2050 FLAT GLASS IN A CLIMATE NEUTRAL EUROPE

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GLASS FOR EUROPE

H2 Glass, GIFFT, Everglass Webinar - 2 December 2025


CLIMATE URGENCY
A GLOBAL MATERIAL
LOSS OF BIODIVERSITY
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FLAT GLASS IS KEY for climate-neutrality, circularity, digitalisation, safety, health, innovation

- **Energy efficient** glazing solutions for **buildings**
- More **efficient and interactive glass solutions,** which preserve security, offer new functionalities and contribute to **clean and automated mobility**
- Extra clear glass to capture more **solar energy**
- Innovative **IT integration** to support **digitalisation** with touch-screen, smart mirrors, solar-heat modulation, glazing enhancing radio and telecom signals, invisible sensors and radars, etc.
- Specific glass solutions with **hygienic properties** for use in hospitals and most exposed environments
- **Recyclable** product with potential for enhanced collection

THE TRADE ASSOCIATION'S DUTY to support the flat glass sector

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AGC · GUARDIAN GLASS · NSG GROUP · SAINT-GOBAIN · ŞİŞECAM

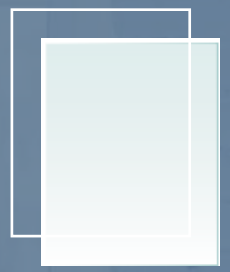
AGN · ASSOVETRO · BF Bundesverband Flachglas · BV GLAS · UDTVP Union Des Transformateurs de Verre Plat · FÉDÉRATION DE L'INDUSTRIE DU VERRE VERBOND VAN DE GLASINDUSTRIE · Bouwend Nederland · GGF · ZWIĄZEK PRACODAWCÓW POLSKIE SZKŁO

Flat glass and Buildings

-37%

High-performance glazing can help cut nearly 37% of CO_2 emissions from buildings in the EU.

Insulating glass units



Switchable glazing

BIPV Transparent photovoltaics

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What is the maximum saving potential?

Independent study by TNO - Potential impact of high performance glazing on Energy and CO2 savings in Europe

In 2030

75.5 Mtoe
of annual energy savings

-29%
of total EU building consumption

94.2 Mtonnes
of annual CO_2 emission avoidance

-28%
of total EU building CO_2 emission

In 2050

67.2 Mtoe
of annual energy savings

-37%
of total EU building consumption

68.5 Mtonnes
of annual CO_2 emission avoidance

-37%
of total EU building CO_2 emission

Significant: Europe's buildings are aged with a lot of old generation glazing!

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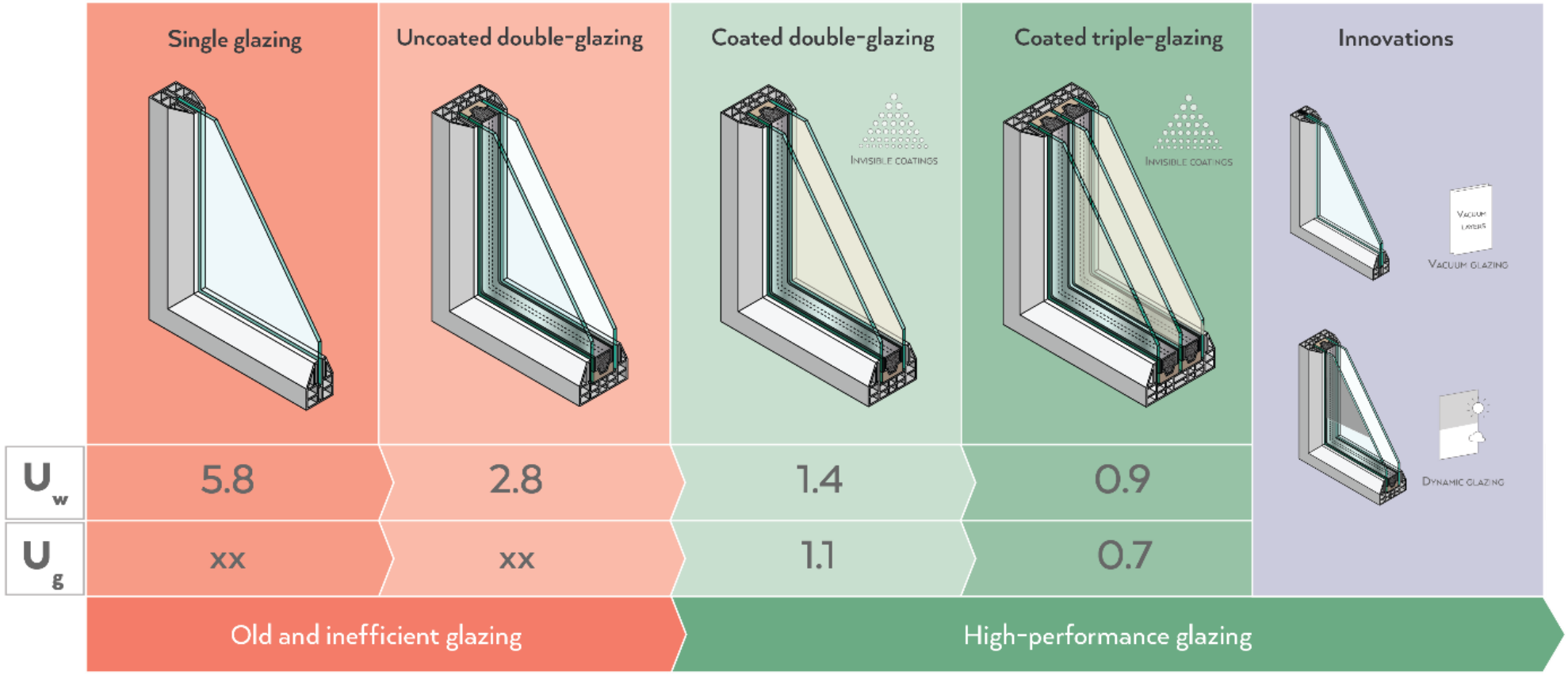
CONSTANT IMPROVEMENT IN PRODUCT PERFORMANCE



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A MYRIAD OF FUNCTIONALITIES FOR MODERN BUILDINGS

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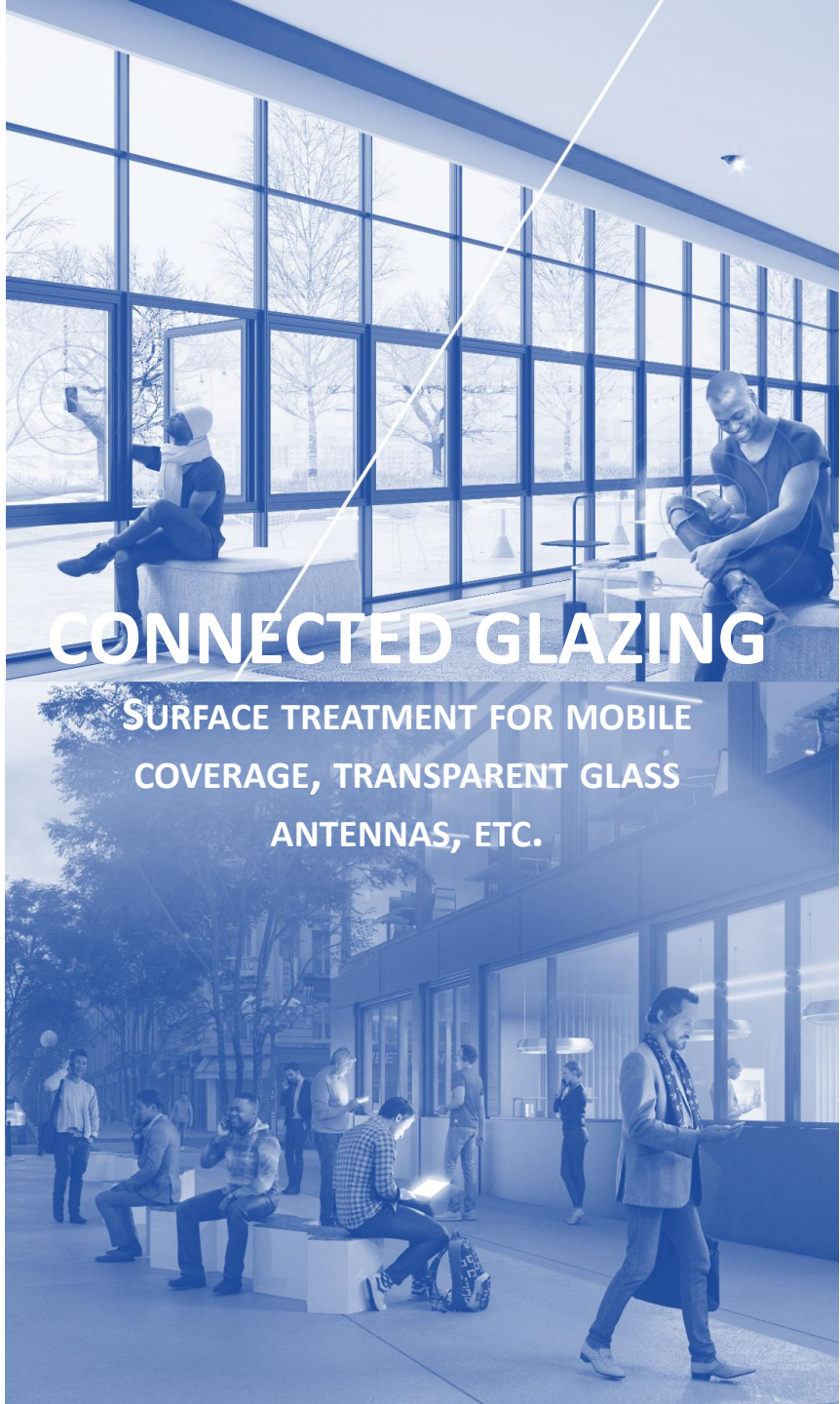
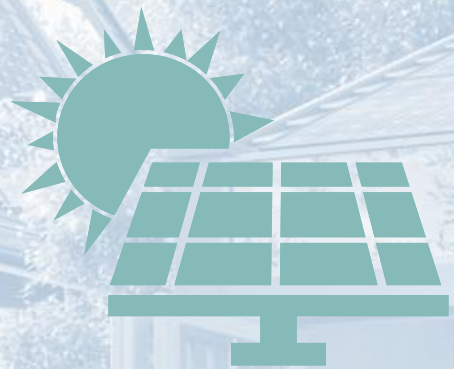
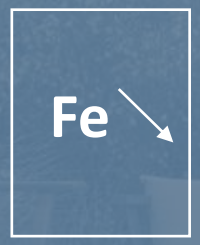


FLAT GLASS AND SOLAR ENERGY



Glass represents from 65% to over 95% of the weight of PV modules.



LOW IRON

SELF CLEANING

SOLAR MIRRORS

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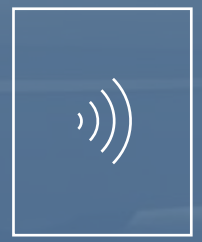
Flat glass and Mobility

+17%

Average increase in glass area in passenger cars since 2000.

Lighter safety glass

Coatings for efficiency and range



Automated driving components

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RESEARCHING, TESTING AND DEVELOPING NOVEL WAYS TO LOWER INDUSTRIAL EMISSIONS

-43% CO_2

IN 25 YEARS PER TONNE OF FLAT GLASS

0.13%

OF TOTAL EU EMISSIONS

25%

OF PROCESS EMISSIONS

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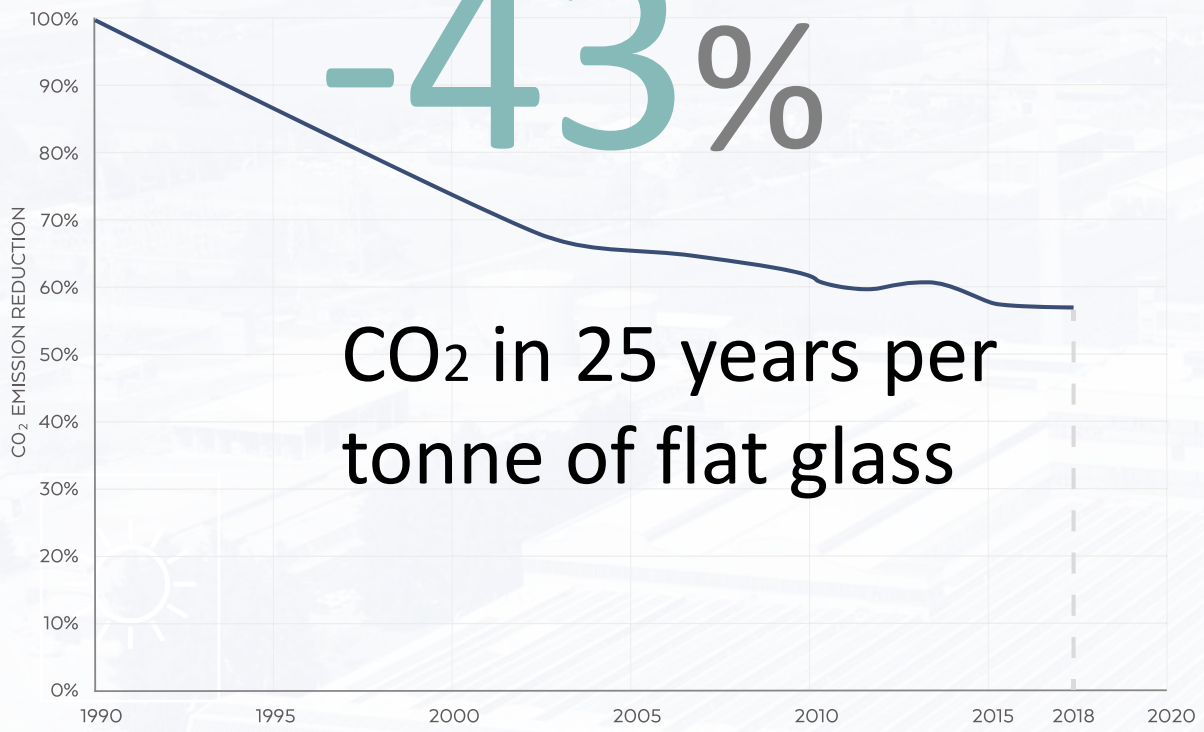
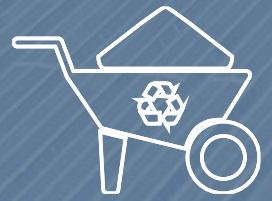
EXCELLENT TRACK RECORD
IN DECREASING EMISSIONS



INDUSTRIAL INNOVATION

EVOLVING ENERGY MIX



IMPROVING CIRCULARITY

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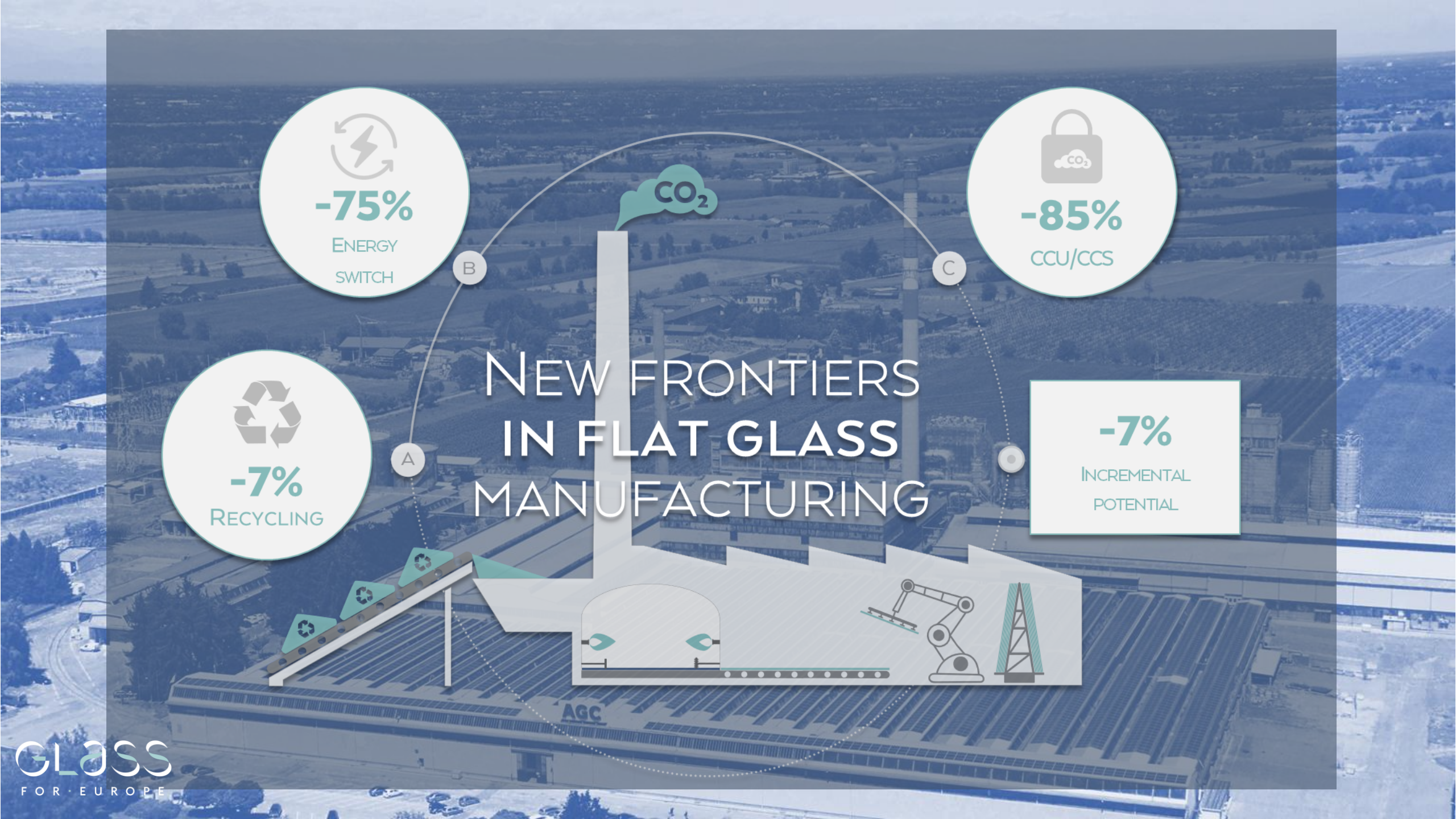

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RECYLING: KEY EUROPEAN DATA

26%

of cullet

in a flat glass batch/

furnace*

(est. 2.75 Mt)

2 to 3%

reduction in energy consumption

for every **10%** extra cullet

in the batch

1t (tonne) **of cullet saves**

1.2t (tonne) of raw materials

310kg CO_2 in glass manufacturing

+/- 600kg CO_2 (including CO_2 saved upstream)

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* Average EU 2018

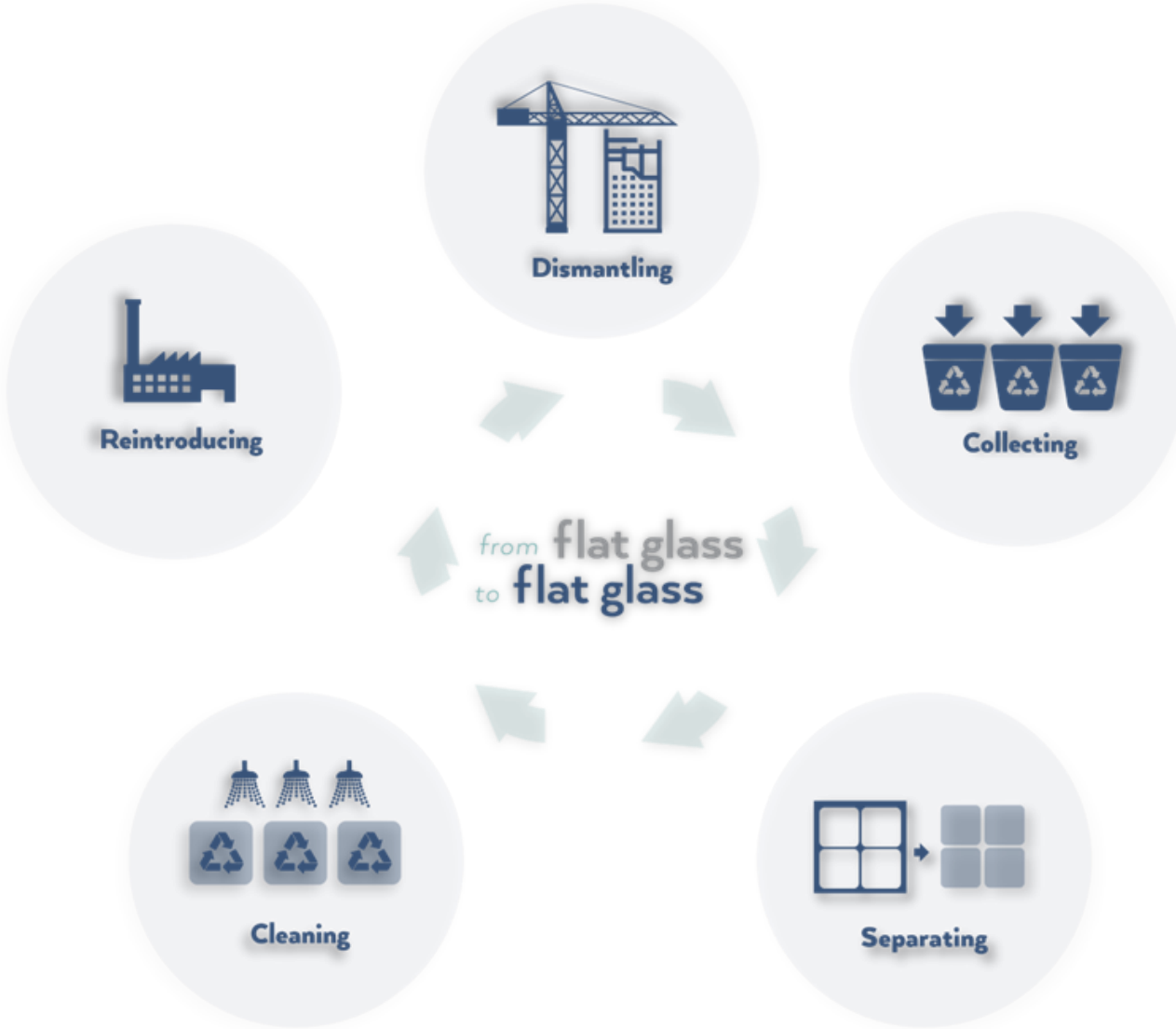
Source: Glass for Europe

Challenges

- ✓ Collection and sorting
- ✓ Highest quality levels required
- ✓ Cost-benefit balance
- ✓ Competition

Main Success factor:
Cooperation across the sector

Objective: closed-loop recycling
from flat to flat glass



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From low to nearly zero carbon glass

Low-Carbon Glass

TODAY

Going further ...

- Technology readiness
- Glass quality
- Availability of decarbonised energy
- Cost of production
- Competition & market conditions
- Investments cycles

Patience needed

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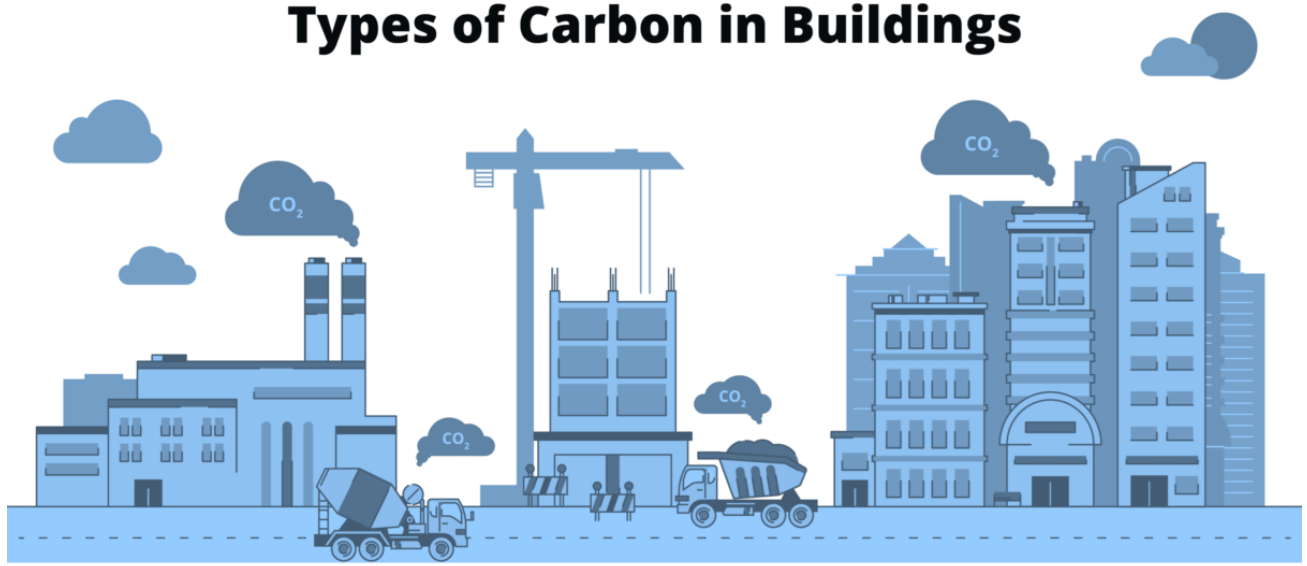
LIFE-CYCLE THINKING IN BUILDINGS

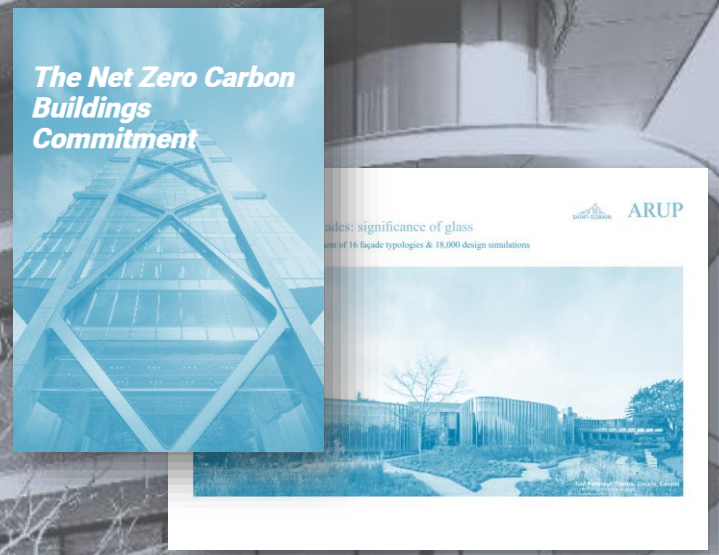


POORLY EFFICIENT BUILDINGS:

OPERATIONAL OVER 70% - EMBODIED BELOW 30%

HIGH-PERFORMANCE BUILDINGS:

OPERATIONAL AS LOW AS 25% - EMBODIED OVER 75%



REDUCE & OPTIMIZE ENERGY DEMAND

+

GENERATE BALANCE WITH RENEWABLES

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*The transition to **sustainable and low-carbon buildings** is not a threat to the glass industry. It is **a driver of high added-value production.***

*The **European flat glass industry** takes at its role to manufacture the products needed for **the sustainable transformation of Europe's building stock.***

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Our way to grow

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2050 FLAT GLASS IN CLIMATE-NEUTRAL EUROPE

TRIGGERING A VIRTUOUS DECARBONISATION CYCLE

THANK YOU!

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