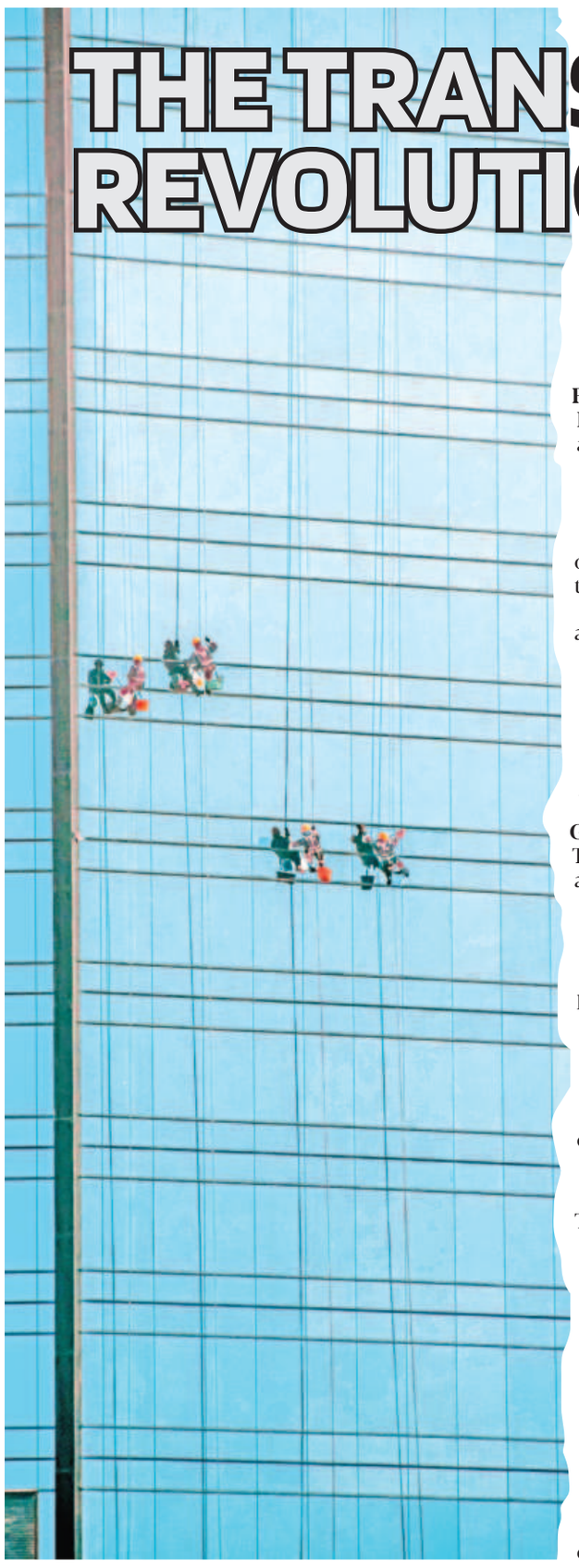

THE TRANSPARENT REVOLUTION

Once fragile and functional, glass has become one of the toughest, smartest, and most versatile materials of our time. It no longer just lets in the light. It now powers buildings, connects cities, and reflects the changing face of modern design.

From utility to innovation

In the past, glass was valued mainly for its transparency allowing light into homes while keeping out dust and weather. Today, thanks to technology, glass has become a symbol of innovation. It is used not just for viewing but for insulation, energy efficiency, and aesthetic appeal. Modern architects and designers use glass to create open, bright, and elegant spaces that connect people to their surroundings.

Reflective glass, for example, is widely used in apartments and commercial buildings. It allows sunlight to pass through while ensuring privacy and reducing glare. This reduces the need for blinds or curtains and gives buildings a sleek, modern look. Double-glazed glass, another common type, improves thermal insulation and minimizes outside noise, making indoor spaces more comfortable and energy-efficient. Other variants include:

Glass in Bangladesh's Urban Growth

The use of glass in Bangladesh has grown rapidly alongside urbanisation from apartments and office towers to shopping centres and public buildings. According to a 2022 report, the local glass industry is expanding at approximately 8-10 % annually, with more than 90 % of domestic demand now met by local production. Domestic manufacturers now produce around 2,000 tonnes of glass per day and are even exploring exports. This now includes energy-efficient variants—such as double-glazed and low-emissivity (Low-E) glass—well suited to Bangladesh's tropical climate and modern design demands. This shift not only modernises building exteriors but also enhances light flow, ventilation, and aesthetic appeal.

Challenges and Opportunities

Though the industry continues to advance, it still faces challenges like high production costs and reliance on imported raw materials. Glassmaking demands uninterrupted operations and heavy investment, limiting smaller producers. Yet, rising demand for sustainable, energy-efficient materials is driving innovation and growth.

Today, glass is more than a transparent surface. It is where design meets technology. From double-glazed windows that conserve energy to decorative panels that define modern interiors, glass has become integral to how we build and live. In Bangladesh, the growing use of locally produced, climate-smart glass reflects a shift toward sustainable urban living and a future that's not only brighter, but clearer.

Beyond transparency

Nasir Group has become one of Bangladesh's largest business conglomerates with a wide range of operations, including in the glass industry. While the adoption of "smart" materials in the country's glass sector is not yet widespread, with a focus on conventional products, the company is beginning to introduce smarter technologies through its production.

The Daily Star (TDS): ***How would you describe the current level of adoption of smart materials in Bangladesh's glass industry?***

Nasim Biswas (NM): The adoption of truly "smart" materials in Bangladesh's glass industry is not up to the mark as we expected. The industry is overwhelmingly focused on the production and use of conventional, commodity-grade glass. Bangladesh's local glass production consists of some Sheet Glasses, such as Float Glass, Tempered/ Laminated Glass. These products are "passive." They do not change their properties in response to external stimuli like light, heat, or electricity. Recently, Nasir Float Glass are making Auto frost glass, double glazed and laminated glass, where the smart adoption is noticeable.

NASIM BISWAS
Managing Director
Nasir Group

My perspective on building materials is rooted in practicality and durability. When we look at the next generation of construction, smart materials are not just a trend; they are a fundamental shift towards creating infrastructure that is adaptive, responsive, and self-sustaining.

TDS: ***How is your product uniquely suited to solve the challenges faced by modern construction in Bangladesh?***

NM: Our product line is not just glass; it is an engineered response to the specific challenges of heat, humidity, storms, energy costs, and urbanisation that define modern construction in Bangladesh. We don't sell square meters; we sell performance, resilience, and intelligence.

TDS: ***Do you have any data or comparative analysis that shows the long-term financial and environmental savings of using these advanced materials versus conventional ones in a typical urban project?***

NM: Smart glass can offer long-term financial and environmental savings in urban projects compared to conventional glass, primarily through reduced energy consumption for heating, cooling, and lighting, which lowers utility bills and carbon emissions. Smart windows with daylighting control achieved 23% energy savings. Additionally, the ability to manage peak energy loads can provide flexibility in energy use and increase building comfort. Smart glass can decrease a building's overall energy demand by reducing the need for artificial lighting, heating, and air conditioning.

TDS: ***What kind of government policies, R&D incentives, or changes in building codes are necessary to accelerate the integration of smart materials into mainstream construction in Bangladesh?***

NM: To accelerate smart material integration in Bangladesh, government policies should incentivise R&D and adoption, update building codes to include performance standards for smart materials, and support both large-scale and grassroots innovation through targeted funding and a streamlined regulatory process. These measures should align with national goals like the Climate Action Roadmap for Buildings and Construction, which focuses on livability, functionality, and resilience through sustainable practices.

THE GLASS GUIDE
What Works Where

FLOAT GLASS (CLEAR GLASS)
This is the plain, everyday glass found in most windows and doors. Its biggest strengths are clarity, affordability, and easy availability. This is great for spaces that need natural light. However, it's fragile and unsafe for high-impact areas like balconies or railings, as it shatters into sharp pieces when broken.

LAMINATED GLASS
Made by bonding two or more glass layers with a plastic interlayer, laminated glass holds together even when cracked. Much like a spiderweb instead of shattered pieces. It's excellent for skylights, windshields, or security areas where safety matters most. The trade-off is cost; it's pricier and slightly heavier than standard glass.

SOLAR CONTROL GLASS
This one's built for Bangladesh's sunny climate. It reflects heat while allowing light, reducing the need for air-conditioning and saving energy. However, it can be costlier than clear glass and may slightly dim indoor brightness.

ACOUSTIC GLASS
Perfect for Dhaka's noisy neighborhoods, this layered glass minimizes sound transmission while maintaining visibility. It's great for homes near roads or airports, though its cost can be prohibitive for large installations.

TEMPERED GLASS
Tougher and safer, this is heat-treated to be four to five times stronger than regular glass. When it breaks, it crumbles into small, dull fragments instead of dangerous shards. Perfect for doors, shower enclosures, and railings. The only downside? It can't be cut or altered once tempered, so exact sizing is crucial before installation.

DOUBLE-GLAZED GLASS
Essentially two panes separated by air or gas, this type insulates against both noise and temperature. It keeps rooms cool in summer, warm in winter, and quiet all year. The downside? Higher price and trickier maintenance if moisture seeps between the panes.

LOW-EMISSIVITY (LOW-E) GLASS
A high-tech cousin of solar control glass, it uses a thin metallic coating to reflect heat without blocking light. Ideal for energy-efficient buildings but again, more expensive upfront.

DECORATIVE GLASS
Where functionality meets art. Etched, frosted, or colored glass adds privacy and personality to interiors. While it won't block heat or noise, it creates atmosphere while turning a practical surface into a design statement.