

Gas Assist Injection Molding. Gas inner cooling for fast and economical production.

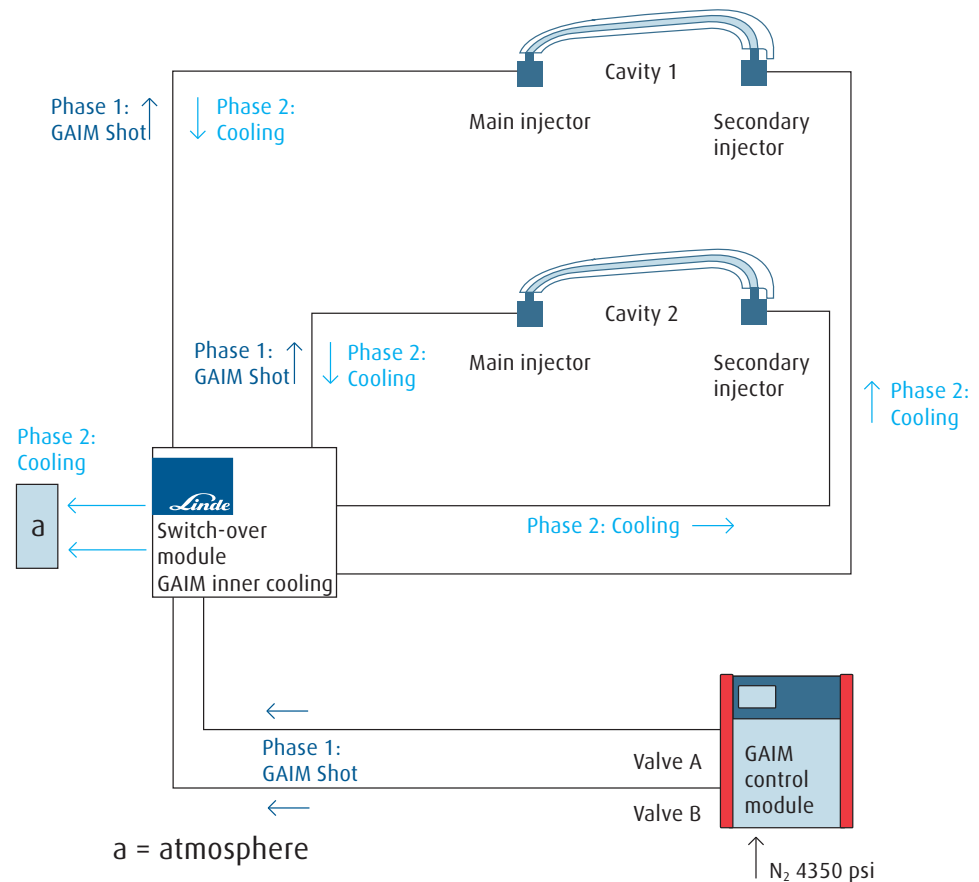
Linde has developed and patented a new low-cost, and very effective process to reduce the cooling time of gas assist injection molding (GAIM) in the plastics industry. The process is mainly suitable for molded components with a pipe-shaped gas channel.

Process description

Besides the standard gas injection shot, the new Linde switch-over module was designed to operate in the following manner:

- After the normal gas injection shot, the feed of nitrogen to the primary injector is interrupted. The switch-over module opens the primary injector to the atmosphere.
- The preceding action then reverses the gas flow. Additional nitrogen is injected through a second injector placed at the end of the gas channel, opposite the primary gas injector. The latter now functions as a gas outlet.
- The high-pressure nitrogen flowing through the product cools the inner side of the gas channel and removes heat.
- After cooling, the switch-over module rapidly releases the nitrogen pressure.

Set-up GAIM inner cooling (example)



Advantages In detail, gas inner cooling offers several advantages:

- Shorter cycle time (30 % or more)
- Higher measurement accuracy
- Easy installation/application
- Low investment cost
- Less clogging of piping from plastic residues
- Less maintenance

Areas of application Products for which gas inner cooling is recommended are:

- Handles produced with GAIM
- Other GAIM products with handle- or pipe-shaped gas channels
- GAIM products that are problematic in terms of measurement accuracy



Technical data

Maximum pressure	7250 psi
Number of cavities switched	1, 2 or 4 (depending on model)
Compressed air supply	5 scf/min (73 psi min. – 160 psi max.)
High-pressure connections	Ermeto 8S
Power supply	230 V, 50 Hz
Floor space (all models)	2 ft x 2.3 ft
Height (1 and 2-cavity model)	3.94 ft
Height (4-cavity model)	6.56 ft
Weight (1-cavity model)	300 lb
Weight (2-cavity model)	500 lb
Weight (4-cavity model)	615 lb

This unit is one part of the total technology package containing hardware, application experience and services to customers starting with this extended GIM process to improve function and profitability in the production of plastic parts.

Service range

Linde offers

- Analysis of the existing GAIM process, verifying flows and pressures with Linde's measurement module designed for this purpose
- Detailed modification layout integrating the gas inner cooling process
- Implementing the necessary modifications
- Complete start-up, measurements and optimization of flows and pressures
- Documentation of the new process with Linde's measurement module

Last but not least, Linde also supplies all the necessary nitrogen.

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