It appears that the future of windows and doors will involve the confluence of technologies that previously have had little to do with fenestration products. Some examples of improved fenestration functionality being conceptually introduced around the industry involve automatic operation of fenestration products, as well as integrated security, locking and alarm systems. There are also plans for electrochromic, thermochromic and photochromic glazing controls, as well as automated shading systems for dynamic control of solar gain and daylighting, and for Zero Net Energy buildings with power sources (such as photovoltaics) and associated control systems integrated into windows. And, even the integration of devices that detect and monitor the status of the window itself as well as environmental conditions and the status of other building systems is a concept on the drawing board.

All of these involve electronic sensing and control systems that interact seamlessly with other building systems engineering and innovation, MI Windows and Doors, miwindows.com, and Brian Lyles, national sales manager, Caldwell Manufacturing Company, caldwellmfgco.com, the AAMA Innovation Task Group is taking formative steps under its stated objective to “create industry standards on system electronic integration, fenestration automation, attachment automation, glazing controls and system safety.”

Next steps
The Innovation Task Group has a big task ahead to appropriately account for all these factors. The next items on the docket include:
- Organizing and prioritizing the many options for technological advancement,
- Identifying allied associations that could aid in the group’s work, and
- Collecting existing standards and product application information on various elements of the list of evolving technologies.

One of the first tasks is to take inventory of the existing standards. “There are no window industry based standards now—only various standards for the application of electronics and the base electrical safety codes,” observes Garries. “It will be necessary to combine existing standards and practices to arrive at a group of standards and guidelines for integrating electronics safely and efficiently into windows and doors.”

The task group will also line up experts in allied fields, such as electronics and control technology, who can contribute to the task group’s work. Potential expertise may be found from the electronics industry as well as laboratories such as the National Renewable Energy Laboratory, the Rocky Mountain Institute, and the Lawrence Berkeley National Laboratory Facility of Low Energy eXperiments in Buildings.

The task group must also create and promote integrated systems in a non-integrated industry to initiate, organize and drive change. There is also a need to better quantify human wellness factors and their relationship to occupant performance. The business environment must adapt as well. Different supply chain configurations and appropriate cost-effective “packaging” of operational features must be determined for different market segments.

New delivery models would require changes to embedded institutional paradigms and answer questions such as:
- Who would specify the open, interoperable protocols for smart systems?
- Who would define the performance requirements?
- Can contractors install and calibrate diverse design options?
- Can owners and occupants operate these systems effectively?

To develop answers to such challenging questions, the task group seeks participants from multiple disciplines in what should be an interesting project, with an opportunity to define future fenestration and its supply chain.

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