



The next generation windows a new source of energy (reduction)

Today A&S are used for a wide variety of commercial and residential applications. Common sealants include silicone, acrylic, urethane, butyl and other polymeric types. Formulations have been developed to meet the performance specifications established by industry standards and the particular requirements of the end user. The use of adhesives and sealants allows for greater innovation in building design, along with increased durability of structures, the preservation of the building's environment and a reduction in material consumption for the construction of the façade and windows.

Thanks to modern window technology, city centres now have huge expanses of glass that reflect the sky and provide a lighter environment. Structural glazing attaches glass to a building under high wind and stress loads, yet the adhesives and sealants that strengthen the structure remain largely unseen.

Modern market requirements and the increasing demand for energy efficiency have led to innovative solutions that are technically superior, more cost effective and facilitate 'greener' buildings with a low carbon footprint. Windows are one of the most important factors when considering the overall energy efficiency of a building. The solutions provided by adhesives and sealants translate directly into higher energy efficiency. For example, argon gas can be used in insulating windows as a filling between the glass panes. It has better insulation properties than a conventional filling with air.

By bonding glass directly into the window frame the need for steel reinforcements in plastic windows is removed, producing a thinner frame design. This leads to an increased glass surface, greater energy savings, improved material efficiency and a brighter room ambience.

One of the earliest adhesive chemistries used in structural window glazing is silicone, which now has a 40-year track record of success. The silicone allows for differential thermal expansion between substrates of differing thermal expansion coefficients. Another key requirement is the long-term adhesion durability to glass under the temperature extremes and movements found on the exterior of a commercial building. Today the world's tallest buildings use this technology, confident of the performance and durability demonstrated over past decades.

A variety of other technologies are widely used in window glazing and weather sealing too, including polyurethane reactive adhesives, acrylics, hot melt urethanes, synthetic rubber membrane systems and, more recently, tapes. Each offers a particular set of performance characteristics and will bond

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glass to metal, stone, tile, ceramic, wood and composites. Sealants remain the number one choice for glazing because they deliver high performance and long durability as well as being aesthetically preferable, if not invisible. Glazing adhesives provide insulating properties, lower labour costs, faster installation times, corrosion resistance, and are lighter in weight than old-fashioned mechanical fasteners. In terms of safety, glazing adhesives are flexible, more forgiving and absorb shock better than mechanical fixation systems.

It is this remarkable performance of adhesives and sealants that is extending the limits of architectural creativity. Most importantly, they allow architects to combine cutting-edge design with highly energy-efficient buildings.

To read the detailed version of this Benefit Story click here ([pdf_button](#))

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About Feica

FEICA, the Association of the European Adhesive & Sealant Industry is a multinational association representing the European Adhesive and Sealant Industry. With the support of 14 national associations and several company and affiliated members, FEICA coordinates, represents and advocates the common interests of our industry throughout Europe. In this regard FEICA aims at establishing a constructive dialogue with legislators in order to act as a reliable partner to resolve issues affecting the European Adhesive and Sealant Industry.

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Picture 2. "Passiv House" Image courtesy of Dow Building Solutions and Sto Ltd. Photographer: Samuel Ashfield.