

EvoSlide – Evolution in Window Sliding System

Summary

The main goal of the project is to develop a minimalist horizontal sliding window system with slim frames for large glazed areas (window panes with over 10m²).

Minimalist windows are an architectural trend that has great commercial value but which present specific challenges. The aim of this project was to overcome some of these known weaknesses while introducing new features that will differentiate the system from the ones currently on the market. The novelty of this project is the intention to incorporate solutions of high technological value into a window made mainly of non-metallic components.

The preference for minimalist systems appears to be long-lasting, mainly due to the advantages offered by large window panes with slim frames in terms of aesthetic value and light and solar gains. However, these solutions, in particular sliding windows, are known to have some functional disadvantages in terms of thermal and acoustic performance, watertightness and durability.

The window system developed is composed mainly of non-metallic components. There are several reasons for this. Namely, they have a smaller ecological footprint, better thermal behavior, and are not subject to, even in the most aggressive environments, oxidations and corruptions, which are common phenomena in the currently available solutions. Furthermore, the technical advancements extended beyond the utilization of non-conventional materials. We innovatively engineered a bottom profile featuring a sliding solution designed to accommodate high drainage capacity and incorporate acoustic attenuation elements. As mentioned previously, it is composed of non-metallic components, and, in addition, it has developed from a modular perspective to obtain a repeatable and flexible solution. EvoSlide system is also fully integrated

with automated home systems, motor control, and electronic locking systems, which can also provide more durability and security against intruders.

The several tasks of the project included window development, prototype production, and experimental testing campaigns to characterize both the various components as well as the whole system in terms of mechanical resistance, durability and usage tests, and thermal and acoustic performance, to validate each of the development stages of the final product. To assess of the window's environmental impact reduction, we conducted a comprehensive Life Cycle Analysis (LCA) of the solution. This analysis meticulously evaluated the effective impacts linked to every phase of the product's life cycle, pinpointing opportunities for enhancement. Subsequently, we generated and widely disseminated pertinent technical information regarding this innovative window concept.

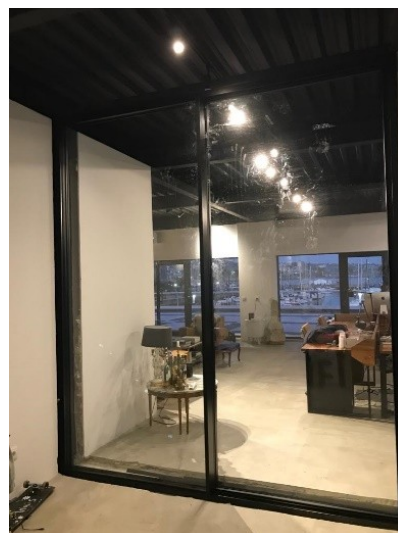


Figure 1. Prototype demonstrator installed in showroom.



Figure 2. Project image.

INFINITO

Project Reference

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Leading Institution

FWD, S.A. (Portugal)

Partners

Itecons – Instituto de Investigação e Desenvolvimento Tecnológico para a Construção, Energia, Ambiente e Sustentabilidade (Portugal)

CERIS Principal Investigator

Nuno Simões
(nsimoes@itecons.uc.pt)

CERIS Research Team

António Tadeu, Catarina Serra, Joana Prata, Julieta António, Rosário Fino

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CERIS

Coimbra Hub: 202 828.90€

Project Website

<http://www.itecons.uc.pt/projectos/evoslide/index.php?module=sec&id=930&f=1>