

Application and Process Optimization Technology for Plastic Injection Compression Molding(ICM)

Limited Seats. Register Now!

Course Introduction

Injection compression is one of the special molding processes to cope with the problems in conventional plastic injection parts, such as residual stress, non-uniform shrinkage, and warpage. However, in recent years, process condition control as well as part/mold design becomes more and more challenging due to severe requirements on product size accuracy. For instance, how to enhance product quality and meanwhile prolong machine longevity has been a critical concern in the product development of optical, 3C and automotive parts using injection compression. Based on this, the course begins with a brief introduction to injection compression and its current industrial applications. Then the bottlenecks in traditional product development cycle are addressed to understand the importance and benefits of using CAE tools in product design, process optimization and problem solving. Also, an innovative 3D injection compression simulation technology is introduced and this technique is very helpful in handling many practical issues related to injection pressure, clamping force, deformation and so on.

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Goals

- Injection compression and its current industrial applications.
- The issues in design and development for injection compression products .
- The bottlenecks for traditional product development cycle.
- The breakthrough with CAE in product development cycle.
- An innovative 3D injection compression simulation technology and application.
- The benefits to practical cases from using injection compression CAE.

Course Information

Date : Please refer to official website

Organizer : CoreTech System

Contact : mkt@moldex3d.com

Remark : Small class size of 8-10

Time	Topic
60 min	Registration
	Introduction to Injection Compression Molding and its Industrial Applications
	Issues in Injection Compression Product Development and CAE Analysis Tool
	Injection Compression Simulation Technology and Application
	Case study - Warpage issue for DVD disks in injection compression molding <i>The effects of compression force histories on warpage with experimental validation and discussion.</i>
	Case study - Residual stress issue for optical lens in injection compression molding <i>The effects of critical compression parameters, such as compression gap and compression speed, on residual stress and birefringence.</i>
20 min	Q & A

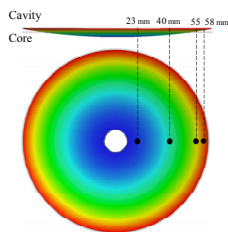
*The agenda is subject to changes.

Course Content

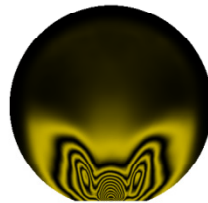
In this course, two real cases are unveiled to deepen the understanding of injection compression simulation. In the first case, the warpage issue on DVD disks is investigated. The influences of different compression force control histories on warpage behavior are explored. The predictions in the CAE analysis are compared and validated with the experiments. In the second case, the residual stress, warpage, and birefringence issues on plastic optical lens are focused. The effects of various compression gap, compression speed, and delay time on product quality are simulated and discussed. The simulating and experimental photoelastic fringe patterns signifying residual stresses are compared with each other. Through this course, students can learn how to use CAE to reach solutions and optimizations for injection compression products.

Participants

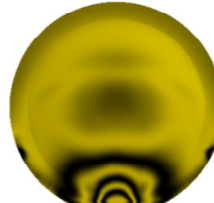
- Owners and managers, and supervisors in Research or Production Departments
- Part design/production engineers
- Mold design/manufacturing engineers
- Molding experts/ engineers
- Material suppliers
- People interested in plastic products and processing
- People interested in injection compression products and processing



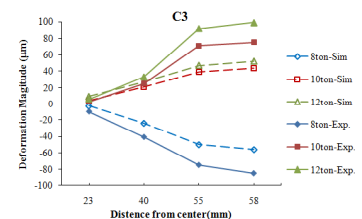
Warpage analysis in injection compression



Simulating fringe pattern for conventional injection



Simulating fringe pattern for injection compression



Validation of warpage results from the experiments

Instructor



Dr. Enoch Chen

Current Position : Senior engineer in Technical and Research Division of CoreTech System

Education : PhD in Mechanical Engineering at University of Florida

Specialization : Experimental mechanics /Residual strain analysis in composite materials/Shrinkage property study for concrete materials /Finite element analysis

- Research assistant in “Experimental Stress Analysis Laboratory” at University of Florida, specialize in the optical measurement of process-induced residual strains in composites and finite element analysis.
- Research assistant in “Advanced Material Characterization Laboratory” at University of Florida, specialize in, focus on shrinkage property study on concretes applying the optical method.
- In recent years, engage in plastic injection molding analysis and the solutions to molding problems. In addition, research on many special molding processes, including injection compression molding, gas-assisted injection molding, hot runner, and optical application. Moreover, experience with integration of injection molding and structural analyses in PLM.