

« Do you speak sustainable construction? » Brussels – 20/05/2010



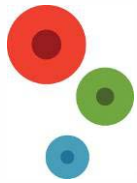
Evolution of thermal performance of glazing units

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GLASS FOR EUROPE

Europe's Manufacturers of Building, Automotive and Transport Glass



Overview

- About Glass for Europe
- The objectives of the EU and the current situation
- Two studies:
 - Low-E Insulating Glass for Energy Efficient Buildings
 - Solar Control Glass for Greater Energy Efficiency
- Vacuum technology
- Conclusion



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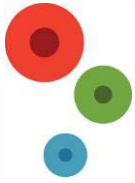
About Glass for Europe

- 4 members and 1 associate = 90% of the EU production
- Flat glass:
 - Primarily building, automotive & transport
 - Also furnitures, solar panels, electronics, appliances
- Partner of CPIV
- Campaign associate of the EU Sustainable Energy Europe campaign

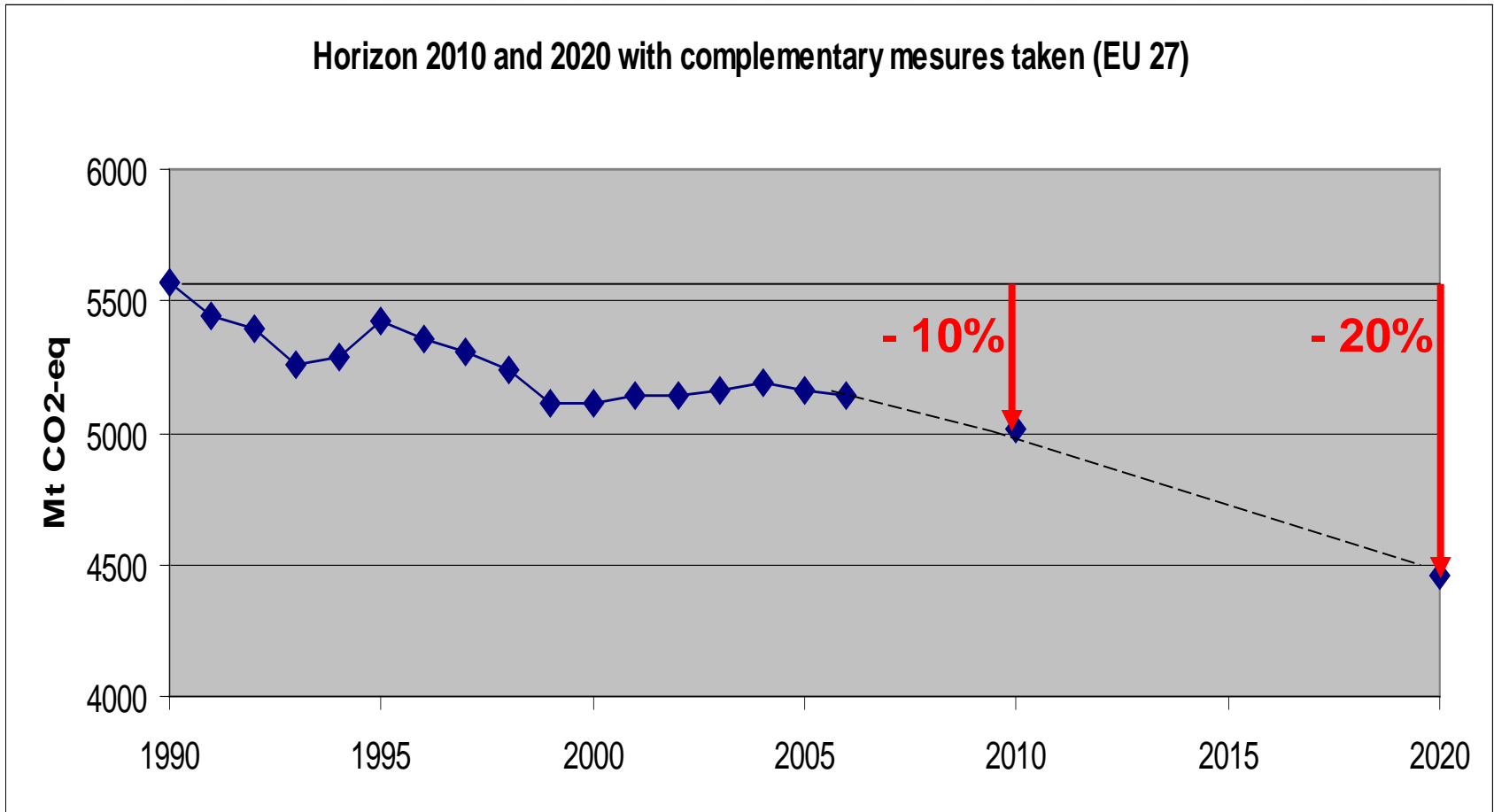


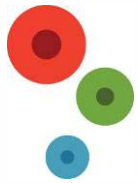
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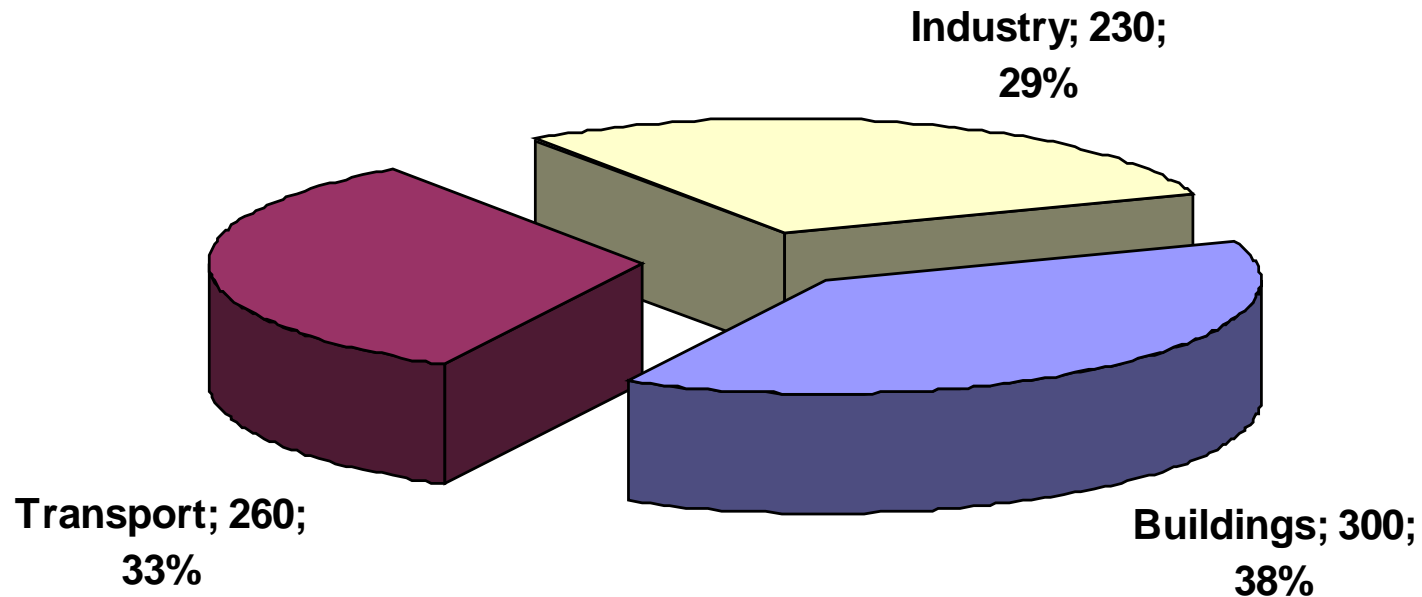
Reduction of CO-emissions for horizon 2010 and 2020





Objectives of the EU and the current situation

Contribution to reduction of CO2 emissions.





2 Studies by TNO

- “Low-E” Glass
 - To reduce the energy demand in buildings (especially heating).
 - 2 scenarios
 - $U = 1,1$ (DGU) – $0,7$ (TGU)
- “Solar Control” Glass
 - To reduce the need for air-conditioning.
 - 4 scenarios
 - $SF = 40$ (N. Europe) – 35 (S. Europe)



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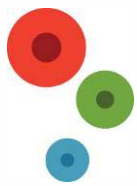
Low-E glass

- Improved insulation by
 - gas filled spacer (convection)
 - Low-E coating (radiation)
- U-values variation
 - 1,3 – 1,0 W/m²K (DGU)
 - 0,9 – 0,5 W/m²K (TGU)
- Keeps the cold out and the heat in, but doesn't block solar heat!

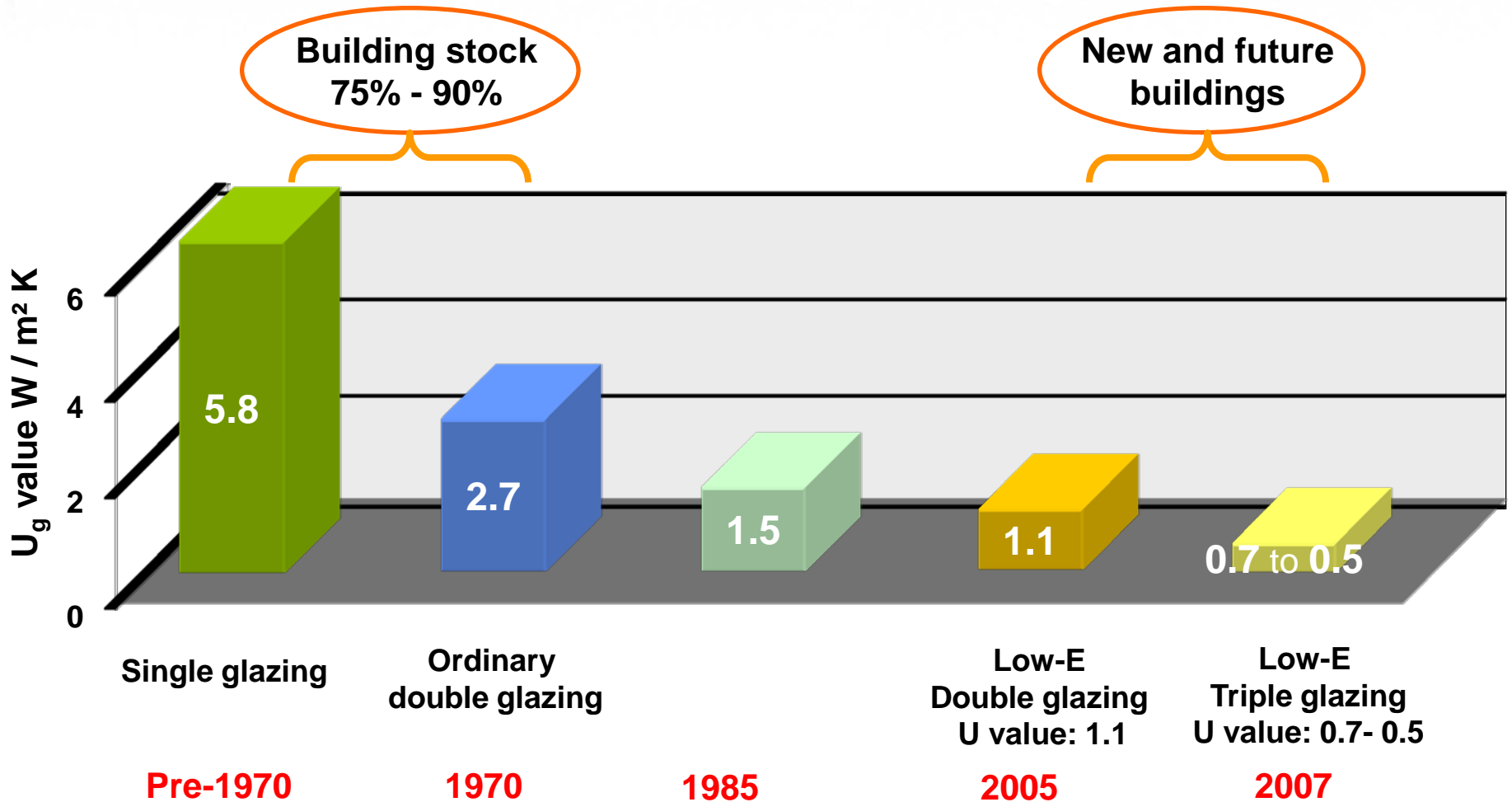


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Improvement in the thermal insulation of glazing



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Solar control

- Same improved insulation is possible as Low-E
- LT/SF range
 - 70/40 (eg. Residential)
 - 60/35 (eg. Buildings)
 - 50/28 (eg. Large buildings)
 - 40/21 (eg. Roofs)
- Even lower SF possible, but by using coloured or enameled glass



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Results

- Low-E
 - 1) - 90,1 Mt/y (30,4% of EU)
 - 2) - 96,6 Mt/y (32,2% of EU)
- Solar Control
 - 1) - 4,6 Mt/y (1,5% of EU)
 - 2) - 6,8 Mt/y (2,3% of EU)
 - 3) - 16,6 Mt/y (5,5% of EU)
 - 4) – 86,0 Mt/y (28,7% of EU)
- TOTAL
 - - 94,6 to – 182,6 Mt/y (**31,6%** to **60,9%** of 300 Mt/y for EU)



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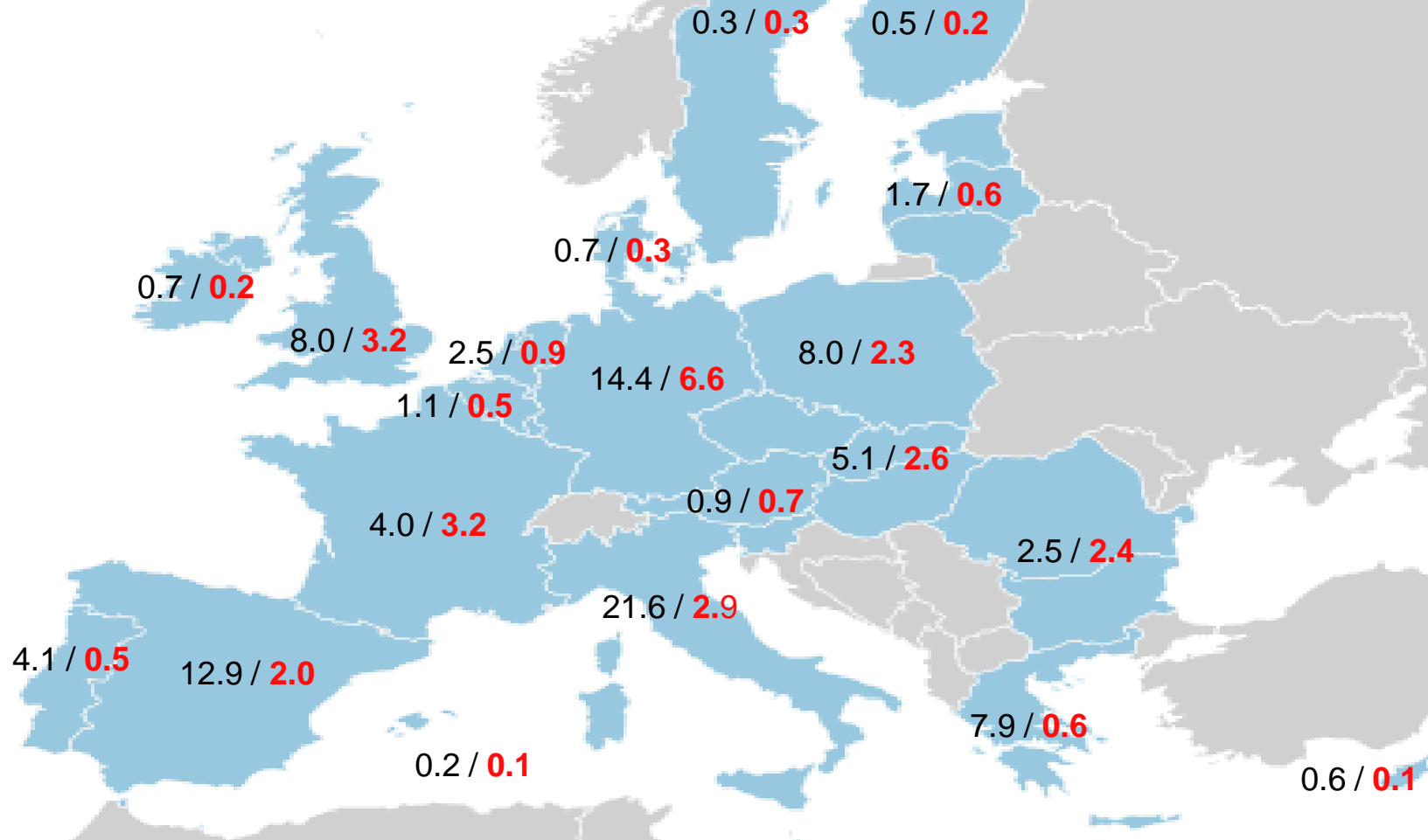
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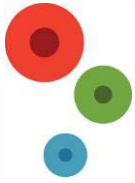


Results per region (% per year in 2020) for Low-E (scenario 2) / Solar (scenario 4)



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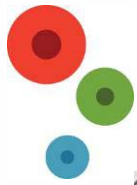
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Vacuum technology

- Replacing gas filled spacer by a very thin vacuum layer further increases thermal insulation
- Exists for both vision parts and spandrels
- Allows much thinner compositions than with classic insulation



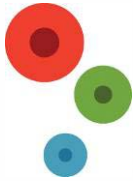


Vacuum technology



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Conclusion

- The use of today's high-tech glass provides a “win-win-win” scenario:
 - Using existing products and conventional building types: ...products...
 - Keeping building occupants comfortable and productive
 - Reducing unnecessary CO₂ emissions: ...xxx t...
 - Reducing energy needs and cutting costs





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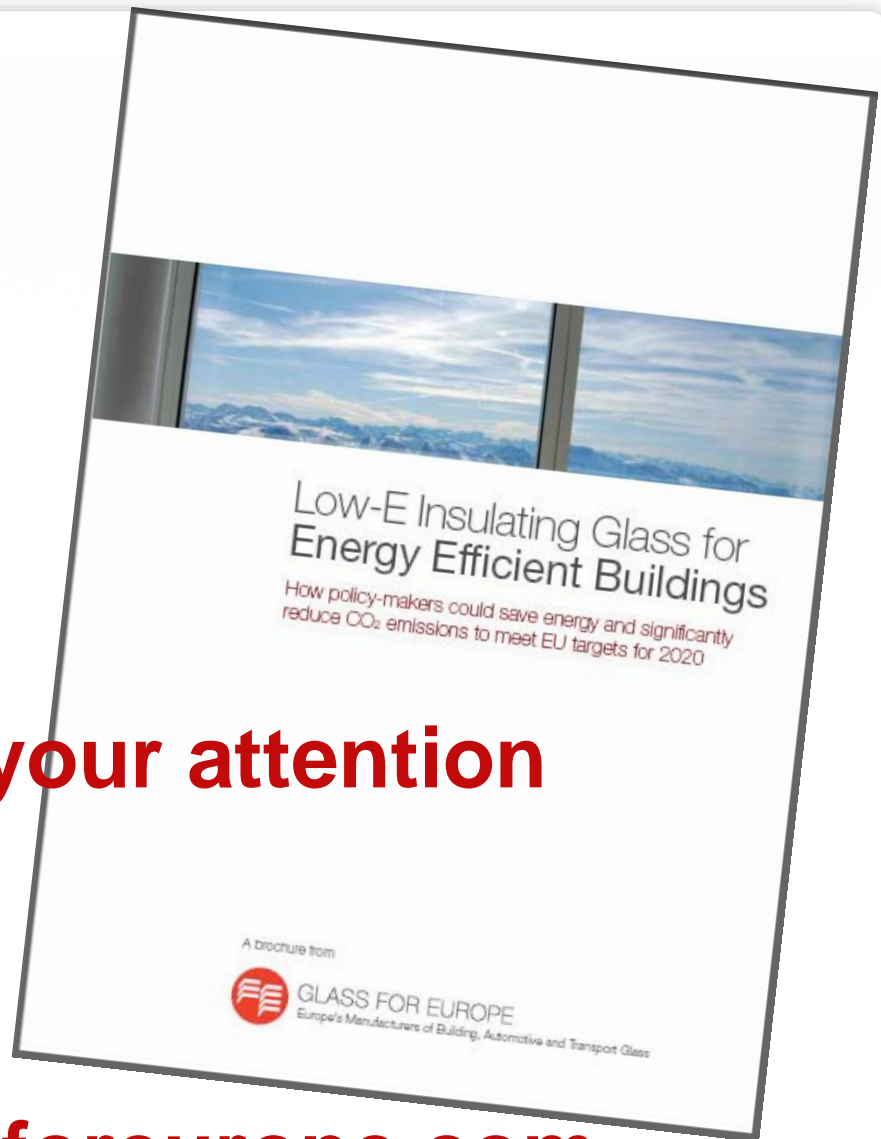
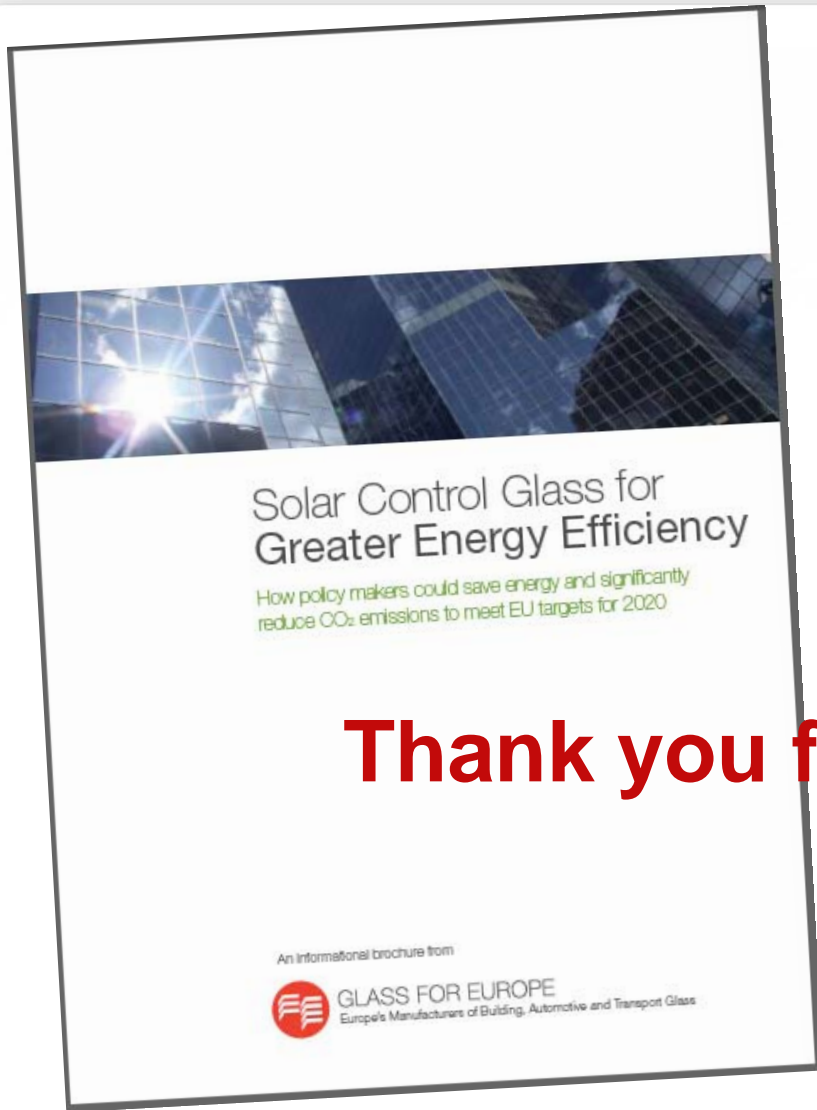
DE WINDMILKARTEN
VIBER ENHANCING

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Thank you for your attention

<http://www.glassforeurope.com>