incorporated into the front doors of private homes and apartment complexes including:

- Letting in light but preventing people from peering inside without invitation.
- A full-glass entry door will also afford a view from the inside out – and is an increasingly popular choice in modern home design.
- Expansive views of front or backyards, or views of scenery/cityscapes with the option to block views during busy hours with lots of foot traffic.
- Giving pets the option of looking outside when it suits (and pet owners being able to see their excited pets when walking up to their door).

Paired with Solar Privetek®, Smart Glass Exterior Doors can contribute to glare reduction in doors that have direct sunlight or as doors that are part of full glass facades. Many home or balcony doors are incorporated into glass exteriors.

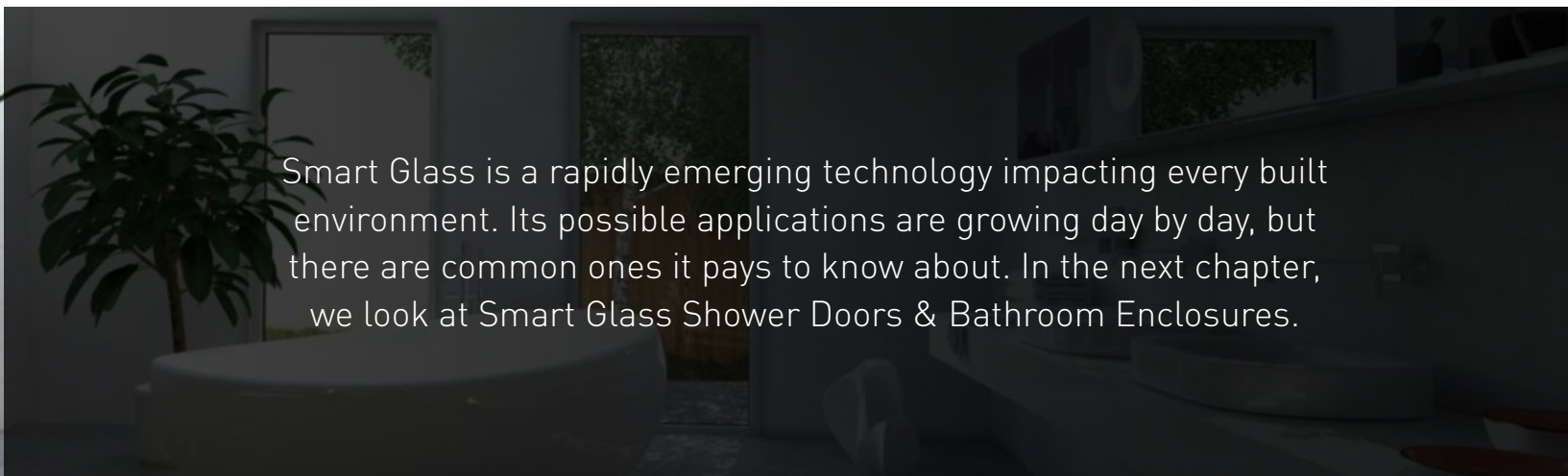
## Why Smart Glass is the Better Choice for Doors

In addition to offering the dual functions of light filled privacy and paired with instant transparency, there are also many other advantages to using Smart Glass in door applications:

- Reflects 78% of IR light, reducing heating and cooling costs (when paired with Solar LCG®).
- The best privacy solution for glass doors
- Ability to transform a space within seconds
- Distinctive sleek look
- Improved security
- Unobstructed outdoor views
- Blocking of damaging UV rays
- Easy to customize to fit a wide range of door sizes, styles and aesthetics

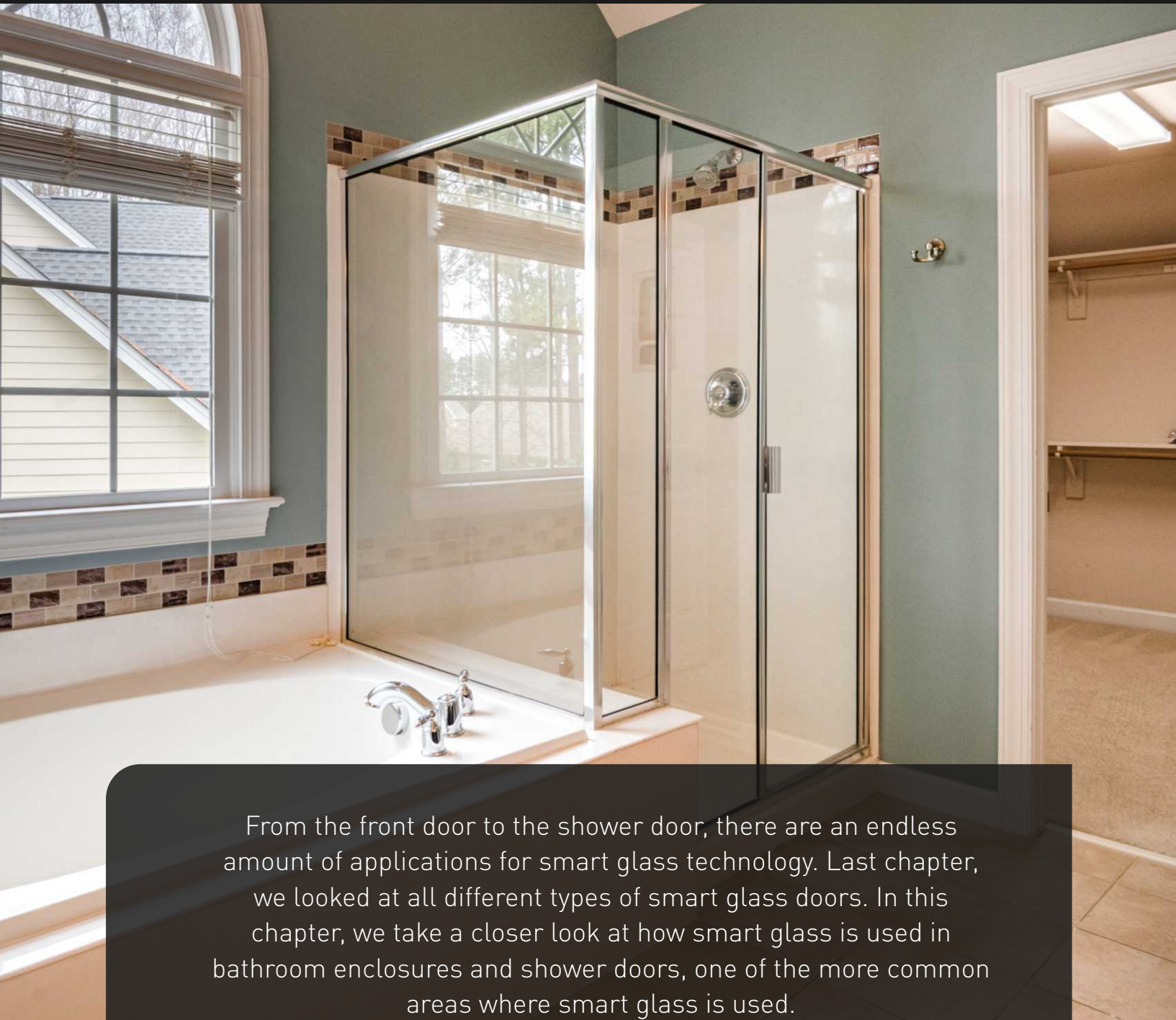
### The Bottom Line

Smart Glass Doors – whether internal or external – offer the chance to elevate architecture and interior design from both a practical and aesthetic perspective. Providing new ways to balance privacy, openness and light, Smart Glass allows users to further customize the spaces they spend their time most. Easily customizable and effortless to maintain, Smart Glass doors are the new must-have for technologically advanced and contemporary buildings.



Smart Glass is a rapidly emerging technology impacting every built environment. Its possible applications are growing day by day, but there are common ones it pays to know about. In the next chapter, we look at Smart Glass Shower Doors & Bathroom Enclosures.

## CHAPTER 3: Smart Glass Bathroom Enclosures and Shower Doors



From the front door to the shower door, there are an endless amount of applications for smart glass technology. Last chapter, we looked at all different types of smart glass doors. In this chapter, we take a closer look at how smart glass is used in bathroom enclosures and shower doors, one of the more common areas where smart glass is used.



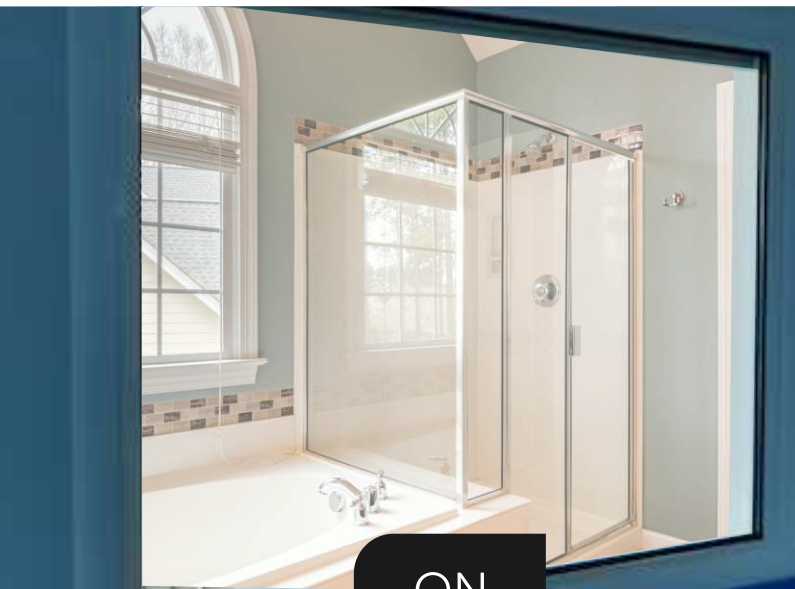
## Smart Glass in Bathroom Design

Smart glass and films are perfect for glass bathrooms, especially as designers continue to lean towards minimalist designs that hotel guests and homeowners appreciate. Glass makes small spaces appear larger, but limits privacy, which is essential when talking about bathrooms and showers.

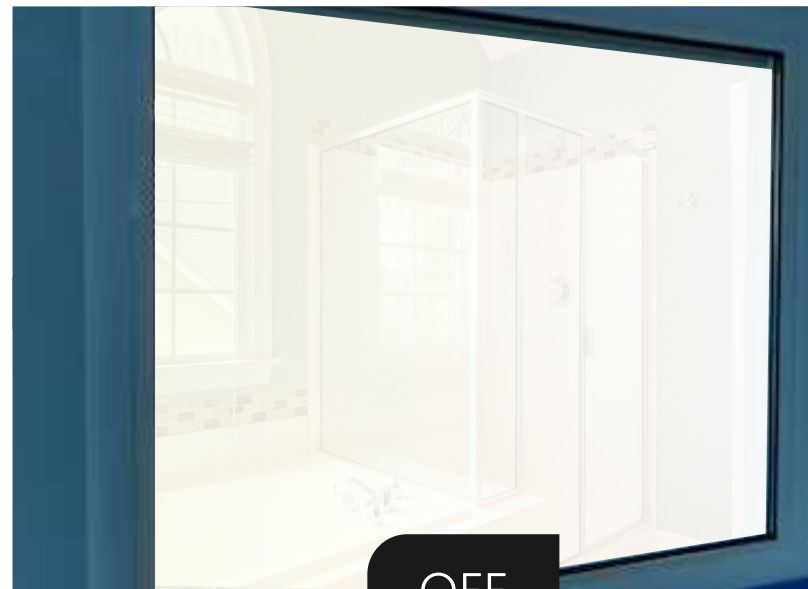
When smart glass is used, privacy is available instantly with the flip of a switch, which is not only convenient, but makes using these spaces comfortable and secure. The shower is often the first thing you see when you enter a bathroom as it's a prominent feature that takes up a lot of space.

A transparent door or enclosure will allow the wall and floor tiles to really shine, whether they're marble, ceramic or porcelain. Even showerheads and fixtures are designed for great looks as well as functionality, so you want them to be visible. Using traditional curtains interferes with such aesthetic elements (and has terrible hygiene implications) no matter how pretty a pattern they might have.

Switchable glass also makes a terrific room divider, shower screen, partition or even a dividing glass wall between a bathroom and bedroom. A transparent bi-fold shower door might be perfect for a tight space, or mirrored panels may help make a bathroom appear larger. Glass certainly helps light flow between areas, making for an overall better experience inside or outside a bathroom or shower.



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## Why Smart Glass is a Better Choice for Bathrooms

A smart glass shower stall or bathroom enclosure has many advantages, from aesthetics to safety, hygiene, and general usability. Shower curtains or privacy curtains not only look unappealing, but are also a hazard. The importance of clean spaces has been amplified by COVID-19, and this is important in bathrooms where we live, work, travel, and play. Some of the most critical issues with traditional curtains in bathrooms include:



### Germs & Bacteria

Studies have shown that shower curtains carry more germs than any other item in a bathroom. They detected 60 times more microbial life on curtains than on toilet seats. The strains of bacteria present include gram-positive rods, the majority of which are harmful to humans and can be resistant to antibiotics.

This phenomenon may be because, believe it or not, a lot more than just washing and rinsing may occur in the shower. In addition, toilet flushing with the lid open can spread contaminated water droplets to a shower curtain. After the germs collect on the shower curtain, the bacteria multiply in the hot, humid atmosphere, surviving and thriving on organic compounds released by the human body. Commonly found pathogens include *shingomonas* and *methylobacterium*, which can infect wounds and exacerbate illness in those with compromised immune systems.



### Mold

A good hot shower might feel wonderful, but the moisture it creates and the mold that results can cause health problems, especially for people with respiratory problems, children, older adults and those with compromised immune systems. Mold exposure is associated with symptoms such as eye irritation, chronic cough, skin rashes and sore throat. The mold that easily forms on shower curtains can cause allergic reactions. In addition, the toxins that mold secretes, called *stachybotrys*, can cause asthma, headaches and nausea.

Unfortunately, washing the shower curtain does not necessarily solve the problem (and many people do not do this on a regular basis anyway) because heat and detergents can release toxins more quickly. Often the only solution is to replace it frequently, which is costly and wasteful.



## PVC is Dangerous

Most shower curtains are made with polyvinyl chloride (PVC) and can release over 100 different volatile organic compounds (VOCs) into the air through off-gassing. This is 16 times greater than the recommended guidelines for indoor air quality established by the U.S. Green Building Council. Seven of the elements found are classified as hazardous air pollutants by the EPA under the Clean Air Act and can cause eye, nose and throat irritation as well as developmental damage to the liver and central nervous, respiratory and reproductive systems. Young children are particularly sensitive to these chemicals.

In addition, shower curtains can also contain phthalates and metals such as mercury and lead. These chemicals can linger in the air for up to a month after the curtain is hung. Phthalates are an unstable chemical that migrate in the shower curtain itself, eventually making their way onto its surface. When they evaporate and become airborne, they cling to dust in the environment. They actually release more gasses when exposed to hot and humid conditions. Just one new PVC shower curtain releases total VOCs that exceed the entire amount existing throughout a home over a four-day period.



## Maintenance & Replacement is Costly

Curtains in wet areas need to be thoroughly maintained in order to prevent mold and mildew from spreading on their surface. Cleaning or replacing them regularly is expensive, time consuming and wasteful.



## Smart Glass Bathrooms are Safe and Durable

Because only safety tempered or laminated glass is used, you will have many years of worryfree durability with only a minimal amount of maintenance. The glass can look good for years with an application of a protective coating to the glass that ensures long lasting shine. Smart Glass is easy to clean (just like any type of glass), making it easier to clean than curtains, resulting in a safer and healthier bathroom environment. While more expensive than shower curtains, glass shower enclosures are a one time investment that speaks to health and experience.

### The Bathrooms Line

Smart glass and switchable films are a smart choice in bathroom design:

- Modern and elegant aesthetic
- Provides privacy or an open space at the flick of a switch
- Makes small spaces appear larger
- Allows in more light
- Shows off unique accessories without being bulky
- Easy to maintain and long lasting
- Hygienic and easy to clean
- Tempered glass used is durable and safe

The bathroom is perhaps one of the most common areas where smart glass is used. A perfect replacement for bathroom blinds and curtains, smart glass is an easy-to-clean and sleek privacy solution for bathrooms of all shapes and sizes. Next chapter, we look at another common application - smart glass skylights.

## CHAPTER 4: Smart Glass Skylights



Smart Glass can be used almost anywhere regular glass is used in building applications – including typically hard to reach places like skylights. In this ebook, we unpack the everexpanding number of applications for this groundbreaking product. In our last chapter, we looked at Smart Glass for bathroom enclosures and shower doors. In this chapter, we take a look at Smart Glass skylights.

Thanks to advances in smart glass technology, skylights are no longer simply pieces of glass in the ceiling to let natural light into a room. They can be an effortlessly versatile and practical architectural feature – providing the flexibility for privacy, solar control, or shading with the click of a button or through automation systems. But just why is smart glass so beneficial when used as a skylight?

Skylights are usually built into a ceiling, which typically makes them difficult to reach and nearly impossible to dress with curtains or blinds. They can let in too much light that creates heat, or present an inherent privacy issue particularly in cities – people in private spaces are subject to peering eyes from taller buildings that can look down into their skylights. And constraints for shading solutions in atrium skylights in office buildings or other commercial spaces like shopping centers may let in too much light that creates eye strain, uncomfortable glare, or a space that is unbearably hot.

Not to mention, given that skylights are typically so high up and slanted in nature, when fitted with many traditional shading or privacy solutions they can be painfully arduous to operate and clean on a regular basis.

Switchable glass technology provides a solution; convenient, instant privacy or custom shading with the flip of a switch, turning a skylight from clear to shades of opaque within a matter of seconds. Cleaned just like regular glass, smart glass skylights are ideal for hard to reach places like ceilings, providing an easier-to-clean alternative than traditional glass paired with blinds and shutters.

When paired with PDLC technology, Smart Glass Skylights can balance the need for openness with the desire for privacy, while blocking IR to create cooler spaces. When skylight glass is fabricated with SPD technology, skylights can block more than 99.5% of light, shading areas without the need for blinds or curtains in impossible locations.

Benefiting a wide variety of public and private spaces, here are some of the top ways smart glass is enhancing skylights across a range of different building types:

## Smart Glass Skylights for Offices

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In addition to reducing energy bills, skylights improve employee well-being and increase productivity. Because they allow natural light to enter the workspace, they reduce stress by reducing levels of the hormone cortisol in the body. But office spaces in crowded cities

or in multi-storey buildings open up possibilities for onlookers from above, not to mention light entering the room at different times of the day which causes eye strain for employees. Smart Glass skylights with PDLC or SPD solve this design challenge, removing the need for cumbersome and clunky electric shutters or blinds.

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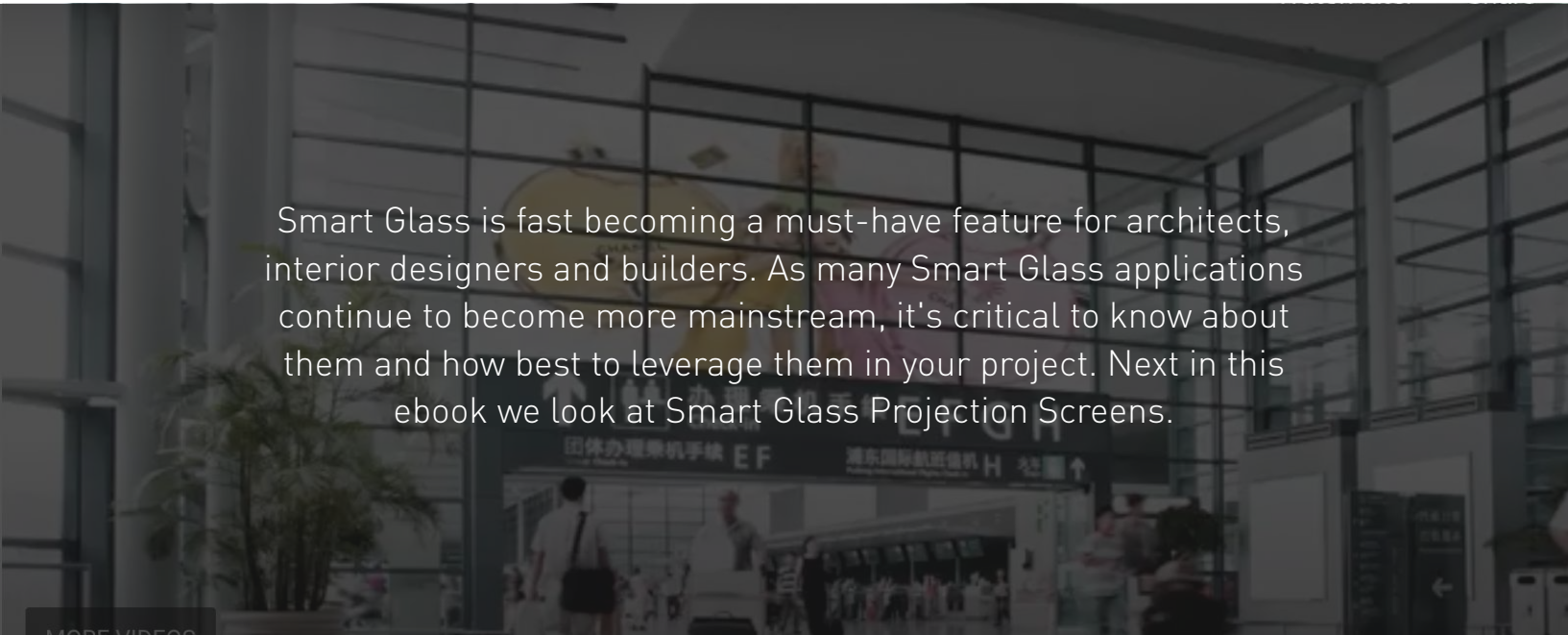
## Skylights in Museums & Galleries

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Both direct and artificial light can damage delicate artwork by exposing it to light and solar heat gain. Smart Glass skylights provide an ideal solution by delivering high illuminance levels, which can direct visual emphasis near the artwork on display while avoiding hitting it directly. Meanwhile, Smart Glass skylights stand on their own as an effective attraction, enhancing a museum or gallery's contemporary clinical design and helping to create a warm and inviting atmosphere.

### PDLC vs SPD Smart Glass: What's the difference?

The key differences that set SPD and PDLC apart: SPD stands for Suspended Particle Devices (rod-like particles that are suspended in a matrix). SPD can block up to 99% of light, making it ideal for custom shading in outdoor windows, and not a solid privacy solution. Meanwhile PDLC stands for Polymer Dispersed Liquid Crystal (liquid crystals that are dispersed into a polymer glue-like material). PDLC has high light transmittance (80%), making it ideal for privacy or projection when opaque, and not for tinting. It's also possible for PDLC to include IR blocking features, for example, Privetek's Solar PDLC blocks up to 78% of IR light that creates heat, reducing cooling costs and increasing energy efficiency in buildings.



Smart Glass is fast becoming a must-have feature for architects, interior designers and builders. As many Smart Glass applications continue to become more mainstream, it's critical to know about them and how best to leverage them in your project. Next in this ebook we look at Smart Glass Projection Screens.



# CHAPTER 5: Smart Glass Projection Screens



The benefits of smart glass extend beyond custom privacy and shading into more dynamic applications including projection. In this ebook, we explore every possible smart glass application. Last chapter, we looked at smart glass skylights. This chapter, we explore how smart glass can be used to project HD images and videos onto glass.

Smart Glass projection film, also known as Vizio LCG®, is a clear window tint-like material that makes it possible to convert standard glass used in office partitions, store fronts and sliding doors into a high-quality projection screen within a matter of seconds. It has gained popularity in the last decade, becoming a preferred medium for attracting attention and drawing consumer awareness to brands, products and services for companies worldwide. It's a great choice for projecting on glass in malls and in-store displays. An added benefit is that glass treated with projection film can also double as a privacy partition.

## Benefits

- 100% utilization of shop fronts, façade windows, and glass walls
- Location and time based messaging or preprogrammed content
- Transparent displays for polite advertising
- Replace expensive LED displays and HD TV's that occupy valuable window space when not in use
- High ROI: easy to clean, low maintenance, minimal energy consumption, and no discoloration from projection lights

## Retail Advertising Projection On Store Windows

Projection film can eliminate the inconvenience of changing window displays. It allows window shoppers to get a clear view of products while reinforcing brand messages with on-going and updated advertising campaigns and promotions. Entire building facades can be transformed into innovative advertising platforms with the ability to generate current targeted messages.



## Office Projection Screen

The traditional pull-down projection screen – or the entire conference room – can be replaced with a Smart Glass projection screen. Even an office window can be simply converted into a state-of-the-art projection screen and switched back again after the presentation. Glass partitions in offices can also function as a projector screen, perfect for video conferencing and presentations. All of these applications can travel beyond the office environment to trade shows and lobby displays.

## Home Theater Projection Screen

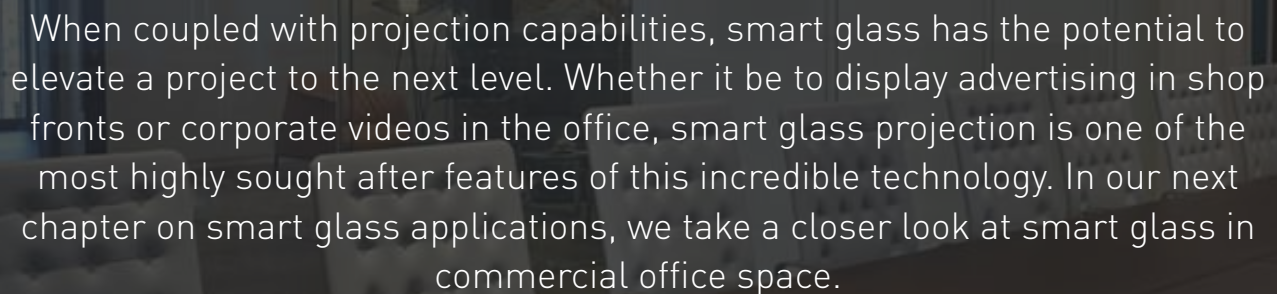
Any room in a house or apartment can instantly become a home theater simply by applying projection film to windows or glass partitions. Even the TV and all its accompanying gadgets and accessories can be replaced, giving a living room, den or bedroom a clutter-free, streamlined look and feel. It's a chic upgrade that luxury homeowners will appreciate for years to come.

## Projection Screens in the Transportation Industry

Projection film can be used for advertising on commercial or private vehicles while providing sun shading and privacy for windows and sunroofs. When not switched on, the windows remain transparent. In-flight and airport entertainment can be provided by projection on any glass surface. It is also a vehicle for advertising, all with the flip of a switch.

## Additional Applications

It really is up to the imagination as to where and how Smart Glass projection can be used. Here are some other examples (note: this is not an exhaustive list!). Hotel lobbies, corporate tower atriums, specialty product launches, home theaters, stadium and large event venues, museums, universities, religious buildings and more.



When coupled with projection capabilities, smart glass has the potential to elevate a project to the next level. Whether it be to display advertising in shop fronts or corporate videos in the office, smart glass projection is one of the most highly sought after features of this incredible technology. In our next chapter on smart glass applications, we take a closer look at smart glass in commercial office space.

## CHAPTER 6: Smart Glass in Commercial Offices

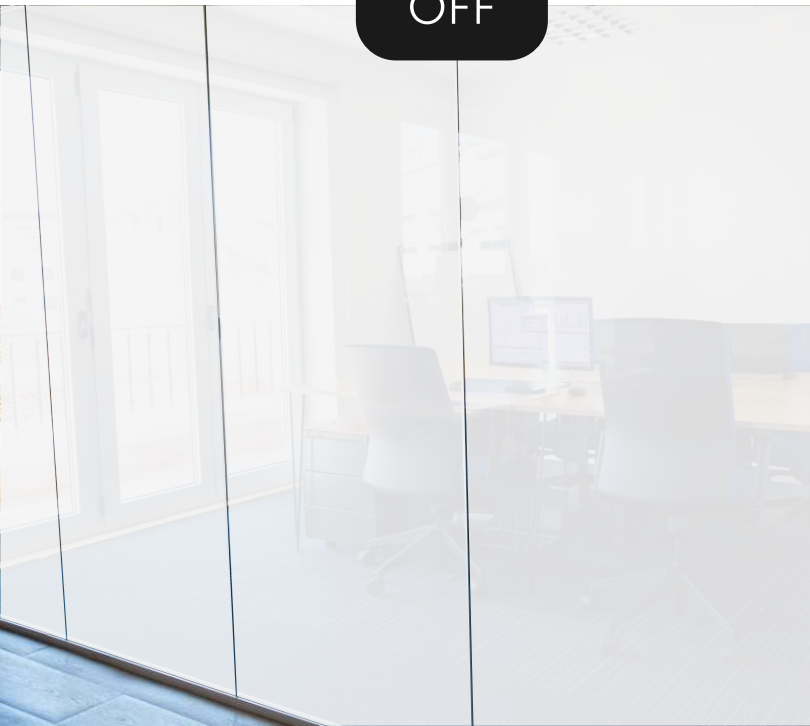


Smart glass is paving the way for more dynamic, safer and contemporary spaces across the built environment. In this ebook, we expand on the many revolutionary ways smart glass is being used. In our last chapter, we looked at smart glass projection screens. In this article we look at smart glass in commercial and corporate office settings.

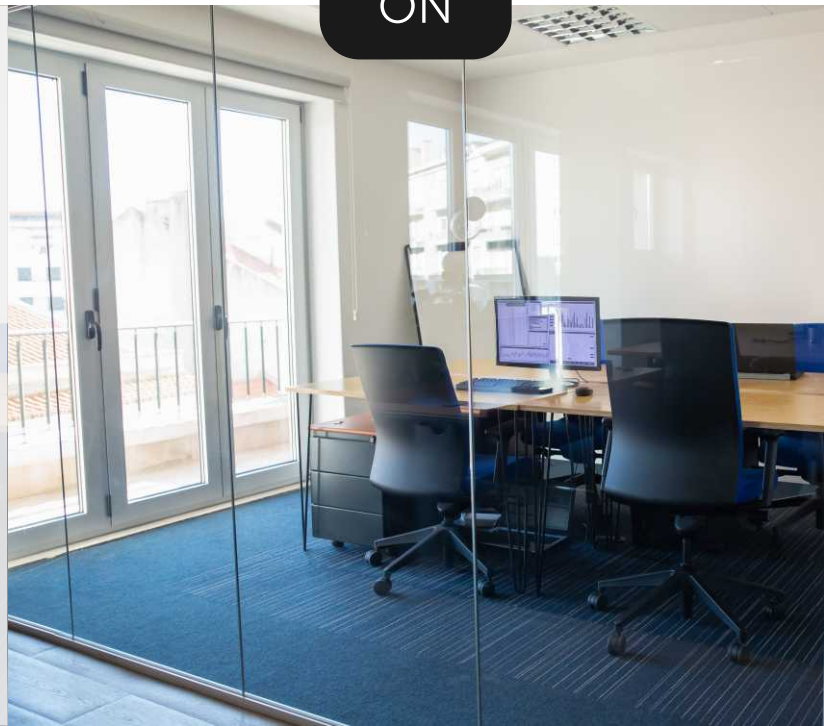
Glass has long played a role as a favorite component in office design. Interior designers and architects use it for everything from walls to dividers, partitions and doors because of its versatility, contemporary look, easy maintenance and ability to bring a sense of openness and transparency to the office environment. Especially now, when the necessity of hygiene plays a major role in office design, glass is rapidly becoming the material of choice.

Yet employees still have a proven preference for privacy. From confidential management meetings, sensitive one-on-ones, or just a quiet place to take a break without the feeling of being in a fishbowl, privacy is not a luxury, but rather a requirement. As we continue to confront the COVID-19 pandemic (and eventually prepare for a safer world after it), we can turn to smart glass as a solution to create the safest and most effective use of office space. Given minimizing the spread of infection is now a top priority, commercial offices require designs that support hygiene protocols by using materials that create privacy while encouraging collaboration.

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## Benefits of using Smart Glass in Commercial Offices

Smart Glass partitions, which turn on and off instantly, offer many benefits in commercial office space including:

- Provides a needed barrier while supporting a transparent environment that encourages connectedness among employees.
- Allows natural light to infiltrate a space even when in private mode, which boosts productivity, morale, and both physical and psychological well being.
- Enable employees to see outdoors into nature even in shaded mode with SPD, which can even earn points when applying for a LEEDs certification.
- Replaces traditional walls to optimize much-needed square footage. See section two of this blog for full details on how much space you can actually save.
- Accordion partitions allow spaces to be modular and adaptable to the constant changes a company needs.
- Projection film applied to glass can act as an HD projection surface. Glass partitions can instantly become a screen for presentations, visual art, or company branded videos or a simple clear glass. Learn more about smart glass films with projection capabilities, like Privetek's LCG.
- When the film is opaque, it acts as a whiteboard. Easy to clean but without the risks of marker residue accumulating over time, Smart Glass is both sleek-looking and multifunctional. Patterned film can add excitement and drama to shared spaces like conference and meeting rooms, turning static glass into a series of moving lines and shapes. See patterned films in action in one of Gauzy's recent projects for a leading healthcare technology company.

There's no argument that smart glass offers a multitude of enhancements for technologically advanced buildings and brings many additional benefits to the end users of the space. Office architects and interior designers agree – and have already begun using smart glass in a variety of ways to improve commercial office spaces.

## Top Applications of Smart Glass in Commercial Offices

Here are some more common applications for smart glass in office design:.

### Office Partitions

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Glass partitions are the easiest way to divide up space without requiring a complete remodel. They can switch from transparent to opaque on demand, creating privacy as well as a spacious light-filled atmosphere. They create distance between employees while increasing productivity and optimizing floor plans. Smart Glass can easily replace germ-harboring fabrics.

### Dividers

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Placed between desks and tables to block eye level, dividers leave an open-air space above. Smart glass dividers minimize the spread of infection while allowing for open collaboration in both individual and communal office spaces.

### Pods

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Pods can be easy to assemble and rearrange to create rooms of varying shapes and sizes. Their possibilities are endless. When made with easy-to-clean Smart Glass, they are easy to disinfect and provide immediate privacy.

## See For Yourself: Deloitte Offices, China

Deloitte chose Privetek's Switchable Glass Office Partitions technology for its offices in Greater Bay. This switchable PDLC glass technology is used to make the office interior design more dynamic with installation in the entrance and conference rooms. Paired with projection, Privetek's switchable glass technology allows:

- a personalized welcome greeting upon arrival that turns transparent right before you enter
- conference rooms partitions that can instantly become screens when private meetings are in progress – or just to create a different vibe.

[Explore Deloitte China](#)



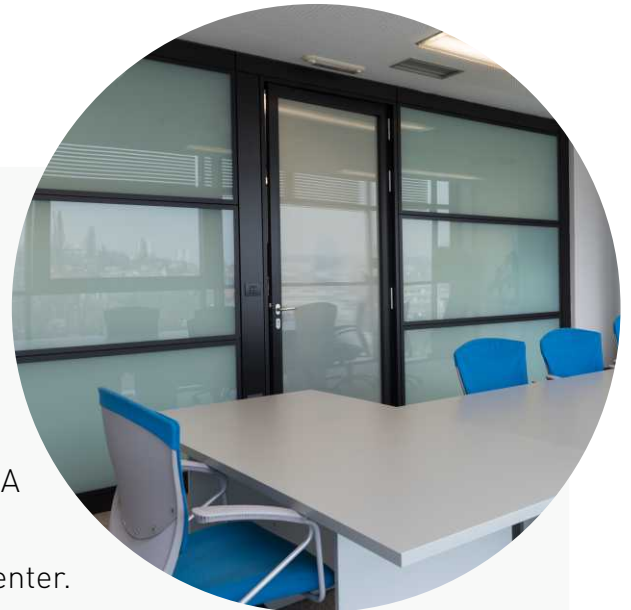
## See For Yourself: Leading Healthcare Technology Company, USA

This leading healthcare company in MidWest USA chose Privetek's Patterned Smart Glass Office Partitions technology for its executive briefing center.

The design embodied innovation and technology, which was well suited to the company's aesthetic and what it wanted guests to feel when visiting its headquarters. Nine panels of full-framed glass partitions with no visible specially created for the client with the most advanced laser patterning in the market enhances both for form and function, allowing for:

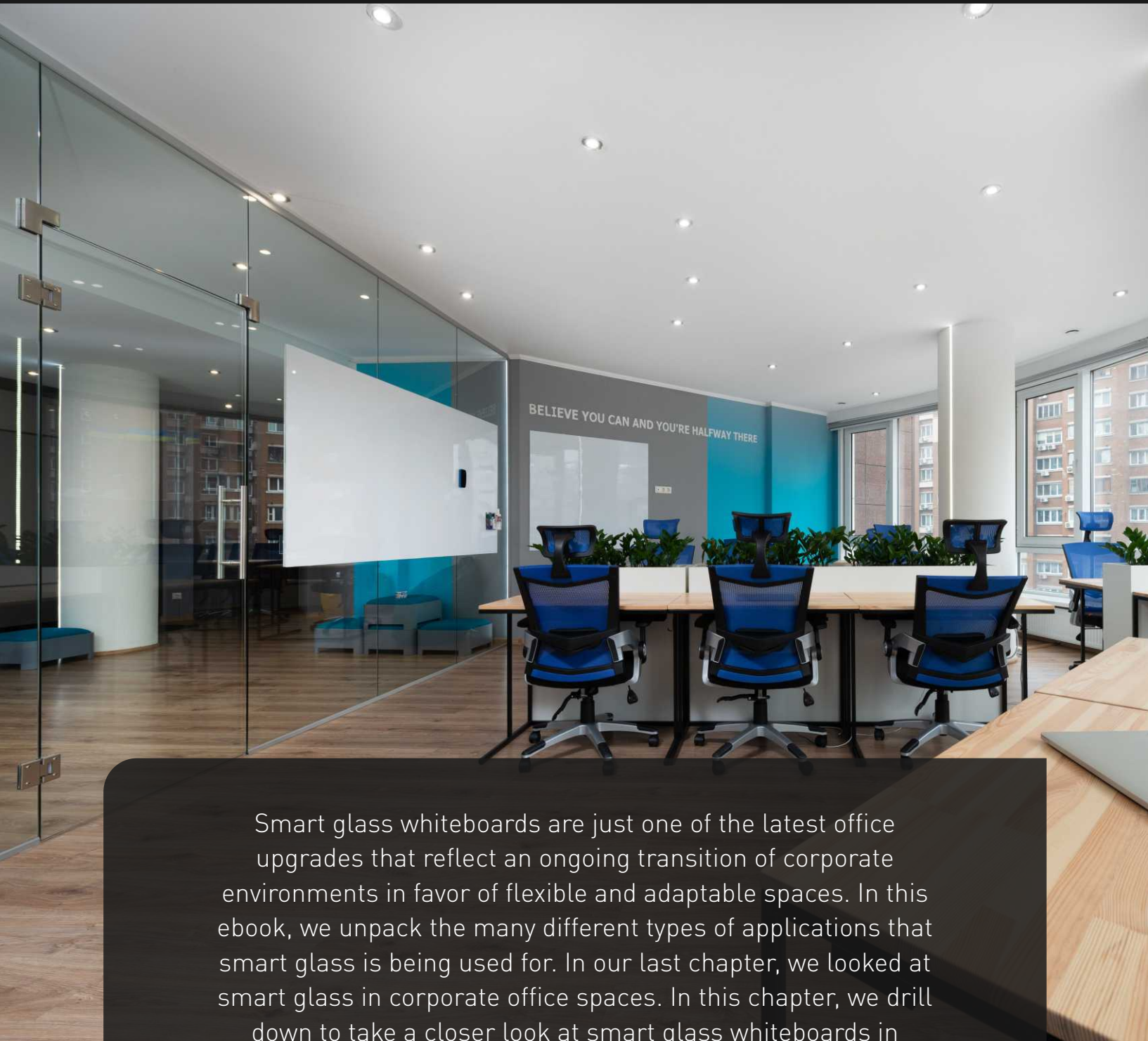
- Full transparency for collaboration and openness and complete privacy when desired
- A dynamic patterned display, adding an artistic and creative dimension and enhancing the office environment

[Explore the Project](#)



Smart Glass upgrades the look and feel of a space, and increases productivity, while simultaneously providing both privacy and an open atmosphere. Many commercial offices are now using smart glass windows, doors, and privacy partitions, and the demand just keeps on growing. Keep reading our next chapter, as we take a deeper look at one of the more practical applications of smart glass in the office - smart glass whiteboards.

## CHAPTER 7: Smart Glass for White Boards



Smart glass whiteboards are just one of the latest office upgrades that reflect an ongoing transition of corporate environments in favor of flexible and adaptable spaces. In this ebook, we unpack the many different types of applications that smart glass is being used for. In our last chapter, we looked at smart glass in corporate office spaces. In this chapter, we drill down to take a closer look at smart glass whiteboards in particular.

Office design has taken center stage in recent years as societies grapple with a global pandemic and a new dynamic of corporate environments – working from home is becoming more commonplace and companies are beginning to rethink how they use their traditional office space. What is clear? The future is uncertain and companies are leaning toward office partitioning, furniture and floor plans that can adapt on the fly. This includes everything from desk dividers and even whiteboards. New smart glass technologies are taking what was a traditionally static object and turning it into a dynamic partition that doubles as a fully transparent or opaque wall and even a whiteboard – all with the flick of a switch.

Glass whiteboards have been slowly replacing traditional whiteboards thanks to their durability, cleanability and contemporary aesthetics. While traditional whiteboards have a lifespan of only about five years and easily show streaks, glassboards can last up to ten times as long and are compatible with dry erase markers as well as permanent markers and grease pens. They never stain and are easy to clean and maintain.



## Smart Glass Whiteboard Benefits

Smart Glass whiteboard products offer the same bonus' of glassboards, but with added flexibility to modify spaces to suit the needs of a dynamic work environment as they can instantly switch clear, supporting the following advantages:



### Sophisticated Design

Available as tabletops, freestanding boards and partitions, smart glass whiteboards offer a sleek, modern and vibrant look in conference rooms, hospitals, hotels, classrooms and retail stores. Made with tempered glass, they are a great choice for newly renovated spaces. Acting as a stylish messaging platform and collaboration tool, glass whiteboards can be fully customized and fitted in a variety of frames, adding a sophisticated aesthetic to any highly visible setting.



### No Parallax Effect

Parallax is an optical illusion that presents itself as the eye moves off center of a sight picture, often appearing as an out-of-focus image. It occurs when the background moves at a slower rate than the foreground, creating an illusion of 3D depth in a two-dimensional site. Our smart technology eliminates this optical error, allowing images and writing to appear undistorted in a bright and clear display.



### Easy to Clean

Smart glass whiteboards are made from super-durable tempered glass that is easy to clean and disinfect, and will not degrade with continuous sanitizing. They can withstand alcohol, bleach and ammonia-based cleaning solutions, making them ideal in settings where safety and hygiene are imperative. Compatible with dry erase, permanent and paint markers, their smooth glass surface provides an ideal writing canvas that will never streak or stain, or leave ghosted letters behind after being erased.



### Energy Efficient

Offering a high degree of energy efficiency, smart whiteboards use substantially less electricity than a traditional interactive whiteboard and projector system. In addition, they

result in an enormous reduction in printing paper and ink, the use of which generates considerable waste and can represent a significant expense.



## Optimized Projection Surface

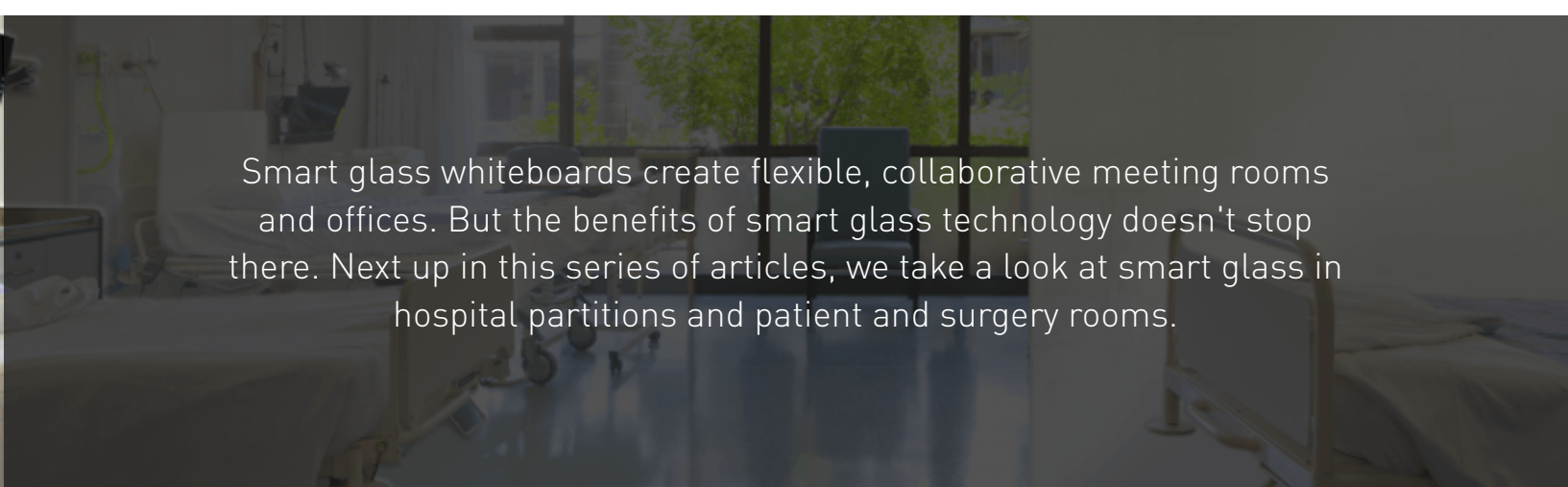
The durable surface of smart whiteboards is also optimized for clear high-definition projection, featuring a flat, ultra-smooth surface designed to be compatible with interactive projectors, their high-quality projection surface enables 180-degree viewing of HD images and videos. They offer substantially less distortion and eliminate light reflection for better visibility.



## Ultra Low Haze

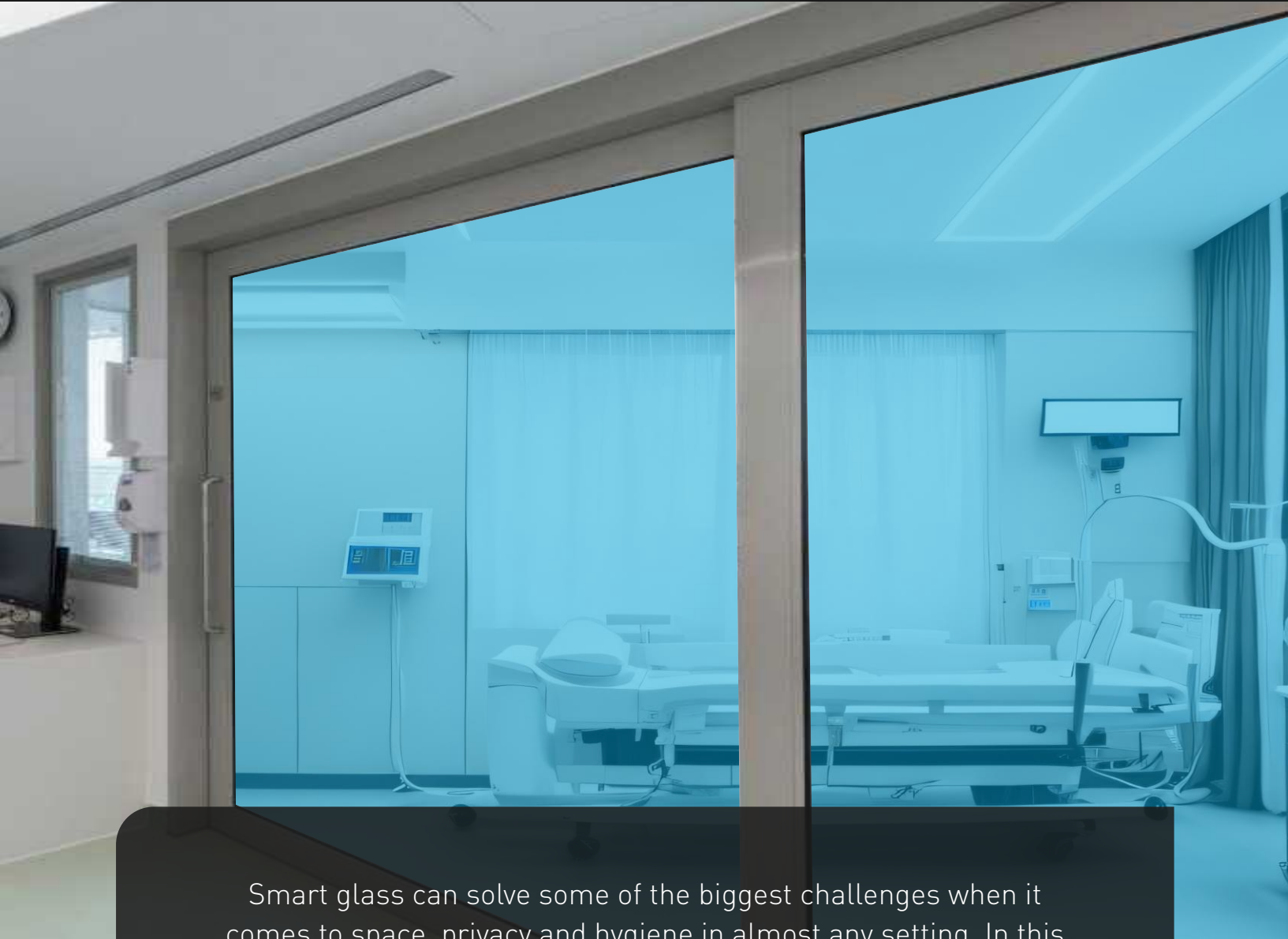
Haze is a fog that looks milky or cloudy when privacy glass is in its transparent state. It is caused by light scattering of the Liquid Crystal (LC). Our state-of-the-art technology helps maintain the spherical structure of the LC molecules, thereby minimizing light scattering and the haze it causes. When the glass is opaque, it creates a perfect whiteboard. When it's switched to the transparent setting, it appears as a clear glass partition that is not white or and with minimal haze, making it the privacy glass with the lowest haze on the market.

As office design continues to evolve, so will the furniture and tools we use in corporate environments. Smarter objects and new technology are transforming once static objects into interactive and multi-functional products that optimize space and encourage innovation – and smart glass whiteboards are no exception. They provide users the choice for a clear, open space or a private space, as well as providing the option for a whiteboard or projection surface.



Smart glass whiteboards create flexible, collaborative meeting rooms and offices. But the benefits of smart glass technology doesn't stop there. Next up in this series of articles, we take a look at smart glass in hospital partitions and patient and surgery rooms.

## CHAPTER 8: Smart Glass Hospital Partitions & Surgery/Patient Rooms



Smart glass can solve some of the biggest challenges when it comes to space, privacy and hygiene in almost any setting. In this ebook, we look at the many different ways architects and interior designers work with smart glass. Last chapter, we looked at smart glass whiteboards. This chapter, we explore how this game-changing technology can benefit healthcare design and facility management.



Are you currently designing or [specifying](#) for a new healthcare facility (ground up or renovation), or are you part of facility management looking for solutions to propose for your sites privacy, sterility, and operational challenges? Read more.

Privetek smart glass provides a high-tech, sophisticated, and sterile privacy solution for patients and staff alike. There are innumerable hospital and health care facility settings in which privacy glass can enhance the experience for patients and their visitors, create a better work environment for staff, and save valuable resources on cleaning and maintenance costs, all while reducing the spread of germs.

## Smart Glass Hospital Partitions and Patient Rooms

Smart glass is used in hospitals and health care facilities around the world, offering easy to sterilize privacy solutions that reduce overhead recurring costs while prioritizing staff and patient needs. Perfect for use as a replacement for privacy curtains on glass partitions, windows and doors (which harbour infectious germs that cause HAIs) smart glass also creates a minimal look and feel associated with sterile facilities. Its use is becoming more prevalent because of its many benefits, including:

- ability to provide total light filled privacy both visually and acoustically
- easy to sterilize and align with cleaning protocols
- contribution to patient well-being, providing access to light and reduced outside noise, especially important in providing limited disturbance during patient monitoring
- meets strict visibility standards
- high-tech upgrade with aesthetic appeal that both staff and patients appreciate
- Control via motion activated sensors, centralized system, remote, or wall mounted touch panels



## ICUs and Operating Rooms

Smart Glass helps hospitals maintain maximum sterility in the ICU/NICU and operating rooms. Its easy-to-clean surface provides complete privacy during surgery and treatments, turning transparent when needed. And it enables doctors and nurses to centrally monitor their patients and conduct exams in complete privacy. Privacy glass in operating rooms helps enhance the patient experience: they can enter in complete privacy, without external distractions or unnecessary stress. Once the patient is sedated, the glass can be switched to clear so that the surgeons, doctors and attending nurses and technicians can communicate.

## Movable or Sliding Partitions

Movable privacy partitions allow a space to be instantly reconfigured, especially when portable partitions on wheels are used or sliding partitioning systems. They also allow for complete patient privacy. In addition, the COVID-19 pandemic has shed a light on the need for infrastructure-based measures that support infection control in order to create a healthy environment, a critical consideration in health care design and interior architecture. Glass partitions and dividers are an excellent solution because they allow access to natural light without compromising sterility and making boundaries more fluid and adaptable to changing spatial needs.

## Single Patient Rooms

Evidence based design (EBD) and [medical studies](#) show that a patient's well-being and recovery process is directly related to healing architecture, and faster recovery is hinged on:

1. Single or private patient rooms
2. Reduced noise
3. Exposure to natural light



The use of privacy glass allows staff to check on patients without having to enter the room by simply changing a door from opaque to transparent with the touch of a button since smart glass is glass that turns opaque. They can also monitor patients without entering. Staff can also change the privacy glass instantly from a nurse's control station, offering a practical and unique privacy solution which allows patients and their family to enjoy the benefits of privacy, while giving staff the option to monitor them quickly. In the event of an emergency, the glass can be switched to clear to allow complete visibility. Access to natural light can also be maintained while the glass is in private mode, meaning both patients and hospital staff can enjoy the benefits of natural light even when privacy is required.

## Shared Patient Rooms

The use of privacy glass creates a dynamic sense of privacy in large, shared patient rooms with an aesthetic and sterile divider. Unlike curtains, smart glass creates true privacy, eliminating sound from nearby patients and providing clear barriers, creating a sense of calm for patients and their families (and offering doctors and staff more privacy during procedures and delicate discussions). In shared rooms, having a private space to recover reduces stress, allows for better rest and supports a sense of dignity. The use of glass partitions in wards helps to section off spaces and create private rooms, but also leaves the option for a transparent window to easily check on patients when the time arises.



## Project Highlight: KSSHP Hospital Nova, Finland

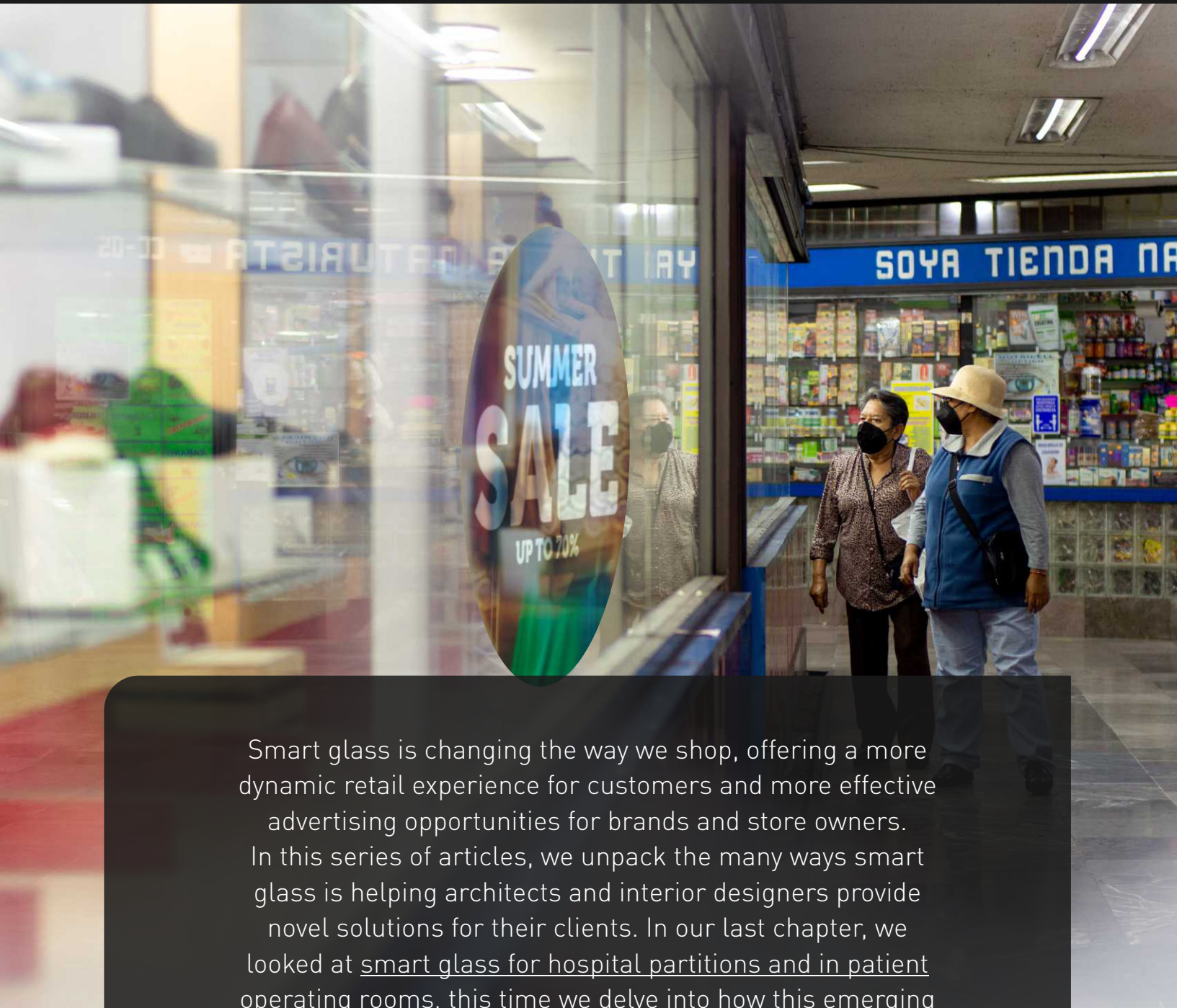
This project features White LCG Switchable Glass throughout operating and conference rooms, eliminating the need for fabric curtains that harbor bacteria while still allowing the flexibility for privacy. Paired with a custom motion sensor sliding door system, staff is able to limit the amount of touchable surfaces for sterility and streamlined cleaning protocols. Ultra low haze and fast switching times allow for maximum transparency for high two way visibility and instant privacy. Explore KSSHP Hospital Nova

[Explore KSSHP Hospital Nova](#)



When used in healthcare environments, smart glass not only provides functionality, but it has the potential to enhance patient recovery and wellbeing. Decision makers in this space are increasingly turning to smart glass as the next frontier in privacy and design. The same goes for applications in the retail industry. Keep reading the next chapter to learn about smart glass for retail shop windows and in-store advertising.

## CHAPTER 9: Smart Glass for Retail Shop Windows & In-store Advertising



Smart glass is changing the way we shop, offering a more dynamic retail experience for customers and more effective advertising opportunities for brands and store owners. In this series of articles, we unpack the many ways smart glass is helping architects and interior designers provide novel solutions for their clients. In our last chapter, we looked at smart glass for hospital partitions and in patient operating rooms, this time we delve into how this emerging technology can benefit the retail sector.

Attracting shoppers and brand reinforcement, particularly in the era of COVID-19 when traffic is limited, are a priority for retail stores. As digital marketing continues to replace traditional advertising, brick-and-mortar stores are constantly looking for ways to transform their space into one that is attractive, compelling and keeping up with current trends. Smart Glass, also known as glass that turns opaque and electric glass, allows retailers to transform their storefronts into transparent displays, increasing brand awareness and enticing walk-in customers. When the glass switches from transparent to opaque, it can act as an HD projection screen for eye-catching and dynamic ads, as well as having the option to create complete privacy. When it's transparent, shoppers can see inside the windows with an unobstructed view.

Here are five ways Smart Glass can be strategically used in retail spaces and can enhance the effectiveness of in-store advertising:

1

Smart Glass windows can switch from regular glass to an HD projection screen in a matter of seconds. When the dimmable glass is partially transparent, retailers can create subtle messages that float on semi-transparent glass surfaces without obstructing shoppers' view of the merchandise.

2

Retailers can avoid the inconvenience and cost of traditional window displays. Ads created by projection using dynamic smart glass upgrades enhance in-store marketing by displaying high-definition images and videos with 180-degree viewing angles. This distortion-free imaging captivates customers from all viewpoints, both inside and outside of the store. Moreover, replacing and switching content is all digital instead of with physical materials that cause waste and recurring costs.

3

Changing traditional window displays often means draping a sheet over the front window. With the use of Smart Glass, instant privacy can be created by switching the window from transparent to opaque for full privacy while redecorating.

# 4

Retailers can eliminate traditional fitting room curtains, which attract germs, are expensive to clean, and create visual clutter. Smart Glass wall partitions are the perfect solution. Not only are they hygienic and easy to clean, they can switch from transparent to opaque the moment a shopper steps inside to try something on. Retailers can even project ads and messaging onto fitting room glass partitions using rear projection.

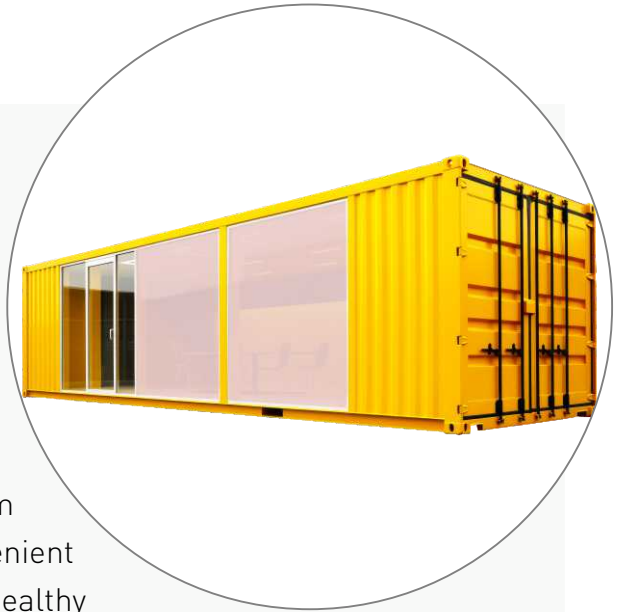
# 5

Retailers can display merchandise after hours without jeopardizing store security by setting Smart Glass windows to opaque and using them as a projection screen to show images of store items.



## Project Highlight: The Gym Pod, Singapore

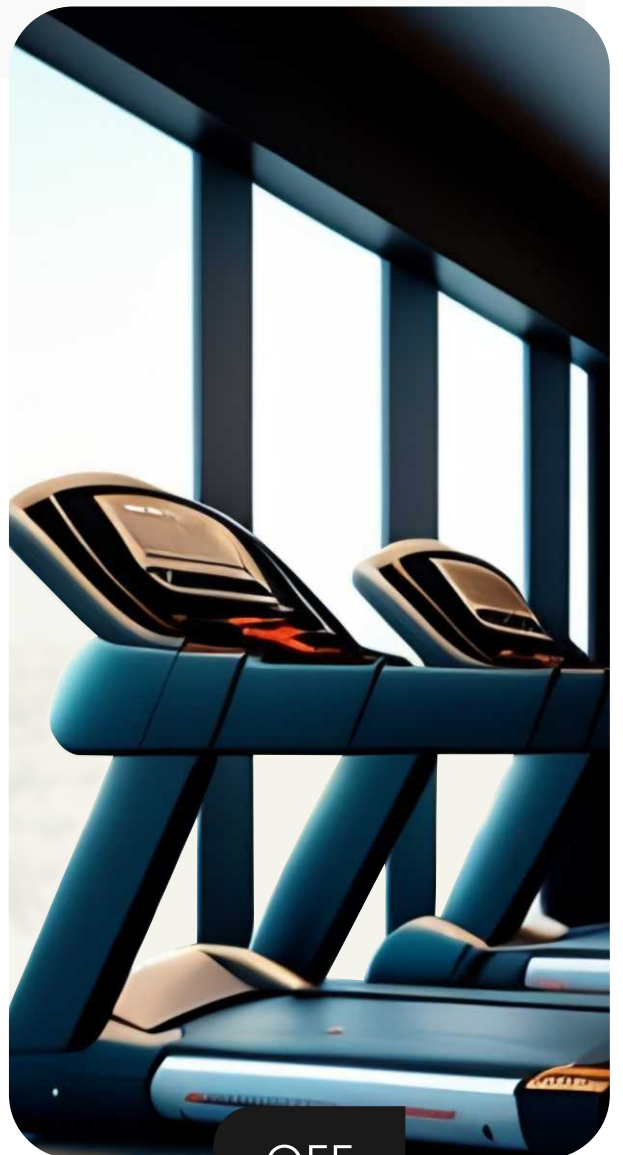
Privetek's advanced Smart Glass was installed in the first of it's kind gym fully autonomous pod in Singapore, transforming the exterior from static glass panels to dynamic privacy solutions and HD projection screens. The vision for the Gym Pod was to create an innovative, private yet convenient space to exercise and provide a way to access a healthy lifestyle even in a city center.



[Explore the Project](#)



ON



OFF

## Project Highlight: Superpharm

Privetek's advanced Smart Glass was installed in the first of its kind gym fully autonomous pod in Singapore, transforming the exterior from static glass panels to dynamic privacy solutions and HD projection screens. The vision for the Gym Pod was to create an innovative, private yet convenient space to exercise and provide a way to access a healthy lifestyle even in a city center.



Smart glass helped create a space that wasn't only modern and sleek, but that was light filled with the option for privacy when desired. Users of the Gym Pod don't have to worry about operating outdated and clunky blinds or shutters – that can get stuck or become dislodged. Instead they can easily control the privacy of the space by turning the glass on and off – or transparent and opaque.

Retail spaces are intended to truly surprise and delight shoppers, making smart glass a must-have addition for stores looking to appeal to modern customers and increase footfall. But the great thing about smart glass is it can be used virtually anywhere regular glass is used; from the shops to the office to a luxury home. If you liked this chapter and also plan or design home or office spaces, make sure to read our final chapter which takes an in-depth look at smart glass in the home office.

## CHAPTER 10: Smart Glass in Home Offices



Smart glass is a growing trend among the world's leading architects and interior designers, in a variety of different spaces and environments. In this series of articles, we explore the countless different applications for smart glass. Last time, we explored how smart glass is being used in the retail sector and for in store advertising. This time, we see how smart glass is adding significant improvements to home office designs.



An open concept floor plan has been a popular trend in residential home design for the past decade. Architects and developers have been creating innovative homes with fewer walls and larger, multi-functional rooms by converting the main floor living area into a single unified environment, blending the kitchen, dining and living rooms into a central space for family time and entertaining.

But especially now and into the future, when more people work from home for a portion of their work, there is a great demand for private space. Smart Glass, also known as glass that turns opaque or electric glass, is helping interior designers and architects convert high-end urban apartments and country homes into residential sanctuaries, without sacrificing views, space or privacy. Used as exterior and interior dimmable windows, walls and room dividers, Smart Glass technology allows designers to create a coveted sense of spaciousness while allowing for practicality and privacy, especially in smaller apartments and houses.

The home office exemplifies the need for quiet privacy, removed from the rest of the home. Smart Glass helps designers create the ultimate sanctuary for those working from home, in an environment that is conducive to productivity.

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- **Privacy:** Smart Glass technology allows the home office to become totally private with the touch of a switch. Alternatively, it can be switched back to 'on' mode where the glass is transparent, for more of an open atmosphere when desired.

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- **Access to light:** Especially if the home office is located in an interior space without windows, Smart glass allows light to filter through, creating a brighter, more productive work environment where residents enjoy spending time.

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- **Sound dampening qualities:** Laminated Smart Glass paired with an acoustic glass partition significantly decreases noise, making for a quieter working environment. It can be integrated into almost any type of wall or partition system.

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- **Wide open views:** Smart Glass allows those working from home to enjoy views of the outdoors (and indoors), while being protected from harmful UV rays and sun glare.

There are numerous benefits to smart glass home offices. For architects and interior designers looking to deliver their clients with high-tech, modern and sleek home office fit outs, smart glass is a must-have product. The same goes for standard corporate offices as well.

# CONCLUSION:

## The Bottom Line

Smart Glass is a rapidly emerging technology impacting every built environment. Its possible applications are growing day by day, but there are common ones it pays to know about. Whether you are designing an office, a high-end residence, hotel, hospital or a retail store, Smart Glass provides solutions that go beyond just great aesthetics. With its ability to change from transparent to opaque in a matter of seconds, it provides privacy, access to light, easy maintenance, good hygiene and a myriad of design options. It represents smart technology at its best.

Considering Smart Glass for your next project? keep these top 10 applications in mind;



Windows – Smart Glass windows provide both privacy and unobstructed views of the outdoors, eliminating the need for blinds or shades, while increasing efficiency and reducing energy costs in buildings of all types.



Doors – In addition to offering the dual functions of privacy and light, interior and exterior Smart Glass doors provide energy efficiency, easy maintenance, customization, views and a distinctive contemporary look.



Bathrooms – From high-end homes to hotel rooms, Smart Glass provides unique bathroom design solutions by enhancing small spaces, eliminating the need for shower curtains, and providing instant privacy.



Skylights – Smart glass elevates skylights to a new level by blocking damaging UV rays, creating privacy, increasing airflow and providing visual access to the sun and stars, all with a sleek, contemporary look.



**Projection Screens** – Used in offices, home theaters and retail building façades, Smart Glass projection screens reduce clutter, create superb viewing surfaces and offer a number of merchandising solutions.



**Commercial Offices** – Used as partitions, dividers or pods, Smart Glass offers an unlimited array of design and energy-efficient solutions for the modern office.



**Whiteboards** – As a replacement of traditional whiteboards, glassboards offer durability, cleanability, movability and a sleek, modern aesthetic.



**Hospitals** – Smart Glass is unrivaled in its solutions to patient care and operational efficiency, providing privacy, hygiene and convenience in many applications throughout the healthcare sector.



**Retail Advertising** – With its ability to attract shoppers and reinforce brand awareness, Smart Glass offers a convenient, compelling and eye-catching alternative to traditional window and in-store advertising.




**Home Offices** – With the increased need of homeowners to have private but functional and attractive home offices, Smart Glass provides the light, privacy and quiet necessary to work happily and efficiently from a high-end home.

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