Press Release

Laser-treated glass suitable for wireless communications

The laws of physics cannot really resolve it: glass that features a low-E or another type of wear layer to improve its insulating properties, has a significantly reduced heat transfer coefficient, which improves the pane's thermal insulation. The down side, however, is that the layer minimises the pane's level of penetrability for high-frequency wireless communication waves. Communication with mobile phones or tablets is only limited in the best case scenario and impossible in the worst. Physically speaking, the problem is easy enough to identify. if the panes or the glass front are finished with a metallic coating, the building envelope acts like a Faraday cage involving a large proportion of glass and metal. This either prevents the penetration of wireless communications entirely or severely impairs them as a result of the unintentional reflection of the signals.

Partial removal of the wear layer to achieve penetrability

A new finishing process from HEGLA boraident has broken through the fundamental conflict between thermal insulation and the requirements of wireless data communication. The process involves partially removing the low-E or wear layer by laser in extremely thin lines to allow the high-frequency waves to pass through. The de-coating process follows a newly developed organic pattern consisting of overlapping dodecagons or circles. As a result of the fine line width, the finish is barely visible to the naked eye. If the pane is processed into an insulated glass unit in a further step, the texture can be described as virtually invisible.

Laser segmentation significantly increases the level of penetrability for wireless and data communications. Once the finishing process is complete, the energy transmittance for high-frequency waves is comparable to that of uncoated glass. Even at the higher frequencies and bandwidths of the 5G standard, the limitations do not become greater. The surface treatment designed to enhance the penetrability of glass for wireless communications has proven advantageous in environments where wireless communication is featured, such as conference rooms, hotels, public transport, and

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offices. These are all environments in which glass finishing companies stand to achieve a higher level of added value with their products. Their customers can benefit from the lower technical and financial expenditure for routers, repeaters, and LAN connections.

Insulation properties, strength, and energy efficiency remain virtually unchanged

In terms of quality, the surface remains undamaged by laser processing, and its strength is not negatively affected by float glass, toughened glass, or tempered glass. The insulating properties and energy efficiency of the glass remain virtually the same.

In addition to the direct benefits of finishing glass to establish improved penetrability for wireless communications, the finish's structure also features a number of impressive technical properties. Viewers consider the pattern subtle. It is composed of individual interlocking and overlapping elements, which allows it to be segmented particularly effectively and productively. A finish with this structure creates a visually flawless, seamless overall picture, which is sure to impress with its excellent overall aesthetic quality.

The laser processing method for creating a glass finish for wireless communications can be installed on the Laserbird as an app and used without the need for any special setup requirements.

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Image 1: With a newly developed, subtle pattern, coated glass can be enhanced by means of laser processing so that high-frequency wireless communication waves can penetrate the surface without attenuation.

Image 2: The level of penetrability for wireless communications is significantly enhanced by laser processing and once treated, is comparable to that of uncoated glass.

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