GRENZEBACH

Glass Futures

Team Up to Advance Sustainable Glass Production with Innovative Annealing Lehr

INDUSTRY

Research & development

PLACE

St. Helens, UK COMMISSIONING

2025

SOLUTION

New annealing lehr design, as well as a cutting and control system

CUSTOMER

Glass Futures is a research and technology membership organization based in the United Kingdom driving innovation and sustainability in the glass industry by identifying and delivering routes to industrial decarbonization in the glass industry. It was established to make glass production more environmentally friendly, particularly by reducing carbon emissions and promoting sustainable processes.



INITIAL SITUATION

With the capacity to produce 30 tons of glass per day for research and development, Glass Futures aimed to expand its pilot facility in St. Helens, UK, by developing a second line focused on circular economy testing and exploring low-carbon fuel alternatives like natural gas, hydrogen, electricity, and biofuels. Recognizing the need for a reliable equipment supplier, they sought a partner that shares their commitment to sustainable technologies. Grenzebach emerged as the ideal fit for the annealing lehr and cold end, aligning with Glass Futures in promoting innovation and sustainability in the glass industry as the collaboration commenced. » Grenzebach's annealing lehr combines high glass quality with low energy consumption. With its individually controllable heating and cooling sections the annealing lehr allows us a precise adaptation of the cooling capacity to specific production requirements. A flexible annealing zone makes it possible to maintain the glass stress within the ideal range. As a result, high quality glass is ensured while reducing energy consumption. «

Aston Fuller General Manager at Glass Futures



CHALLENGES

A key challenge in the Glass Futures project lies in the limited space available at their pilot facility, necessitating a compact design for the annealing lehr. Grenzebach's annealing lehr must be adopted on a smaller scale without compromising performance while also providing compatibility with existing equipment from other suppliers. Furthermore, the annealing lehr must meet stringent sustainability requirements, including reduced energy consumption and minimal CO2 emissions, to align with Glass Futures' commitment to a low-carbon future. Balancing these constraints while delivering an innovative solution highlights the complexity of this project and underscores the need for advanced engineering and collaboration.

IMPLEMENTATION

To address the challenges identified in the Glass Futures project, Grenzebach implemented a compact annealing lehr design that effectively maximizes space while enabling integration with existing equipment. Central to this solution is the innovative cooling process, which plays a crucial role in enhancing sustainability. The annealing stands out for its unique cooling principle and optimized nozzles, particularly in the convection zones F, which enables significant energy savings. The individually controllable heating and cooling sections enable the process to be more precisely calibrated. Combined with optimized insulation, they further enhance energy efficiency, ultimately reducing CO2 emissions. The flexible annealing zone can keep the internal stresses in the glass within an ideal range. Furthermore, the contraction of the glass during cooling is compensated by segmented drive trains with controlled servo drives - thereby significantly reducing the risk of scratches. State-of-the-art cutting and control systems round off the range.

BENEFITS

Flexible Annealing Point

Segmented cooling zones enable a flexible annealing point.

Less Energy Consumption

The highly efficient cooling process and an optimized insulation increase energy efficiency.

Ready for Automation

Due to the digital visualization and control solutions, the line is perfectly prepared for future changes, high glass quality, and better accuracy in the processes.

CONCLUSION

The collaboration with Glass Futures has established Grenzebach as one of the key partners of their network, promoting valuable exchanges and reinforcing Grenzebach's role as a trusted journey partner of its customers. The partnership enables Grenzebach to actively contribute to the project regarding sustainability and state-of-the-art (digital) solutions, aligning with the commitment to "thinking ahead."

Grenzebach Maschinenbau GmbH

Albanusstraße 1 86663 Asbach-Bäumenheim, Hamlar Germany Phone: + 49 906 982 2000

Phone: + 49 906 982 2000 glass@grenzebach.com www.grenzebach.com

