



Title: Autonomous Thermal Control in Glass Forming: Industrial Experience and Benefits on Process Stability and Sustainability

Glass container manufacturers face growing challenges related to energy efficiency, lightweighting, workforce renewal, and digital transformation. Addressing these challenges requires stable and repeatable forming processes, where critical parameters must be controlled with consistency and precision.

Among those parameters, blank mold temperature plays a key role in forming conditions and final product quality. However, many production lines still rely on manual adjustments to manage thermal variability. As a result, process fluctuations affect product quality, repeatability, resource utilization, and overall performance.

This paper presents industrial experience from the deployment of the Blankontrol, an autonomous thermal control system based on continuous temperature monitoring and closed-loop regulation, implemented on several production lines. The study focuses on the transition from passive thermal management to active thermal stabilization under real operating conditions.

Field results demonstrate improved thermal stability at the blank mold, reduced operator intervention, and more consistent forming conditions. These improvements enhance process repeatability, operational consistency, and production performance.

The paper also discusses on how autonomous thermal control contributes to sustainability objectives through waste reduction, optimized energy utilization, reduced variability-related losses, and support for lightweighting strategies.

This work highlights how innovation transform into measurable environmental, economic, and operational benefits, supporting a more sustainable glass industry.