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Asahi Glass Co., Ltd.,

Toyota Motor Corporation

Asahi Glass and Toyota Motor Corporation Co-develop “Ceiling-mounted Double Skin System,” a New Energy-saving Glass Structure

- Lightweight and Movable Glass Structure Enhances Energy Savings -

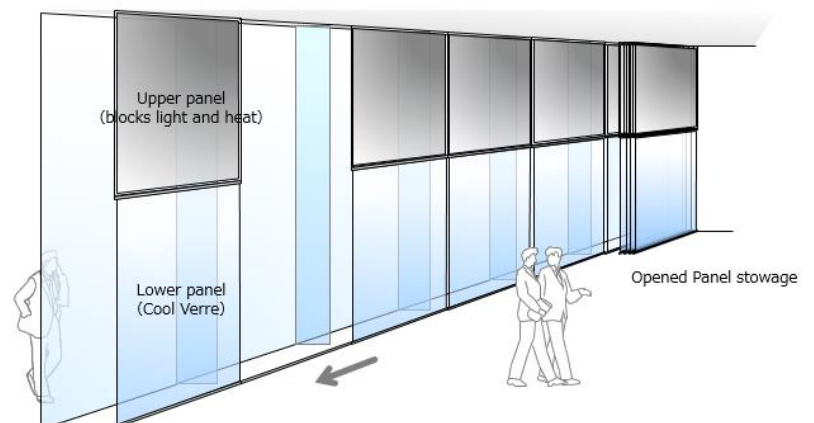
Asahi Glass (AGC) and Toyota Motor Corporation (TMC) have jointly started development of a glass structure, “Ceiling-mounted Double Skin System.” This glass unit is designed to enhance energy savings of buildings such as showrooms, capable of being flexibly opened or closed in response to weather conditions. After finalizing product specifications and safety and performance testing, the companies plan to launch sales of the product in the spring of 2018, mainly targeting car dealership showrooms and office buildings.

Car dealership showrooms and modern office buildings with large glass surfaces are facing challenges of reducing air conditioning load during summer. Conventional countermeasures include use of roll-screen curtains and heat-shielding films. These have drawbacks however. For instance, roll-screen curtains have inadequate ability to block sunlight while also reducing visibility when rolled down.

In 2015, TMC formulated its “Toyota Environmental Challenge 2050” as part of its aim to create a society in which people and cars coexist in harmony with nature. Among its various initiatives to reduce the CO₂ emissions of vehicles, production plants, and related facilities, TMC has developed and commercialized an “opening-closing type basic double skin” for dealership showrooms, and a “dispersion type double skin” for small- to medium-sized offices. TMC brought the concept of commercializing new, environmentally friendly double-skin products to AGC, which has a strong track record in energy-saving replacement glass products, and this led to the start of this development effort.

Key features of the “Ceiling-mounted Double Skin System” are as follows:

Ceiling-mounted Double Skin System



1) Highly effective in reducing air conditioning load

- Adopts AGC's Coolverre™ (IR- and UV-cut glass), an automotive glass with highly effective thermal insulating properties.
- A fan blows hot air between the external glass and product thus boosting air conditioner efficiency. When heating the indoor space, the double skin functions to decrease heat loss.

2) Dual-layer composition

- Upper panel: Superior light- and heat-shielding sheets
- Lower panel: Coolverre™, which ensures good visibility and heat insulation.
- Combining these technologies makes installation in high ceilings possible.

3) Significant reduction in weight and installation cost

- Thin sheet glass used in the lower panel contributes to a significant weight reduction. Weight reduction target is one-fifth that of conventional double skin systems.
- Installation costs can be greatly reduced.

4) Facilitates flexible opening and closing

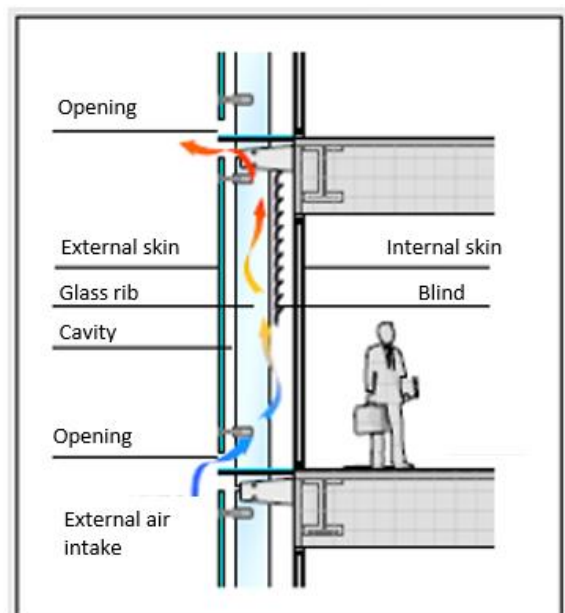
- Can be stored away like a curtain on days in which they are not needed.

REFERENCE

■ Overview of double skin system

- The double skin system is a construction method of covering a building's external walls with glass to raise heat insulation performance in a building's interior. It consists of two glass layers and an interlayer (cavity). Incoming heat is absorbed in the cavity, and heat is dispersed by air flowing in from the outside.

Double-skin composition example



■ Coolverre™

- Coolverre™ is automotive glass designed for use in car windshields. An infrared (IR) blocking agent has been infused into the interlayer^{※1} enabling this laminated glass to block over 90% of IR rays, the main cause of the burning sensation^{※2} on the skin caused by sunlight.

It also cuts approximately 99% of ultraviolet (UV) rays which are said to cause sunburn and blemishes.



※1 It is defined by AGC as "light with a wavelength of 1500-2200 nm "

※2 Evaluation of burning sensation is based on the results of research and evaluation by AGC

■ Thin sheet glass

- This glass offers the benefits of improved strength over ordinary soda-lime glass, which is widely and commonly used for plate glass, and is also damage-resistant despite its thinness.

This chemically reinforced glass is used in general architectural applications and also contributes to weight reduction in such products as solar panels and lighting equipment.



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