



PLASTINUM[®] Gas Injection Molding with CO₂ AQ Anton achieves 55% productivity gains on new CO₂ GIM line with Linde and Maximator

Highlights

- Productivity gains of more than 55%
- State-of-the-art, patented application technology
- Cost savings

Customer

Founded some 30 years ago and now a member of the AQ Group, AQ Anton has grown into a large and successful organization with over 400 employees and annual revenue in excess of EUR 22 million. The company is based in Zalaegerszeg, Hungary, specializing in tooling, machining and plastics. The rapid growth trajectory is largely attributable to the company's innovative mindset. In its plastics division, AQ Anton has always been a pioneer for the early adoption of new, cutting-edge technologies such as multicomponent injection molding, overmolding, central material handling, various welding technologies, plastic heat treatment and several other special processes. Keen to expand its innovative capabilities in the plastics space, the company recently decided to add gas injection molding (GIM) – otherwise known as gas-assisted molding (GAM) – to its wide technology portfolio.

Challenge

Bosch, one of AQ Anton's key accounts, contacted the company about a new product line to manufacture handles for Bosch's UniversalChain chainsaw. In 2019, AQ Anton thus decided to expand its installed base of 21 injection molding machines with a new gas injection line capable of meeting the specifications for this new handle. As is customary at AQ Anton, the plastics team decided to explore all gas injection molding options in the search for a solution with the ability to increase its competitive position by accelerating cycle times and thus reducing operating costs.

The company turned to its trusted gas supplier Linde to discuss the best path forward. For over 15 years, AQ Anton had been relying on Linde for its gas supplies. Working closely with its long-standing partner Maximator, leading provider of high-pressure gas equipment, Linde suggested testing the new GIM machine with both the conventional option, gaseous nitrogen (N₂), and with the more innovative solution, liquid carbon dioxide (CO₂), to compare cooling performance. Linde was confident that its innovative, patented PLASTINUM[®] Gas Injection Molding with CO₂ solution was best positioned to meet the customer's cycle time, cost and process efficiency targets.

Solution

AQ Anton decided to take both options for a test run. In collaboration with Maximator, Linde provided the full test package supporting both CO₂ and N₂ injection molding trials so AQ could benchmark the gases and see which configuration delivered the best internal cooling performance for the new handle. In addition to the gas delivery and pressure boosting equipment, this all-inclusive test package included analysis of the trial results and recommendations on the best path forward.

The test setup revealed that CO₂ was the better fit and so the company rolled out PLASTINUM Gas Injection Molding with CO₂ based on a manifold cylinder pallet (MCP) for reliable gas supplies. "We are constantly exploring new technology-driven business opportunities and Linde's PLASTINUM® Gas Injection Molding with CO₂ quickly emerged as the perfect fit for our culture of innovation, giving us a valuable competitive lead in this space with a 55 percent rise in productivity," says Krisztina Balogh, Materials Manager at AQ Anton.



Linde and AQ Anton Kft. working together for the best possible outcome.
From L to R: Daniel Demeter Linde, Krisztina Balogh, Materials Manager, AQ Anton Kft.
Arnold Farkas, Production Team Leader, AQ Anton Kft.

Benefits

The use of liquid carbon dioxide instead of nitrogen for GIM offers a number of compelling advantages. First and foremost, it accelerates cycle times significantly relative to nitrogen. Increased productivity translates into cost gains as more parts can be produced per hour and so customers can typically look forward to a higher return on investment into the injection molding machine, sophisticated mold and auxiliary equipment.

In addition, the cleaning effect of carbon dioxide on the injectors stabilizes production processes in the long term. And CO₂ is an effective and inexpensive way to improve temperature control in injection molding. All of which has combined to enable AQ Anton to carve out the competitive advantage it was looking to secure through this project.

"We have nothing but good things to say about our past experiences and communication with Linde as our gas and application technology partner. Our positive experiences with this latest project confirm that Linde is the right partner for AQ Anton. We have received great support and Linde's experts were extremely flexible and accommodating during project execution. The quality of service has been exemplary and the quality of the gas is excellent," continues Krisztina Balogh.



AQ Anton production facility.

Linde GmbH

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