Factors that caused glass curtain wall visual distortion

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Glass sheets and processing factors

**Glass sheets** (raw float glass) The glass image we usually see is an image that is reflected back through the glass. Measuring the optical distortion of the float glass is the zebra angle. China’s float glass standard requires that the architectural grade glass zebra angle reach 50 degrees, and the automotive grade and mirror grade glass requirements are more than 60 degrees. The zebra angle of foreign high-grade float glass can reach more than 70 degrees. Due to the problem of float glass technology and quality consciousness in China, this index is generally between 45 and 65 degrees, and the quality is even lower than 40 degrees.

The effect of the zebra angle of the float glass on the visual distortion is fundamental.

**Tempering** Tempering is the process of secondary heat treatment of the flat glass. Distortion during tempering does have a significant impact on imaging. In the middle of the tempered glass, if there is distortion, it can be considered that there is a serious problem in process control. The overall bow and local bow of tempered glass is an important point measuring the glass qualified or not.

In fact, if the tempered glass overall bow is controlled to 1 ‰ and the local bow is controlled at 0.15 mm, it won’t cause serious visual distortion.

**Insulating process** Insulated glass (double glazed glass units) have a great influence on the image deformation of the glass. In general, the air contains 1-4% water vapor, and the greater the humidity, the more water vapor content. After the production of the insulating glass is completed, the molecular sieve absorbs
most of the water vapor sealed into the glass, and the insulated glass often has a concave shape. Of course, horizontal sealing process should be a problem of processing quality control.

The purpose of the insulated glass production line is to control the humidity and temperature during sealing process. It is a pity that the most insulating rooms haven’t been taken advantage.

Design factor

Glass thickness At present, when designing the glass for disturbance calculation, it is generally controlled by 1/60 of the maximum wind pressure load. In practice, it is generally calculated from 1/90 to 1/120. This kind of algorithm leads to the thinner glass used in our country. The thicker the glass, the better the rigidity, and the smaller the imaging deformation in the same case. This is also why foreign countries, including Hong Kong, have a good flatness of the curtain wall glass. Generally, their curtain wall glass is mostly 10 mm.

Reflectance The higher the reflectivity of the glass, the sharper the image is. In fact, it is easier to see the deformation of the glass from the observation.

Aspect Ratio The aspect ratio of the glass is too large to cause distortion. When the aspect ratio is too close to 1:1, the bottom shape of the pan is prone to occur. The best aspect ratio is generally considered to be 2:1.

environmental factor

For the insulated glass, the air in the cavity is expanded or contracted by the influence of temperature, pressure, etc., and the influence on the imaging of the insulated glass is also great.

Air Temperature The air temperature in the insulated space rises or decreases by 15 degrees, and the air volume inside the insulating glass will expand or contract by 5%.

Atmospheric pressure, altitude, atmospheric pressure varies with altitude; for every 610m increase in height, atmospheric pressure is reduced by 1Psi (6900N/m2); from another perspective, for every 610m increase in height, for 610*1220mm insulated glass, This is equivalent to applying a pressure of about 520 kg to each glass from the inside of the glass.
In order to avoid deformation of the insulated glass caused by the change of the air pressure, it is generally recommended to add a capillary tube to the insulated glass when the difference in altitude between the manufacturing location and the installation location exceeds 610 m.

**Installation factor**

**Installation Stress** If the glass is applied to the glass during the installation process, the glass layout will be deformed and affect the imaging.

**Installation flatness** The horizontality and verticality of the glass installation affect the imaging effect of the monolithic glass; the flatness and consistency of the curtain wall glass affect the overall imaging effect of the curtain wall.

**Imaging Environment** The deformation of the regular geometry on the glass is most pronounced; the image with no obvious outline is not significantly deformed; no image distortion can be seen without the background pattern.

*Morn* is your turnkey curtain wall glass supplier, all our glass use the best float glass brands, CSG, XYG, TG, Jinjing glass to guarantee the best Zibra angle, during processing process, all glass are EN/SGCC/IGCC/CSI certified to ensure the best glass flatness before installation, for some high altitude projects, capillary tube will be used to keep air balance, welcome contact us for more info.

**Tags:** capillary tube, curtain wall glass, curtain wall glass supplier, double glazed glass units, FLOAT GLASS, glass curtain wall visual distortion, glass local bow, insulated glass, tempered glass, overall bow, zebra angle
About Morn Building Materials:
Morn Building Materials Co., Ltd is a trading company offering the right facade materials for a wide range of applications for architectural, design, and system requirements. Cooperating with China premium glass fabricators, Morn is able to supply whatever glass products applied in facade, Spandrel, roof, handrail, partition, balustrade, canopy, greenhouse, sun room, interior exterior application.

Other facade materials: Aluminium alloy profiles, aluminium plates, aluminium windows & doors, Assa Abloy hardware, spider fitting, railing systems, shower rooms, polyurethane panels, machines & tools, steel structure, are also available since 2019. From aesthetics, to strict environmental and energy specifications, to critical budget and delivery requirements, our input can make a difference.

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