

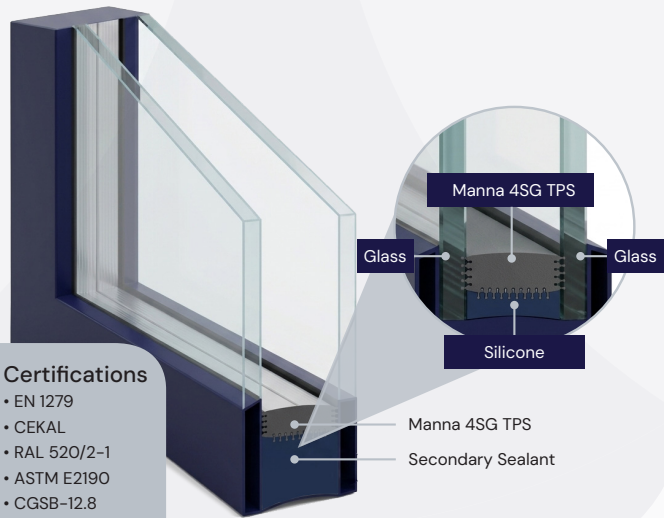


Manna Glass
CRAFT. CLARITY. COMMITMENT.

ADVANCED IGU SOLUTIONS



Manna 4SG TPS – The Technology



- Certifications**
- EN 1279
 - CEKAL
 - RAL 520/2-1
 - ASTM E2190
 - CGSB-12.8
 - EPD (SmartEPD-2024-030-0154-01)

SUPERIOR GAS RETENTION

Maintains insulating gas for long-term performance.

LONG-TERM THERMAL PERFORMANCE

Reliable insulation in demanding facade conditions.

FLEXIBLE CHEMICAL BONDING

Compatible with a wide range of secondary sealants for reliable adhesion.

FREEDOM IN ARCHITECTURAL DESIGN

Enables slimmer profiles and more creative facade solutions.

The World’s Best Performing Reactive Warm Edge Spacer

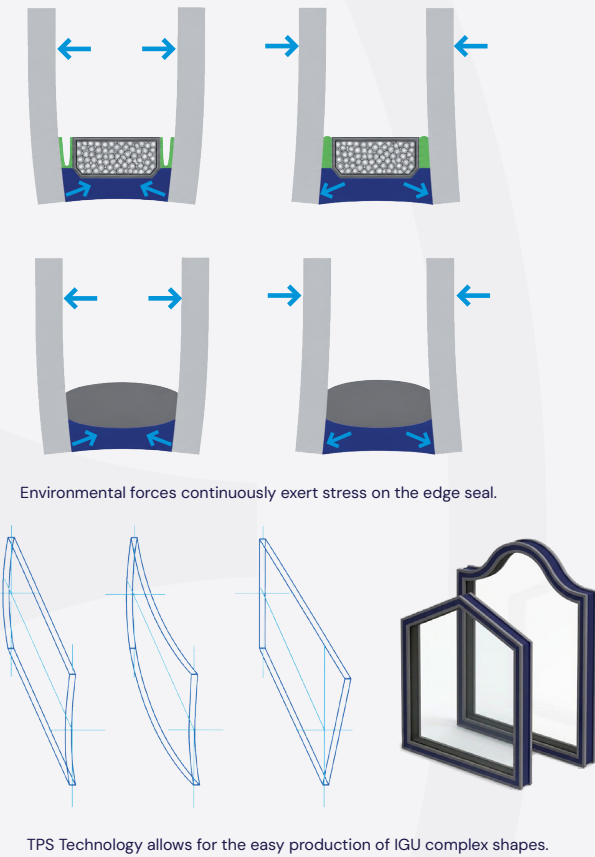
The most modern technology for producing Insulating Glass Units (IGUs) is known as TPS.

TPS stands for thermoplastic spacer; an advanced edge seal material used in IGUs. It replaces traditional rigid metal spacer bars such as aluminium with a continuous flexible polymer-based compound. It integrates the structural separator, primary sealant and moisture-absorbing desiccant into a single automated step.

Manna Glass has invested extensively in TPS Production Lines across its factories and can offer a range of TPS solutions.

- ⊕ Powered by TPS Technology
- ⊕ Engineered for Extreme Climate Performance
- ⊕ Made for the Middle East
- ⊕ Proven to last for decades

Facing the Challenges of Extreme Temperature Regions



As we know, Façades in the Middle East face some of the world’s harshest climatic conditions. Extreme heat, intense solar radiation, and continuous thermal cycling put exceptional stress on insulating glass units (IGUs), particularly at the edge of their spacer systems.

Conventional aluminium, or similar, hollow spacer systems often experience:

- ⊕ Butyl creep, tearing, or squeeze-out = optical deformation
- ⊕ Relatively quick desiccant saturation = increased fogging risk
- ⊕ Rapid loss of gas or air tightness = U-value degradation over time leading to coating corrosion
- ⊕ Temperature and Stress related Edge seal deformation = performance loss due to moisture ingress

Manna 4SG TPS sets a revolutionary new benchmark for hot climate applications. Engineered for the Middle East.

Manna 4SG TPS is engineered to perform where conventional systems reach their limits.

- ⊕ Withstands extreme thermal loads with stable performance up to +95 °C
- ⊕ Maintains adhesion, structural integrity, and gas retention under continuous heat and dynamic stress
- ⊕ Ensures uniform stress distribution
- ⊕ Eliminates typical butyl-based failure modes
- ⊕ Delivers maximum durability and aesthetic quality
- ⊕ Allows the imagination and production of unlimited shapes, curves, and bent glass designs

	MANNA 4SG TPS	FOAM SPACER	HYBRID SPACER	ALUMINIUM SPACER
GAS RETENTION	⊕⊕⊕	⊕	⊕⊕	⊕⊕
THERMAL CONDUCTIVITY	⊕⊕⊕	⊕⊕⊕	⊕⊕⊕	⊕
FLEXIBILITY	⊕⊕⊕	⊕⊕	⊕	⊕
ROBOT-APPLIED	⊕⊕⊕	⊕⊕⊕	-	-
ASTHETICS	⊕⊕⊕	⊕⊕	⊕	⊕
DURABILITY	⊕⊕⊕	⊕⊕	⊕⊕	⊕⊕
CHEMICALLY BONDED TO GLASS	⊕⊕⊕	-	-	-
HIGHER TEMPERATURE STABILITY	⊕⊕⊕	-	-	-
AUTOMATED THICKNESS APPLICATION	⊕⊕⊕	-	-	-

⊕⊕⊕ Best ⊕⊕ Better ⊕ Good

Elevating Façade Performance to a New Standard



Thermal Performance

Manna 4SG TPS ensures outstanding argon gas tightness, helping to maintain insulation performance throughout the entire service life of the IGU.

This long-term gas retention helps maintain a consistently low U-value, which can be up to 25 % better than IGUs affected by gas loss through edge spacer leakage.

Optical & Aesthetic Quality

Conventional spacer systems often develop visible edge defects. Manna 4SG TPS prevents these issues through its reactive spacer technology, ensuring a permanently clean, uniform and precise edge seal.

Mechanical & Structural Performance

Designed for high mechanical and dynamic loads, Manna 4SG TPS provides uniform stress distribution within the edge seal. Therefore, it is ideally suited for large IGUs, cold-bent glass, curved façades and buildings exposed to high wind loads or thermal movement.

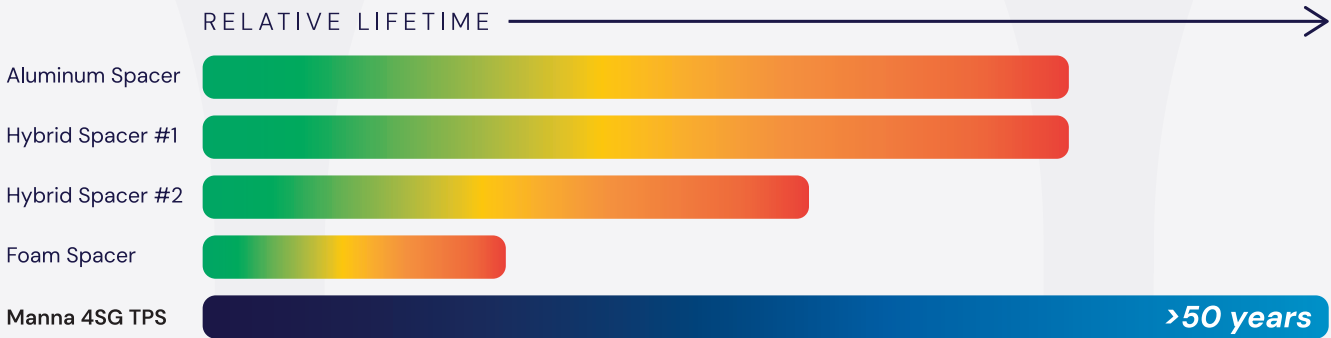


>90%
ARGON GAS RETENTION



>50 YEARS
EXPECTED IGU LIFETIME*

Service Life Expectation of IGUs with Different Spacer Materials*



*Based on internal testing and accelerated aging methods.

Engineered for the future of high performance façades

Manna Glass collaborates with the world's leading TPS providers.

For the advanced Manna 4SG TPS product, Manna and H.B.Fuller have joined together and are committed to empowering our partners with the expertise, tools and support required to meet the evolving demands of modern façade design.

Our comprehensive service offering includes:

- ⊕ Specialised consultant training sessions to enhance technical knowledge of leading technologies in IGU production, design and performance.
- ⊕ Façade engineering support including advanced FEA analysis to ensure reliable outcomes from concept to completion.
- ⊕ Together we can shape the next generation of high-performance building envelopes with craft, clarity and commitment.

Our Promise



MAXIMUM SERVICE LIFE



SUPPORTS CLIMATE PROTECTION



HIGH ENERGY EFFICIENCY



UNIQUE APPEARANCE



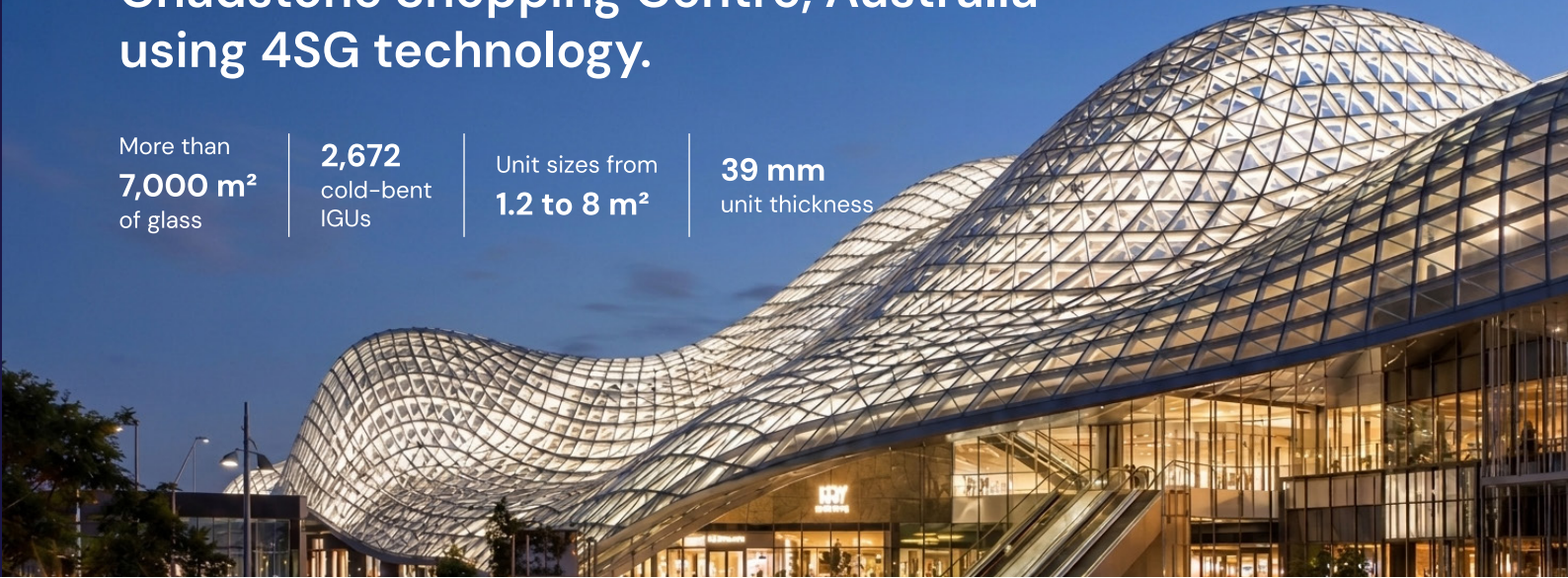
REDUCED ENERGY COSTS



ENHANCED LIVING COMFORT

Chadstone Shopping Centre, Australia – using 4SG technology.

More than 7,000 m² of glass	2,672 cold-bent IGUs	Unit sizes from 1.2 to 8 m²	39 mm unit thickness
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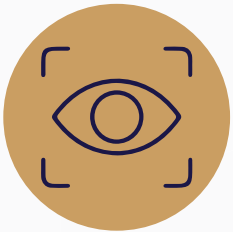




CRAFT.

For more than six decades, Manna Glass has combined craftsmanship with advanced manufacturing expertise. Every product reflects our commitment to precision, quality and continuous improvement.

From architectural glass to specialised glazing solutions, we create products that perform reliably in some of the world's most demanding environments.



CLARITY.

Clarity is more than transparency. It is the way we work, communicate and innovate.

We believe in clear processes, clear partnerships and clear technical solutions that help architects, consultants and fabricators achieve their goals with confidence.



COMMITMENT.

Our commitment extends beyond the products we manufacture.

It defines how we support our customers, invest in technology and contribute to the future of the built environment across the GCC and beyond.

Every project, every solution and every partnership is guided by the same principle: delivering lasting value.

CRAFT. CLARITY. COMMITMENT.





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CENTRAL REGION

RIYADH

Headquarters, Branches,
Accessories, IGU & Glass
Factories, Project Division

AL KHARJ

Branch

BURAIDAH

Branch

ONAIZA

Branch

HAIL

Branch

NORTHERN REGION

SKAKA

Branch

EASTERN REGION

DAMMAM

Branches, Accessories &
Tempered Glass Factory

AL AHSA

Branch

HAFAR AL-BATIN

Branch

EAST RIYADH – AL SULAY

Accessories Branch

SOUTHERN REGION

KHAMIS MUSHAYT

Branch & Accessories

NAJRAN

Branch

GIZAN

Branch & Accessories

AL BAHA

Branch

SOUTH WEST COAST REGION

GIZAN

Warehouse

NORTH WESTERN REGION

TABUK

Glass Factory & Branch

WESTERN REGION

JEDDAH

Mega Factory (65,000 m²)
– Coming Soon

MAKKAH

Branch & Tempered
Glass Factory

MADINAH

Branches, IGU &
Tempered Glass Factories

TAIF

Branch

YANBU

Branch

AL QUNFUDAH

Branch

UAE REGION

SHARJAH

JMG, a Manna Glass Company

AJMAN

JMG, a Manna Glass Company

SHARJAH

Hub Warehouse – Coming Soon

AJMAN

Accessories Showroom
– Coming Soon

ABU DHABI

Accessories Showroom
– Coming Soon

GCC EXPANSION

KUWAIT CITY

Branch – Coming Soon

BAHRAIN

Branch – Coming Soon

MUSCAT, OMAN

Branch – Coming Soon

www.mannaglass.sa

WE ARE HERE WHEN YOU NEED US.

Manna Glass



H.B. Fuller



KÖMMERLING

For more information, contact us at:

sales.glass@mannaglass.sa or tech.projects@mannaglass.sa

For more information about our company, visit:

www.mannaglass.sa

IMPORTANT: It is the user's responsibility to test and determine the suitability of a product for the user's intended use. Any product samples provided for testing are provided in accordance with standard limited warranties as stated on our technical data sheets.

MG-4SG-FLY-EN-V01; 06/2026; INT-2026-0014

TECHNICAL
DOCUMENTS:

