



Case Study:

SentryGlas® ionoplast interlayer delivers vital functional, structural and aesthetic performance for new Morocco Telecom HQ in Rabat

The façade covering Morocco Telecom's new headquarters in Rabat is another stunning demonstration of the comprehensive capabilities of SentryGlas® ionoplast interlayer.

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By deploying laminate panels incorporating SentryGlas®, architects were able to successfully address a number of important structural and functional demands on Morocco Telecom's new headquarters in Rabat.

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The façade construction used on the new building, designed by architects Jean Paul Viguier et Associés, Paris, comprises a double skin covering a total surface area of 11,500 m² (123785 sq ft). The exterior of the skin is composed of vertical shoulders mounted on a stainless-steel structure, for wind mitigation, bearing a curtain-wall made of laminated glass panels. The laminate panels, each measuring 1,480 x 3,503 mm (4.86 by 11.5 ft), comprise 10 mm (3/8") Ipsol bright tempered HST, 1.52 mm (60 mil) SentryGlas® and 10 mm (3/8") float tempered HST.

By deploying laminate panels incorporating SentryGlas®, the architects were able to address a number of important structural and functional demands; one of which was

the high daytime temperatures and the large night-time temperature differential. During the day, the frontage of the building can quite easily see temperatures up to 70 °C (158 °F); something which immediately precludes the use of PVB-based laminates, as they are only certified up to 64 °C (147,2 °F) by French building regulations. The superior thermal performance offered by SentryGlas® therefore made it an ideal candidate for this installation and, indeed, for others that face even higher temperatures, as SentryGlas® is up to 82 °C (179,6 °F).

Thanks to SentryGlas® being 100 times stiffer and five times stronger than PVB, the architects were also able to design and specify laminate panels some 30% thinner and, as a result, significantly lighter, than PVB-based alternatives.

With SentryGlas® there is an almost perfect transmission of load between two laminated sheets of glass - even at

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The frontage of the building can see temperatures up to 70 °C (158 °F); something which immediately precludes the use of PVB-based laminates. In addition, thanks to SentryGlas® being 100 times stiffer and five times stronger than PVB, the architects were also able to design and specify laminate panels some 30% thinner and, as a result, significantly lighter, than PVB-based alternatives.

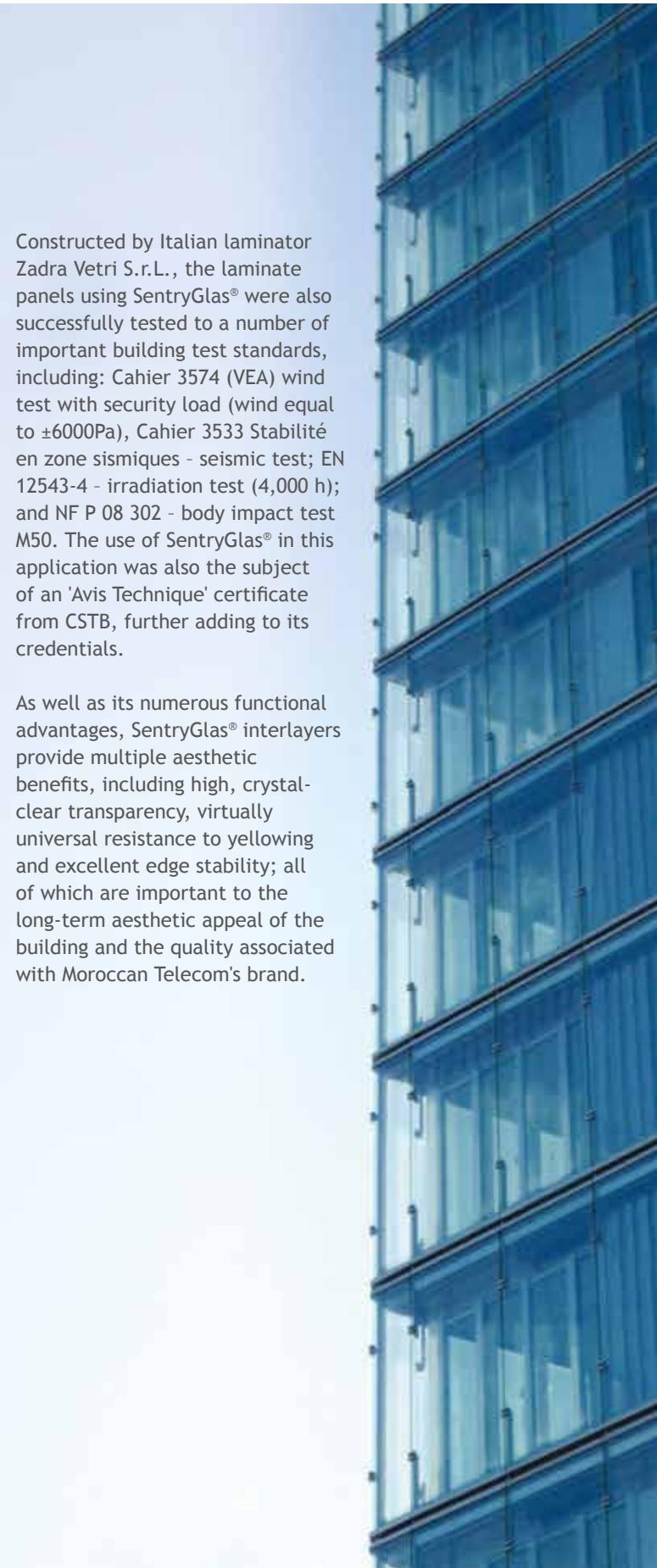
high temperatures - leading to excellent flexural behaviour when under load. As a result, laminates constructed with SentryGlas® show less than half the rate of deflection when compared to laminates incorporating PVB under the same load. Indeed, the deflection figure is very close to that exhibited by monolithic glass of the same thickness.

In this application, the deflection characteristics were also of particular importance due to the seismic activity experienced in the region. Should the worst happen, SentryGlas® show excellent post-glass-breakage performance due to the strength of the interlayer. Upon impact, the glass may break, but dangerous fragments will adhere to the SentryGlas® interlayer, reducing the risk of injury to people in the vicinity.

"The impressive thermal performance of SentryGlas® was a vital consideration in this installation, especially its ability to function in temperatures up to 80 °C. In addition, the ability to provide this level of functional and structural performance, especially with regards to angular wind resistance, using a thinner laminate construction gives us the scope to create less intrusive and more subtle support structures," explains Tomaso Mani, from Jean Paul Viguier et Associés. "This, in turn, gives us greater design freedom coupled with the ability to create more innovative building concepts that are not fettered by extensive external support frameworks."

Lighter façade panels enable more subtle supporting structures

For decades, interlayers made of polyvinyl butyral (PVB) have been the industry standard when producing laminated safety glass. Architects are well aware of the possibilities and limitations of such glass when used extensively in façade engineering, for roofing and window panels. In contrast, SentryGlas® enables an entirely new approach because the interlayer is over 100 times stiffer and five times stronger than PVB. As a consequence, there is an almost perfect transmission of load between two laminated sheets of glass, even at high temperatures, leading to the excellent flexural behavior of the glass when under load - also under direct sunlight in high summer. Accordingly, laminates with SentryGlas® show less than half the rate of deflection when compared to laminates with PVB, when under the same load, and thus almost the same behavior as monolithic glass of the same thickness.



Constructed by Italian laminator Zadra Vetri S.r.L., the laminate panels using SentryGlas® were also successfully tested to a number of important building test standards, including: Cahier 3574 (VEA) wind test with security load (wind equal to ±6000Pa), Cahier 3533 Stabilité en zone sismiques - seismic test; EN 12543-4 - irradiation test (4,000 h); and NF P 08 302 - body impact test M50. The use of SentryGlas® in this application was also the subject of an 'Avis Technique' certificate from CSTB, further adding to its credentials.

As well as its numerous functional advantages, SentryGlas® interlayers provide multiple aesthetic benefits, including high, crystal-clear transparency, virtually universal resistance to yellowing and excellent edge stability; all of which are important to the long-term aesthetic appeal of the building and the quality associated with Moroccan Telecom's brand.

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As well as improved strength and stiffness, other benefits of SentryGlas® include:

- Safety:** In the event of breakage, glass fragments remain firmly bonded to the interlayer, reducing the chance for injury
- Security:** SentryGlas® can be used in glazing that withstands bullets, hurricane-force winds and even bomb blasts
- Durability:** SentryGlas® is extremely durable and resistant to clouding, even after years of exposure
- Design Versatility:** SentryGlas® can be used in glass manufactured flat or curved, including annealed, toughened, heat-strengthened, spandrel, wired, patterned and color tinted glass
- UV control:** SentryGlas® is available with or without UV transmittance

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