Moldex3D
MOLDING INNOVATION

Industrial Application and Advanced Technology of Fluid-Assisted Injection Molding
Limited Seats. Register Now!

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Course Introduction

Fluid-assisted injection molding (FAIM) is an extension technology of gas-assisted injection molding. Developed in 1970's, this innovative concept was derived from improving product quality and reducing manufacturing cost. Here are the procedures of FAIM: Fluid was injected into the cavity when it was partially filled by the melt. Then, the fluid pushes the melt front forward and fully fills the cavity. At the end, fluid was extracted to form a hollow product. This molding process not only saves material cost but has better packing effect. Thus, product defects such as warpage and sink mark can be improved. In addition, product cycle time can also be reduced since part thickness is smaller than in traditional process.

Although fluid-assisted injection molding process has several benefits, it is important to understand its effect during design stage. CAE tools can help validate design and offer a complete solution. For example, penetration behavior can be related to several important factors such as water pressure and short-shot size. By using CAE tools, some phenomena such as penetration length, core-out ratio, and warpage results can be predicted. This is very helpful for design revision and quality improvement. Users can understand potential problems of a design in real time. And the actual number of trails can be reduced in order to minimize manufacturing cost.

Goals

- Understand fluid-assisted injection molding process
- Realize the advantages/disadvantages of fluid-assisted injection molding
- Understand the differences between GAIM, FAIM, and conventional injection molding
- Experience how to use CAE to verify FAIM process
- Find out the benefits of FAIM through real case studies

Course Information

Date：Please refer to official website

Organizer ：CoreTech System

Contact ：mkt@moldex3d.com

| Time	Content
60 min	Arrival
	Introduction to fluid-assisted injection molding
	Advantages/Disadvantages of FAIM
	GAIM, FAIM, and conventional injection molding
	CAE analysis and FAIM validation
	Case studies
20 min	Q & A

*The agenda is subject to changes.

Course Content

Based on this, the course begins with an introduction to hot runner technology and its industrial applications. Afterwards, the challenges and issues in hot runner system development are addressed for understanding the importance and benefits of using CAE tools. Then an innovative advanced hot runner analysis simulation is unveiled. In order to deepen the understanding of this technology, some case studies are discussed. The first case is about melt temperature distribution in a single-gate hot runner system. The effects of heating with different sensor node controls on hot nozzle melt temperature are explored and validated with the experiments. The second case is on the heating coil designs around hot nozzles in an eight-gate hot runner system. The effects of different heating coil designs on melt temperature distribution in the hot nozzle channel are investigated. The third case is a heating rod design issue for the manifold. Temperature difference problem from manifold heating rod design and its solution is discussed. Through this course, students can learn how to use CAE to reach solutions and optimizations for hot runner system design and development.
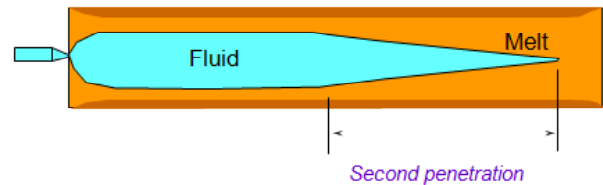
Participants

- Enterprise owner
- Engineer(RD、Manufacturing、Product design、Mold design etc.)
- Mold manufacturer
- Material supplier
- Academic
- Whoever interested in advanced plastic process manufacturing
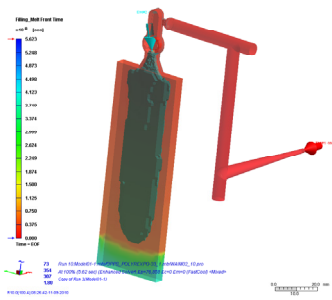
FAIM analysis result
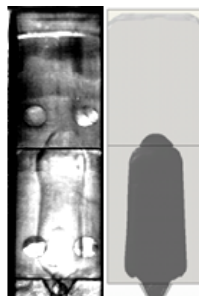
FAIM validation: experiment

The concept of FAIM

Instructor

Dr. Fu-Hung Hsu

Current position: CoreTech System senior engineer

Education: Ph.D. of Mechanical engineering in University of California, Davis.

Research area: Aerodynamics, heat transfer, numerical analysis, advanced injection molding process.

Living in U.S for nine years, Dr. Hsu has several years teaching experience in professional fields such as heat transfer, experimental method, and injection molding. After coming back to Taiwan in 2009, Dr. Hsu had worked in National Taiwan University as a post doctoral researcher for one year. In 2010, Dr. Hsu joined CoreTech System and continue his research in CAE and several advanced injection molding fields such as gas/water assisted injection mold, injection compression molding, optical parts, and conformal cooling. Dr. Hsu has assisted several famous injection molding manufacturers to solve real industry cases worldwide. His teaching style combines theories and practical cases which offer a thorough understanding for both novice and experienced professionals.