Roadmaps to 2030 and beyond

A structured approach to climate neutral glass

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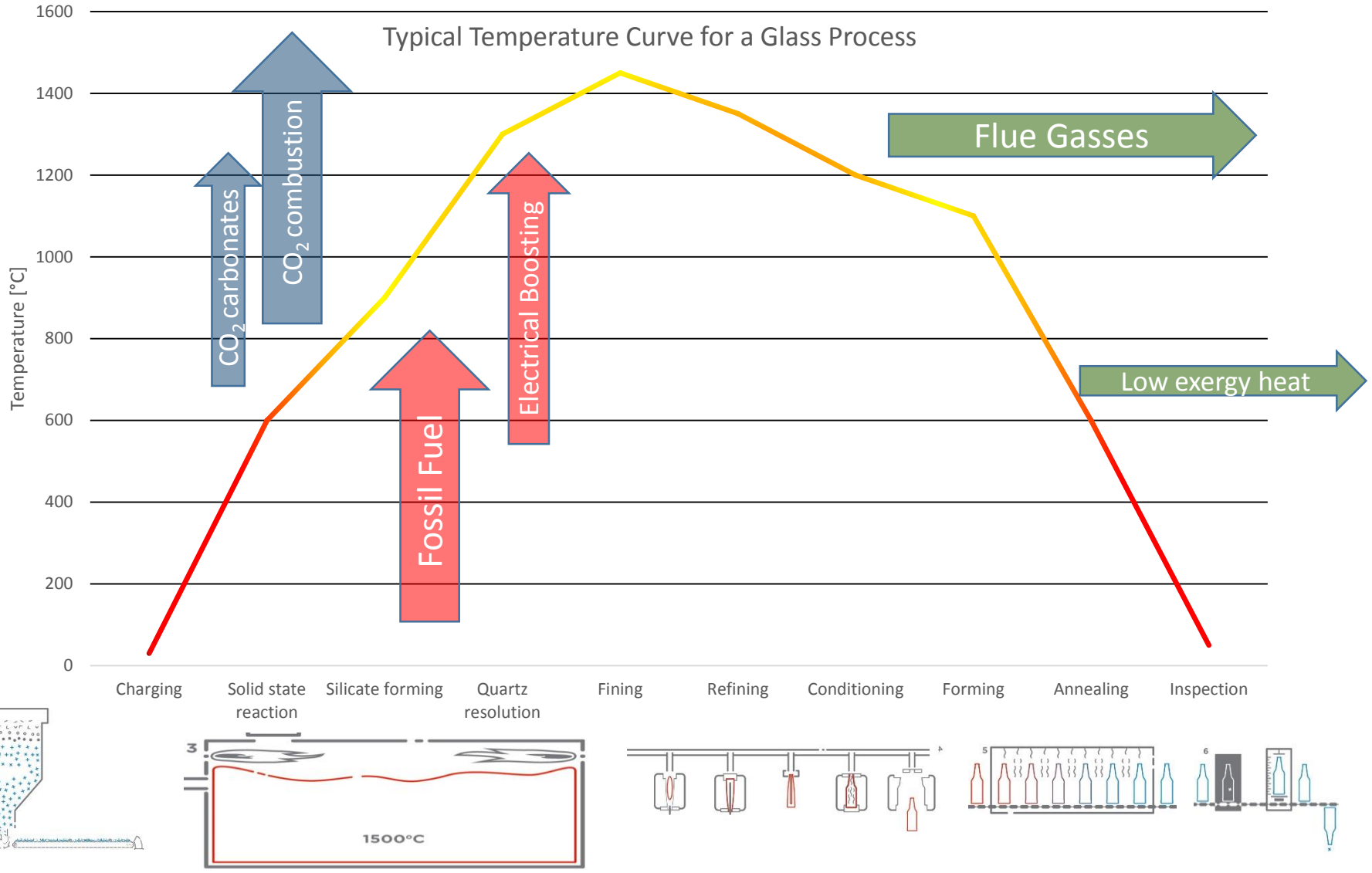
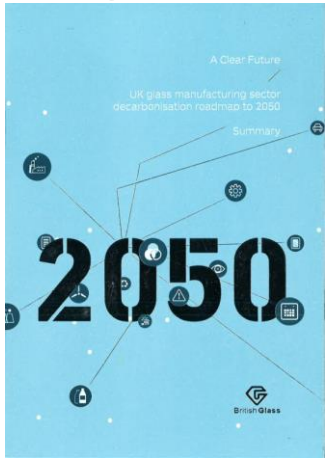
The Glass Process

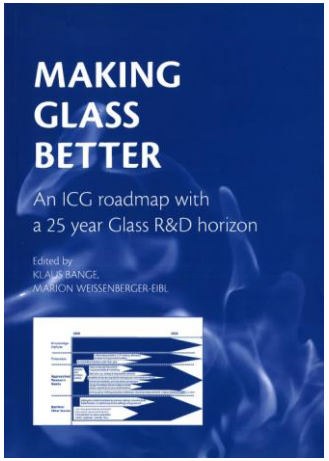


Characteristic for all glass processes is the heat up to high temperatures and the rapid cool down of the glass to ambient temperature

Roadmaps in a quick view

- Dutch roadmap: 25% efficiency improvements by 2030 possible
- British Glass: potential 85% decarbonisation in 2050
- ICG roadmap: a general approach to research in the XXIst century
- All roadmaps are based on careful predictions and do need breakthroughs in technology
- Breakthrough technologies need to be demonstrated





New target: climate neutral glass production

- Raw materials based on waste streams rather than minerals
- Energy sources for all process steps are renewable and the use is answering to availability of energy
- General energy consumption is minimized by process optimisation
- Process emissions are minimised
- Fossil fuel consumption is zero

What is necessary

More efficient processes	Renewable energy sources	Efficient waste heat recovery
• Pre-treated “smart” batches • Innovative furnace designs • Advanced quality based and energy optimized control strategies • Optimised forming processes	• Green electricity • Advanced biofuels • Green gases • Combustion and control solutions for the flexible use of all energy sources to maintain a constant heat flux to the process	• Batch preheating • Capture of low exergy and diffuse energy streams

TLR 1-3
TLR 4-6
TLR 7-9
Commercially unavailable (2017)

What is necessary