

RocTool Study Demonstrates Key Advantages of Mold Heating and Cooling Technologies

HD Plastics™ Material Database Expands with Resins That Deliver High Flow and Reduced Cavity Pressure

LE BOURGET DU LAC, France, February 13, 2017 - RocTool, a leading developer of mold heating and cooling technologies, has conducted a study to identify a range of resin materials that successfully use RocTool's molding technologies to produce high-quality parts with high flow and reduced cavity pressure. The study is part of the company's ongoing effort to further develop its HD Plastics™ material database which is designed to help designers and converters to achieve exceptional part quality and increased performance without secondary operations such as painting or decorative films. The database is available to RocTool process users.

RocTool worked in conjunction with RJG Inc., Traverse City, Mich., an international leader in injection molding training, technology, and resources, to demonstrate the advantages of RocTool's technologies including flow improvement, reduced cavity pressure, high surface replication of the mold, and significant gloss improvement. One of the main challenges in the plastics industry is reducing overall part thickness. The flow increase with RocTool induction heating technology delivers design opportunities and pushes the limits in creating thin-wall applications.

RocTool developed a specific spiral mold to calculate the flow length while pressure sensors were implemented by RJG Inc. to assess the capability of RocTool technology to improve mold filling and reduce the drop of pressure. The spiral mold was developed with variable thickness (from 0.5 mm to 1.5 mm) allowing a complete material characterization. RJG's process monitoring "eDART System™" collected the data from the sensors which were implemented behind the ejector pin and located close to the gate and at the end of the fill.

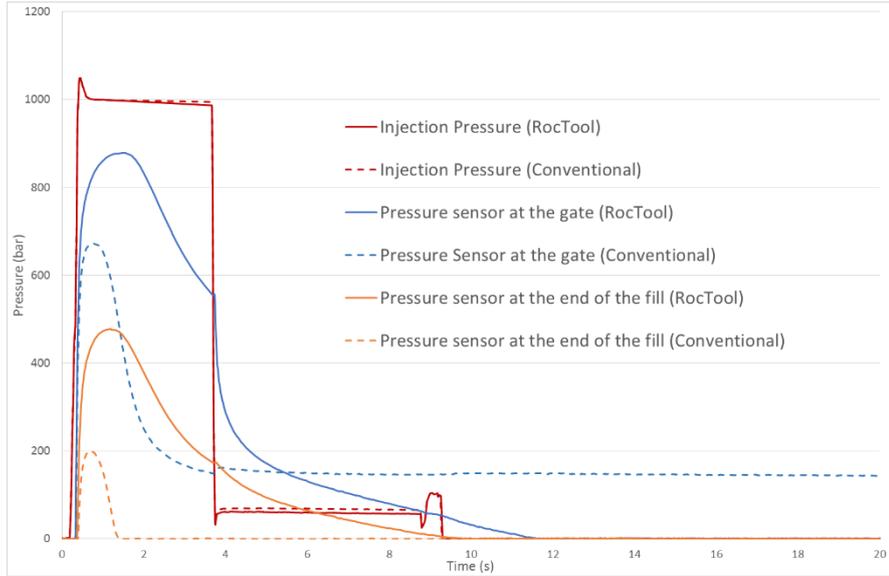


Conventional Process RocTool Technology
Flow length improvement up to 100% with PEI (thickness 1.5 mm)

“The partnership project provided added value in our ongoing characterization of resins for the HD Plastics™ material database,” said Mathieu Boulanger, RocTool CEO. The company is evaluating a range of resins from various material suppliers. RocTool is now capable of demonstrating the additional benefits of its technology beyond just a cosmetic advantage. RocTool can provide true comparison data for parts produced with RocTool technologies versus those made via conventional injection molding. “This information can be very useful and will provide designers with expanded options,” said Boulanger. “We can now bring this unique data directly to the OEM.”

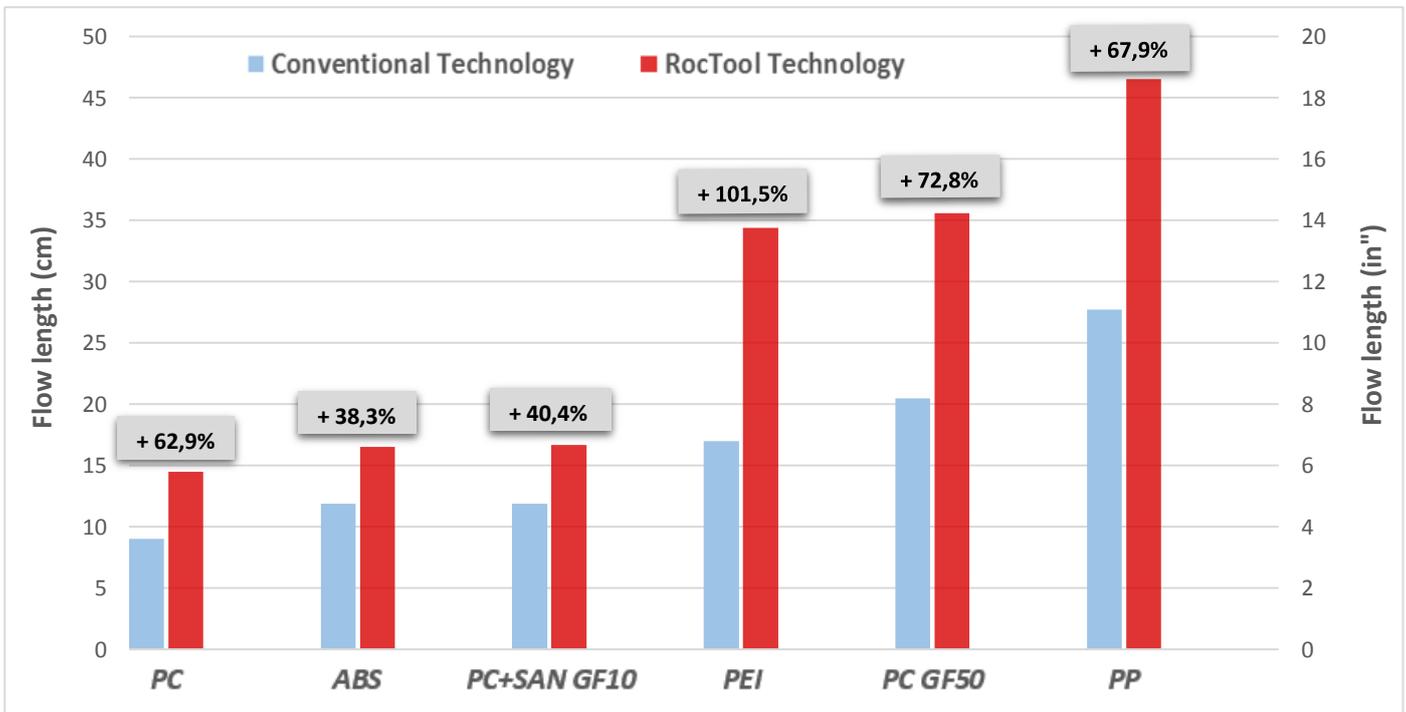
As presented on the pressure graph attached, the drop of pressure is radically reduced between the injection machine pressure imposed (1000 bar) and the cavity pressure measured with RJG sensors.

The pressure measured with the RJG sensors shows a reduction of the pressure drop from the injection machine with RocTool technology. It is clearly observed on the pressure sensor at the gate (blue lines), the delta between the RocTool and conventional curves is 210 bar. This is emphasized with the second sensor at the end of the fill. That reflects an optimization of the pressure drop using RocTool technology which allows the reducing of thickness and sometimes the number of gates.



Injection and cavity pressures in conventional (dotted line) versus RocTool technology (solid line) measured with RJG equipment – Example from trials with PC (1.5 mm thickness)

This first study includes six resins covering commodity, premium, and performance categories. Depending on the material, the evaluation revealed that RocTool's molding technologies can double the flow length (see graph below).



Flow length improvement at injection pressure and thickness defined (1000 bar / 1.5 mm)

In addition, the level of mold surface replication climbed to 97.2%, thus providing product designers with a premium look, high gloss, and a matching texture versus traditional molding. The gloss improvement is of particular note with fiber content resins.

RocTool Technology

Gloss Unit 79



Conventional Process

Gloss Unit 41

TPO aspect improvement

As shown in the photo above, the gloss for TPO was measured at 41 GU in a conventional process compared to 79 GU with RocTool technology. Moreover, strong results were seen with filled materials such as 10% glass-filled PC-SAN which had a 130% improvement.

RocTool has now characterized many materials for inclusion in its HD Plastics™ material database. The company will continue to broaden its material database, evaluating not only targeted commodity resins but also high-performance resins and ultra-polymers. The database will be available on the HD Plastics™ web site by Q3 2017.

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About RocTool

RocTool is a Technology & Manufacturing solutions provider offering engineering services and systems for injection and compression molding. Its R&D team is constantly adapting its induction technologies to more materials, in order to draw benefits such as reduced cycle times, surface quality, lightweighting, product performance, and overall cost reductions. RocTool's latest technology: IDH - Induction Dual Heating, is a leading Heat &Cool process combining composites with overmolded plastic features, which targets major brands in innovative industries, e.g. automotive, aerospace, consumer products, and electronics. Those brands already use RocTool processes in production, in particular HD Plastics™ capabilities for plastic molding and Light Induction Tooling™ for composite parts. RocTool is listed on Alternext. Its headquarters and R&D center is situated at Le Bourget du Lac (France). RocTool also has offices and platforms in North America, Japan, Taiwan, and Germany. For more information, visit www.roctool.com.

About RJG Inc.

RJG is the recognized leader in implementing Scientific Molding strategies and techniques. RJG's offerings include training, technology, consulting services, and resources to "Help Injection Molders Succeed." RJG has found that there is a proven path to becoming a world-class molder. This includes stabilizing a plant and its processes, developing and utilizing part containment strategies, teaching a team to speak the same processing language, and ultimately implementing advanced Scientific Molding techniques. For more information, visit www.rjginc.com.

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