Milgard WINDOWS & DOORS™

Universal Design 2.0

How ease-of-use products are evolving to meet new and growing demand

Ease-of-Use Commendation By ARTHRITIS FOUNDATION® www.arthritis.org

Synopsis

While universal design is often associated with addressing the needs of today's aging population, a demographic that includes 77 million people who are 50-plus according to 2010 census data, the market for products designed for accessibility is growing. This growth is based on three key factors: the aging population, an increase in multigenerational households and growing health issues among younger people.

In addition, there are several factors that indicate the need for universal design in the home. These include the lack of accessibility in today's homes, desire for more people to stay in their homes longer and the rising costs of assisted living. Equally important is the need to change the "institutional" stigma of universal design—a stigma validated by consumers based on a recent poll conducted by the National Association of Home Builders (NAHB).

These factors have led manufacturers to re-shape universal design to include both greater accessibility and aesthetics. An example of this evolution in function and style is the new Essence™ Series windows from Milgard Windows & Doors. Like all Milgard products and features, Essence windows are inspired by those who will be using them. The Essence window adds to the Milgard family of ease-of-use products recognized by the Arthritis Foundation with the Ease-of-Use Commendation.

This paper highlights the key elements of universal design. It also provides steps to meet this growing demand and the role the latest product innovation from Milgard Windows & Doors plays in helping to meet these needs.

What is Universal Design?

The design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. The intent of universal design is to simplify life for everyone by making products more usable by as many people as possible at little or no extra costs, benefitting people of all ages and abilities.

— The Center for Universal Design at North Carolina University.

A Market Segment In Need of Easy to Use and Innovative Products

Aging in Place

The baby boomer population is rapidly reaching retirement. In fact, the first wave of 77 million baby boomers reached full retirement age in 2011. According to the AARP, upon retirement, nine out of 10 seniors prefer to grow old in their own homes. This new aging population will live longer, healthier and more active lives than previous generations in hopes of maintaining their independence.

Changing Family Unit

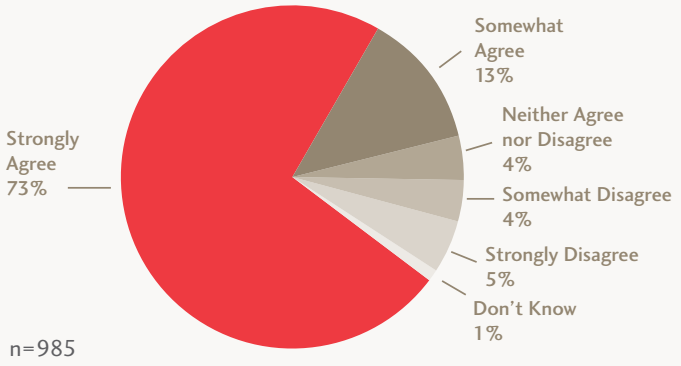
According to the latest U.S. census data, more than 7 million households in the U.S. had multiple generations of people living together—40 percent growth over the past decade. In just the past two years alone, the number of intergenerational households in the United States has increased 15 percent.

Growing Younger

Arthritis and other joint problems are increasing among people of all ages. According to the American Academy of Orthopedic Surgeons, half of the 50 million U.S. adults with arthritis are under the age of 50. Health advocates such as the Centers for Disease Control and Prevention (CDC) contend that arthritis is connected to obesity, one of the fastest growing epidemics of the past century. In fact, findings from the CDC's National Health Interview Survey for 2007-2009 revealed that one in three adults is obese and one in three adults with obesity also has arthritis. Furthermore, Juvenile Arthritis is now one of the most common childhood diseases in the U.S., affecting nearly 300,000 youth.

Aging in Place Preferences

LEVEL OF AGREEMENT
What I'd Really Like to Do is Stay in My Current Residence for as Long as Possible.



Source: Home and Community Preferences of the 45+ Population, AARP, November 2010

Universal Design at Home

Prevalence

While universal design is not yet a "household" name, it is growing in popularity—and application. According to a recent American Institute of Architects (AIA) survey, nearly a third of residential architects reported increased interest in universal design of the kitchen and 50 percent saw increasing use of these features in the bathroom. Furthermore, in 2008, the National Kitchen and Bath Association reported that 30 percent of consumers were considering universal design elements for their home.

Advances in universal design are making products both easy to use and aesthetically pleasing.

Key areas in the home identified by the universal design Association as problematic and therefore accepting of universally designed products include: entry steps, narrow doorways and hallways, inconsistent floor heights, overhead cabinetry, tall countertops, and difficult to operate windows and doors. Through home modifications, Universal Design can enhance functionality, independence and safety for everyone in the home.

Time of Need

The average home is not designed for accessibility. In fact, the average American home is more than 30 years old, according to the Universal Design Association. Moreover, these older homes were built for the "imaginary" person--a healthy, fit, young man of average height, says the Metropolitan Area Agency on Aging. Not surprising, a recent AARP study revealed that the majority of people over 50 are concerned about their housing options as they age, stating they'd prefer to stay where they are, but realize their current home is ill equipped for future needs.

Further supporting the need for accessibility in the home is the fact that most homeowners today do not expect to move anytime soon. According to a 2011 Harris Interactive poll, most homeowners expect to stay in their current homes for at least five years; 89 percent of those 50 and older, in particular, wish to remain in their own homes indefinitely. Even today's younger Generation X homeowners stated they prefer to live in their homes for the next 10 years.

While many homeowners cite independence as a reason for choosing to stay in their home as long as possible, there are other factors at play. According to the 2010 MetLife Market Survey of Nursing Home and Assisted Living costs, the average annual costs for assisted living is nearing $40,000—and has been increasing about $2,000 each year. Depending on the level of care needed, universal design can be far more economical. Unfortunately, says the Arthritis Foundation, half of all adults with arthritis don't believe anything can be done to help them.

Universal Opportunity

The consensus among homeowners today is that the products designed to make the home safer and accessible have an unappealing, institutional feel. This sentiment was reflected in a recent National Association of Home Builders (NAHB) survey in which 95 percent of home builders reported that buyers aged 55 or older can be resistant to purchasing a home with Universal Design features.

According to the Corporate Design Foundation, baby boomers are more design savvy than their parents and are not willing to settle for things that are functional but ugly. Taking this notion one step further, Transgenerational Design Matters, an education and advocacy group, believes the answer to making universal design more universally accepted is to evolve the concept—in other words, accommodate rather than discriminate, appealing to users of all ages and abilities.

Evolution of Universal Design at Home

"The retirement of the Baby Boomers, in particular, has made universal design one of the most important areas in design today. This means greater demand for ease of use, simplicity, energy efficient performance and products they no longer have to replace."

- Lori Dennis, Interior Designer

Combining Function and Style

To combat the "institutional" stigma that has been associated with universally designed products, some manufacturers have responded with solutions that blend safety, comfort and style. Masco Corporation, for example, has a team of industrial designers whose job is to help bring functionality and design together for its many brands. The goal is to create a connection between the product and user and execute design solutions that can accommodate consumers' needs and wants. According to the Center for Universal Design at North Carolina State University, this connection between product and user is paramount. "It must have a normal and natural appearance, be every bit as effective, and be easier to use," said Director Dick Duncan. "The design features don't call attention to themselves but make a huge difference in people's lives."

Blending In

After many years of standing out amongst products that lacked ease of use features, the future of universal design appears to be blending in. In the bathroom, for example, designers across the country agree that these products must be able to meet the changing healthcare needs yet be suitable, aesthetically and functionally, for people of all ages. As Universal Design Expert Wendy A. Jordan pointed out in a New York Times article from 2011, some of the most popular design trends – large, walk-in showers with no doors; versatile shower sprays – fit right in with designs that make showers safe, accessible and enjoyable to use.

There is great demand to make homes accessible and multigenerational – the key is blending performance with style and making the design solutions essentially invisible.

Whole Home Versus Room-by-room Solution

In the past, incorporating universal design has often been a situational or room-specific approach to accommodating needs. Now, however, manufacturers are taking the concept to a new level by delivering it throughout the entire home. In 2008, Milgard Windows & Doors received the Ease-of-Use Commendation from the Arthritis Foundation for its Tuscany® and Montecito® Series windows featuring the patent-pending SmartTouch® lock. Most recently Milgard added the new Essence™ Series window, which also features the SmartTouch lock, to its family of easy to use products. This innovative feature addressed the need for making windows, which can be found throughout the home, easier to operate.

Evolution in Action: Essence™ Series Windows by Milgard

About the Project

With the market for universally designed products growing—and evolving—it is essential that builders, developers and architects have solutions that can meet these new and changing demands. In the case of Milgard Windows & Doors and its new Essence™ Series windows, the goal was to serve the current universal design market while looking to the future. To accomplish this, Milgard chose a more functionally stylish design—one that would allow its ease of use features to both stand out and fit in.

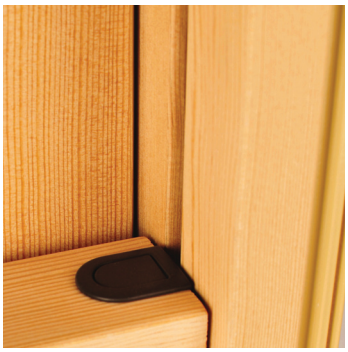
Rather than disguise its ease of use features like some manufacturers have, Milgard chose to accentuate them on the Essence Series. The company redesigned its signature ease of use feature, the SmartTouch® lock, to include a new sleek and stylish profile with five on-trend finish options. These finishes were extended to a new patent-pending tilt-latch system that makes cleaning the outside of the window easier and safer.

Putting It to the Test

The Essence window was submitted in 2010 for independent testing to ensure the product would be accessible for people of all ages and abilities. To pass this testing, the product had to meet strict Ease-of-Use and accessibility standards set forth by the Arthritis Foundation.

Baseline Testing: 63 percent of participants reported that they experience some level of difficulty opening and closing and locking and unlocking their windows.

The Essence™ Series SmartTouch® lock



The Essence™ Series tilt latch system

Essence Series window product samples were submitted to the non-profit Accessibility Evaluation Facility at the Georgia Tech Research Institute for testing. The purpose was to determine the accessibly and ease-of-use of the windows for people with arthritis. Evaluation featured two types of activities: a checklist evaluation of inspection items, observation or direct testing, and a second evaluation consisting of a user study with participants who suffer from varying degrees of functional ability and arthritis.

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User Evaluation

A group of selected participants with varying levels of arthritis conditions were given a brief orientation and a demonstration of the product. Physical measurements such as a grip and pinch strength were recorded prior to testing. The participants were then asked to use the product themselves to perform a series of prepared tasks using the Essence™ Series windows. These included:

- Lift latch to unlock.
- Press buttons to tilt sash inwards.
- Slide window one third of the way open.
- Slide window one third of the way closed.
- Slide window two thirds of the way open.
- Slide window two thirds of the way closed.
- Slide window fully open.
- Slide window fully closed.
- Lock the window.

Results

In order to receive favorable recommendation from the Georgia Tech Research Institute, the product must pass the following criteria:

- Receive a "pass" rating on all of the checklist evaluations.
- Sixty percent of the users must be able to perform the tasks associated with product use with little or no difficulty.
- No more than ten percent of the users should experience great difficulty while performing the tasks associated with product use.

Testing indicated that the Essence windows are well suited for their intended purpose. Most of the participants were satisfied with their ability to interact with the product. Users completed most of the tasks associated with using the Essence window and were generally impressed with the ease of use of the lock. In fact, the participants expressed a preference of the SmartTouch® lock over other window locks they have used in the past.

Conclusions:

- Users liked that "lifting the latch to unlock the window is very easy to do."
- Users liked "how the windows automatically locked when they were closed."
- 88 percent enjoyed using the product and felt they could use it as quickly as they want.
- 75 percent felt their experience with this product was easier or superior to their experiences with similar products.
- 75 percent felt they could use this product without overexerting themselves.
- 100 percent were able to unlock and lock and open and close the smaller double hung window without experiencing any pain.

Both the checklist evaluation and user testing indicated the Essence Series will be easy to use for most individuals with arthritis. The Essence window marks the fourth product from Milgard to receive the Ease-of-Use Commendation from the Arthritis Foundation – a program that recognizes manufacturers who design user-friendly products that are easily accessible for people with functional limitations due to the effects of arthritis.

Checklist Evaluation

A Human Factors Expert inspected the products and performed a checklist evaluation to assess compliance with ease-of-use guidelines tailored for individuals with arthritis.

Evaluation Guidelines:

1. Verify that at least one mode of operation is provided that does not require fine motor control or simultaneous actions, and that is operable with limited reach and strength.
2. Inspect each aspect of the device and verify that key instructions for product assembly and use are provided directly on the device.
3. Inspect the product to ensure that the product is easy to grip and control. The shape of the control should be easy to hold, so that it fits the hand. There should also be a texture to control so that it can be gripped and held onto.
4. Verify that interaction with the product does not require simultaneous actions such as pulling and rotating.
5. Verify that the requirement for constant, uninterrupted actions is minimized by investigating the required actions for each control.
6. Offer redundant modes of operation utilizing the next larger set of motor movements (finger to hand, hand to arm, or arm to foot). Design a door lever, for example, to turn with one's arm if it can't be turned using the hand. If one's arm can't open it, design it so one can use one's hip. Offer different ways to accomplish the same task using increasingly larger motor movements.
7. Verify presence of definitive feedback cues (control positions should 'snap' into position).
8. Verify that operation of the product does not violate standard conventions (clockwise for 'on' or 'increase', counterclockwise for 'off' or 'decrease', up for 'on' or 'increase', and 'down for 'off' or 'decrease').

About Milgard Windows & Doors

Milgard Windows & Doors, a Masco company based in Tacoma, Wash., offers a full line of wood, aluminum, vinyl and fiberglass windows and patio doors for trade professionals and homeowners. The company has been recognized for manufacturing the nation's highest quality vinyl windows six times in a yearly survey sponsored by Hanley-Wood Inc., publishers of Builder magazine. Milgard employs approximately 3,500 people nationwide. For more information, visit milgard.com.

Resources

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