New Age Doors & Windows

For Energy Conservation & Indoor Comfort

Cover Story

Modern technology has given us much better alternatives. Along with many other building materials, the doors we install are wonders of engineering and design. They are aptly designed and well-insulated to provide a thermal barrier between the weather and your home or office, at the same time providing a beautiful entry setting. You can even get doors with large glass panels that use low-E glass technology to deliver excellent thermal performance. Thus, doors and windows play a major role in boosting the energy efficiency of any building. They may also provide some of the biggest energy savings.

This edition's cover story is all about the right designs and proper installation technics of doors in order to provide utmost acoustic and thermal comfort within a building. It also elaborates on performance evaluation of different door configurations to enhance energy conservation. We spoke to the experts on the above-mentioned topics, also on the impact of types of glazing on energy conservation and selection of the right type of glazing. Here we present the excerpts from their comments and guidance on installing the right kind of doors for maintaining indoor comfort, at the same time reducing energy costs, and improving traffic flow and safety.

Image Courtesy - Encraft

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DOOR WINDOW EVALUATION: MEASUREMENT & ASSESSMENT FOR INTERIOR COMFORT LEVELS

Indoor comfort level helps when the door provides adequate security. One has to keep in mind acoustic, visual and thermal comfort to maintain the balance. Doors prevent excess heat or cold entering in and provide comfort. It restricts excessive daylight and heating of the room and the door should have a double sealing gasket system, making it air tight, says **Mario Schmidt, Managing Director, Lingel Windows and Doors Technologies Private Limited.**

If the doors are properly installed as per design & detail intent of an architect, it will definitely help in maintaining the indoor comfort level, points out **Ashutosh Jha, Senior Architect & LEED AP (BD+C), PMP, Studio & Technical Director, Gensler at Bangalore**, indoor comfort level depends on air quality inside the space. "Keep air flowing through your home or office so you are only exposed to fresh, clean air. Opening the doors or windows is a great way to improve airflow, but this may not be the best option for people who live in humid climates or cities with a lot of outdoor air pollution. Striking right balance is very important," Jha adds.

Rajaikepin Rajamoni, Business Head, Sobha Façades points out that fenestration should act as a balance between functional requirements versus offering a comfortable shelter against the outdoor conditions. To keep the external environment, the doors should perform well on keeping wind, water, heat, cold and noise out. The right type of door should be selected based on the functional requirements i.e., traffic, egress type, fire rating, etc., and performance requirements mainly considering air, water, thermal and acoustics. A well designed and detailed door with a correct selection of glass pane or other infill materials will play a key role in maintaining the indoor comfort levels.

According to **Varghese PV**, CEO, Glazing and Metal Works, Sobha Ltd, doors help maintain comfort by:

A. Giving proper acoustic closure. If the doors are made after a careful selection of sections, glass and gaskets, it can reduce sound considerably.
B. It can provide thermal comfort by reducing the heat transfer through the door. This requires a proper selection of glass or door infill material.
C. With proper doors, the discomfort due to water seepage can also be avoided.

Fold & Slide window from Encraft

Daylighting design saves energies in many ways. In daylighting, there are two categories, explains **Avanish Singh Visen, CEO, Encraft** - one is 'side lighting' and another one is 'top lighting'. Side lighting products face the horizon and the top lighting products face the sky. Doors and windows come under the 'side lighting' and it provides daylight and solar energy along with the perimeter of a building. Here an orientation with respect to the sun's path is a critical factor. Remember, the overriding goal of any daylighting design is how well it uses the available light. However, uncontrolled daylight may result in excessive heat gain and potential discomfort. It is important to ensure that the fenestration is appropriately sized and located, and that the correct glazing and accessories are selected. Use the fenestration area wisely to help insure the energy benefits balance the costs, adds Visen.

Superior noise resistance quality of uPVC doors offer excellent soundproofing for home, says **Manish Bansal, Director, Window Magic India**. uPVC doors also help in maintaining the right inside temperature irrespective of outdoor temperature. In today's scenario, it's difficult to find a place where a person can enjoy peaceful solitude, but the superior noise resistance quality of uPVC doors enables users to create silent zones, observes Bansal. uPVC windows and doors have excellent thermal performance. During winters, they resist heat loss, whereas, in summers, they oppose heat gain.

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Sliding door from Window Magic

IMPROVED ACOUSTICS THROUGH PROPER DESIGN & INSTALLATION OF DOORS & WINDOWS

'This is a broad subject and especially reminds me the doors positioned within the meeting room within the office space, using a combination of methods like door gaskets and weather-stripping certainly helps for acoustics', says Ashutosh Jha.

The acoustical architectural design incorporates a noise reducing concepts in the details of individual buildings, explains Visen. The areas of architectural concern include building height, room arrangement, windows & doors design/installation, and balcony and courtyard design. Sound enters a building through its acoustically weakest points, and windows are one of the weakest parts of a wall. A wrong design or not properly installed window will severely negate the effect of a very strong wall. Double glazing is one of the most effective barriers against sound, and combined with uPVC window frame systems, it can reduce perceived noise by up to 80% (>45dB). uPVC windows with good weather sealing are essential for effective sound insulation. uPVC windows profiles are welded and have multiple chamber construction. These two factors combined with the thickness of glass, provide the finished window with excellent acoustic insulation, reflecting sound waves before they have the opportunity to create vibrations and noise, says Visen.

The acoustics of a door can be improved drastically in three major ways, points out Varghese PV:

- There should be a proper selection of the outer