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Technical News Bulletin

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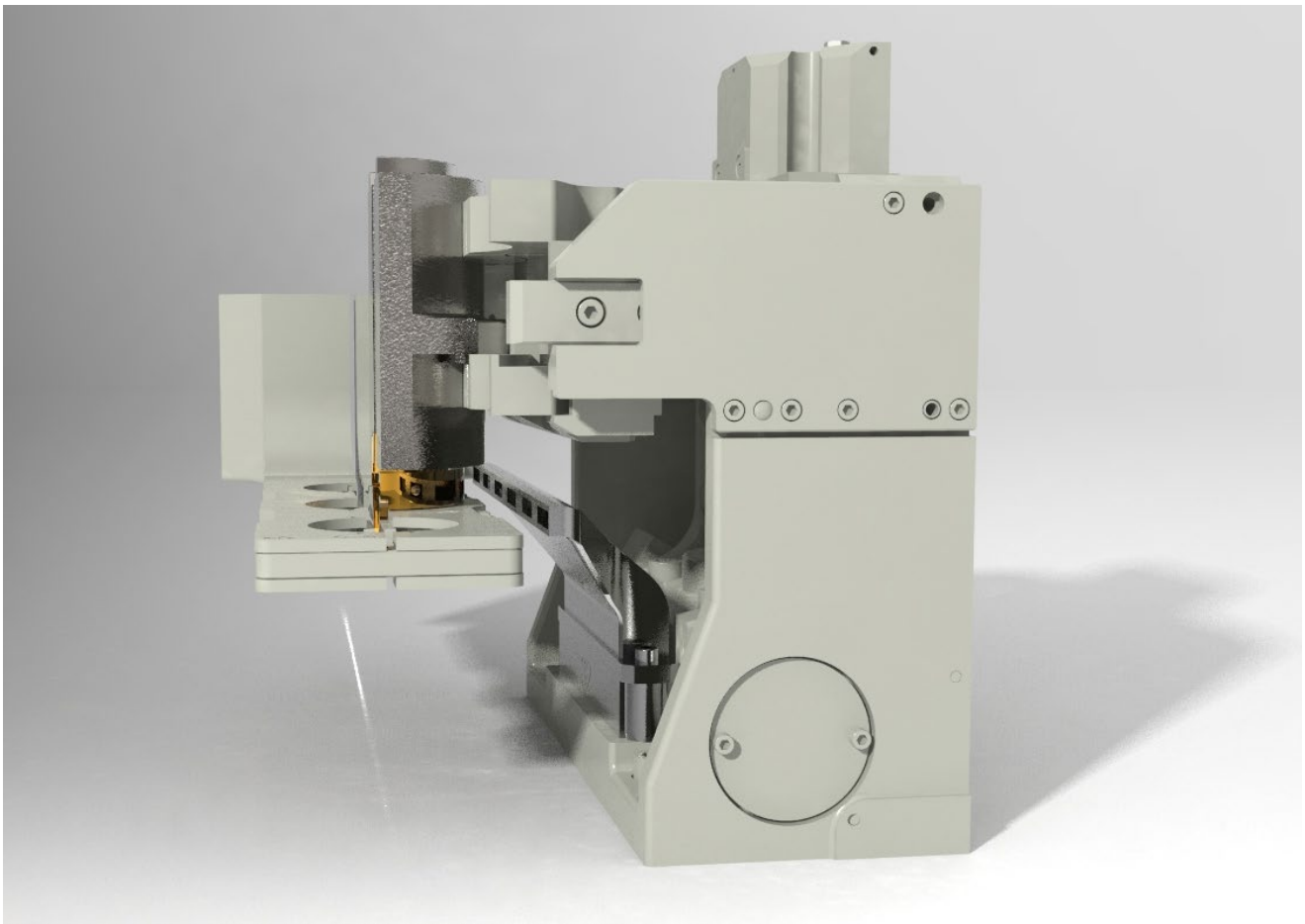


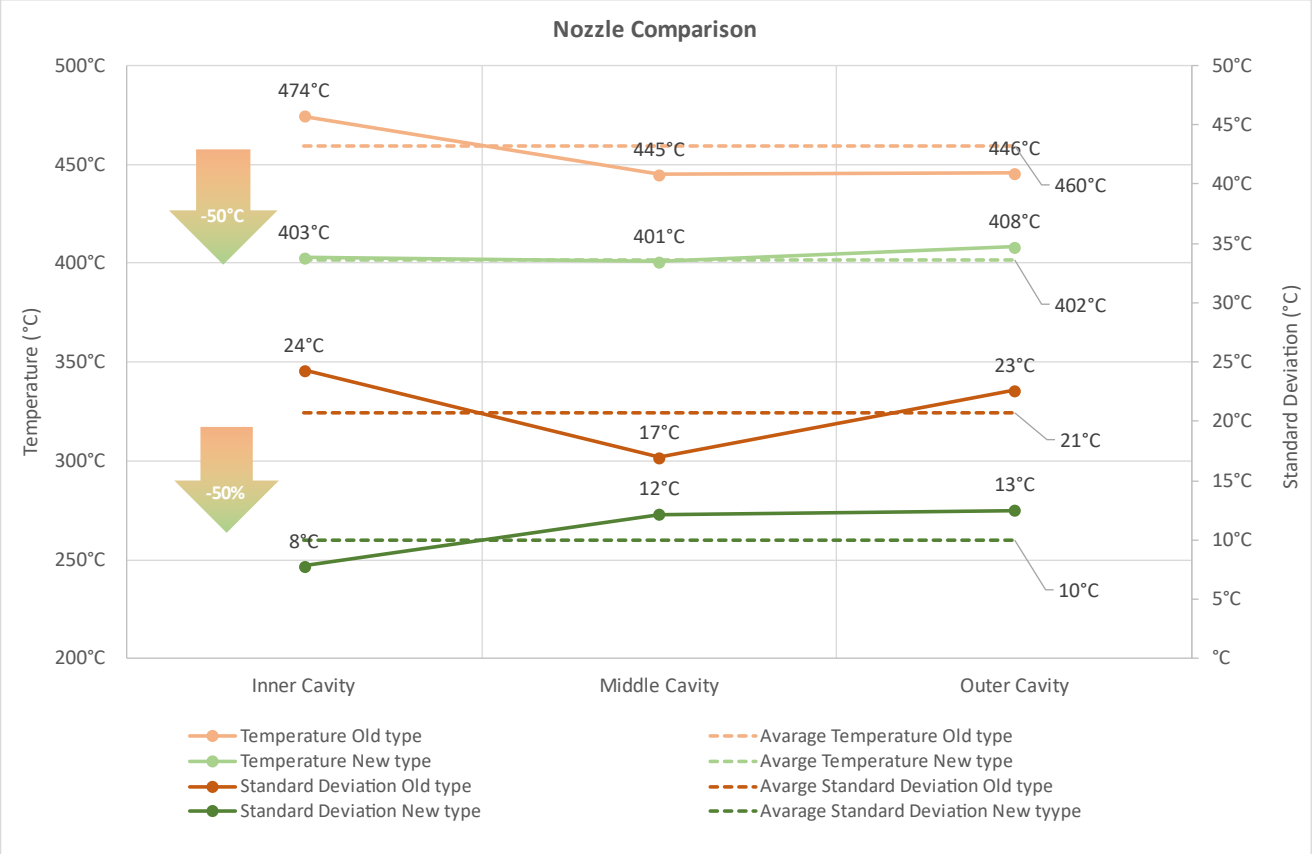
New Neck Ring Cooling Nozzle for NIS

- Enhanced Nozzle Design for B&B and P&B
- Significant cooling performance improvement
- Improved cavity to cavity (inner, middle, outer) variation

Introduction

To meet the growing market demands for enhanced throughput and capacity, requiring superior cooling efficiency, Bucher Emhart Glass has developed an improved solution for Neck Ring cooling. Effective Neck Ring cooling is fundamental to ensure a high-quality finish for containers (jars). Increased cooling performance is particularly crucial for larger finish diameters. The innovative design achieves a more homogeneous cavity to cavity (inner, middle, outer) variation and increased cooling performance.

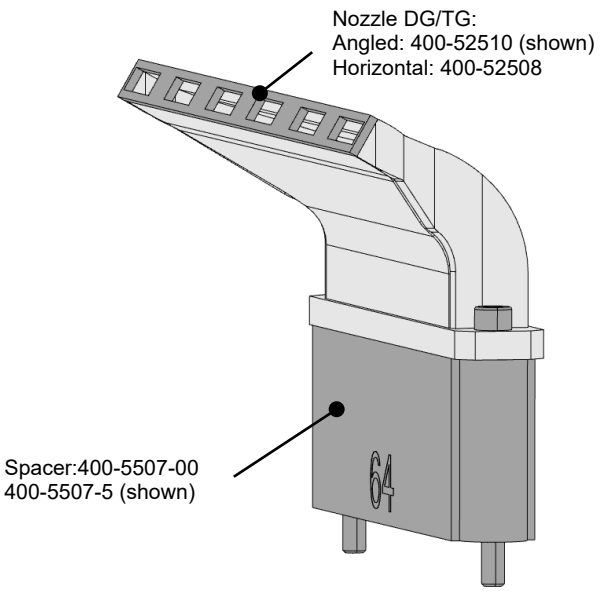
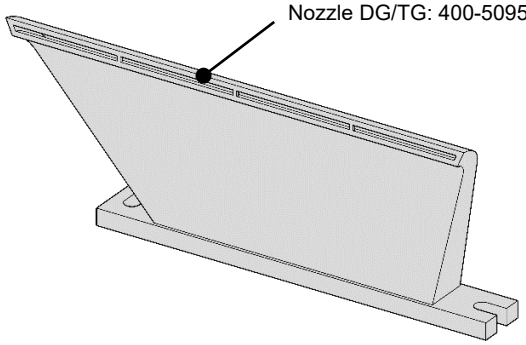
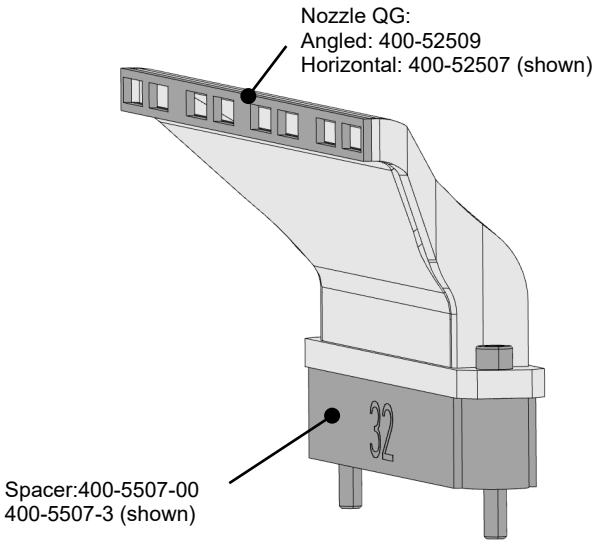
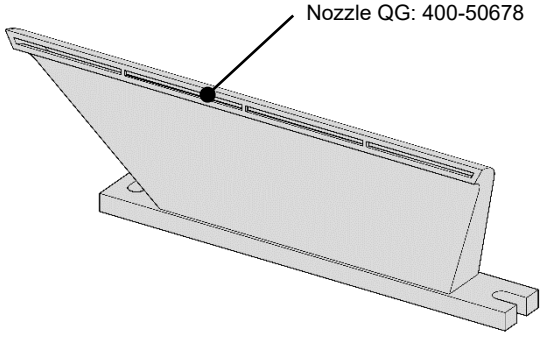
Thermal comparison measurements carried out on the Neck Ring with a typical wide mouth press and blow process **(Graph 1),** show a temperature reduction of approx. **-50°C** and a reduction of the standard deviation by **factor two.** The comparison measurements were carried out in our Emhart Glass Research Center and are exemplary for a specific setup. For other mold design versions, the differences or potential improvements can be smaller or different. The standard deviation is calculated from measurements taken at four points around the circumference of the Neck Ring.



Graph 1 Thermal measurement comparison

System Characteristic

The TG/DG nozzle design with the 6 cooling openings is compatible for both TG and DG operation. For QG a dedicated Nozzle with 8 outlets is available. Due to the enhanced and uniformly efficient cooling of the Neck Ring achieved with the improved wider nozzle, there is no longer the need for a complex VertiFlow mold design with cooling holes through the Neck Ring. This means that a standard VertiFlow cooling design is sufficient in most cases, which ensures individual timing for the molds and the Neck Ring cooling.

	New improved Nozzle	**Old Nozzle (for comparison)**
DG & TG Type		
QG Type		

Availability

In acknowledgment of the evolving requirement, all configurations are available and can be ordered.

- The assembly kit 400-5510-1 for QG contains the complete bill of material (BOM) to cover all setups and process types.
- The assembly kit 400-5489-1 compatible for TG / DG and contains the complete bill of material (BOM) to cover all setups and process type.
- The 400-5489-2 includes the material for Plunger mechanism position for P1&P2 including both Nozzles for B&B and P&B.
- The 400-5489-3 includes the material for Plunger mechanism position for P2&P3 including both Nozzles for B&B and P&B.

At Bucher Emhart Glass, we diligently track customer applications and are thoroughly committed to continuously evolving this solution to align with the market demands. We are dedicated to expanding our product range as needed to meet and exceed customers' expectations.

Neck Ring Nozzle and Spacer Selection (Replacement)

Cavities	Process	Plunger Mechanism Position	Assembly Article Number	Nozzle Article Number	Spacer Article Number	Belongs to Assembly Kit	Replacement of existing Nozzle
DG / TG	Blow & Blow	P1	400-5489-4	400-52510	400-5507-5	400-5489-1/2	400-50953
		P2	400-5489-5	400-52510	400-5507-3	400-5489-1/2/3	400-50954
		P3	400-5489-6	400-52510	400-5507-2	400-5489-1/3	400-50955
	Press & Blow	P1	400-5489-7	400-52510	400-5507-6	400-5489-1/2	400-50676
		P2	400-5489-8	400-52508	400-5507-3	400-5489-1/2/3	400-50678
		P3	400-5489-9	400-52508	400-5507-2	400-5489-1/3	400-50679
QG	Blow & Blow	P1 – 19mm	400-5510-2	400-52509	400-5507-7	400-5510-1	na
		P1	400-5510-3	400-52509	400-5507-5	400-5510-1	400-50953
		P2 – 19mm	400-5510-4	400-52509	400-5507-4	400-5510-1	na
		P2	400-5510-5	400-52509	400-5507-3	400-5510-1	400-50954
	Press & Blow	P1 – 19mm	400-5510-2	400-52509	400-5507-7	400-5510-1	SE-25034-4
		P1	400-5510-6	400-52507	400-5507-5	400-5510-1	400-50676
		P2 – 19mm	400-5510-7	400-52507	400-5507-4	400-5510-1	SE-25034-2
		P2	400-5510-8	400-52507	400-5507-3	400-5510-1	400-50678

Installation Requirements

The advanced Neck Ring design is fully compatible and interchangeable with the corresponding standard. Please also consult the Spacer drawing 400-5507-1, which illustrates the different spacer dimensions.

Features	Benefits
Optimized Nozzle Design for Blow & Blow and Press & Blow setup	Resulting in more efficient Neck Ring cooling which enables typical >30K lower temperatures with comparable timing
Modular NR Cooling Nozzle and Spacer Design	Due to the modular and simple structure, only a very manageable number of parts are required (similar spacer can be used for TG&DG and QG)
Improved air distribution around the Neck Ring	More homogeneous temperature and cavity to cavity distribution
Optimized the distance from Nozzle to the NR for the biggest finish (Neck Ring band diameter)	More efficient wall heat transfer coefficient