Moldex3D
MOLDING INNOVATION

Conformal Cooling: Industrial Application and Design Optimization Technology

Limited Seats. Register Now!

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Course Introduction

In the past few decades, injection molding has developed several new techniques due to the needs of a better quality and cost saving. People have been working on process improvement which deeply affects product quality. Cooling is the most dominant stage in one injection molding cycle. An efficient cooling system is always a crucial target. Nowadays, conformal cooling is a superior one among various solutions.

Although conformal cooling can achieve a better cooling efficiency, we need to utilize CAE as a tool to verify cooling channel designs at early stage. For example, physical properties inside cooling channels, such as pressure, temperature, and flow velocity, can be presented in 3D analysis. Users can detect potential design problems from analysis results. In addition, by cooling time prediction, we can evaluate its cycle time for a cooling system design.

Goals

- Understand the differences between conformal and conventional cooling in manufacturing method and functionality.
- Understand the impacts of conformal cooling on plastic injection molding.
- Realize mold heat transfer theories.
- Experience how to use CAE to verify conformal cooling design and find out the benefits of conformal cooling through real case studies.

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 conformal cooling
	Theory of heat transfer in the mold
	Conformal cooling design and manufacturing
	CAE analysis and design verification
	Case studies
20 min	Q & A

*The agenda is subject to changes.

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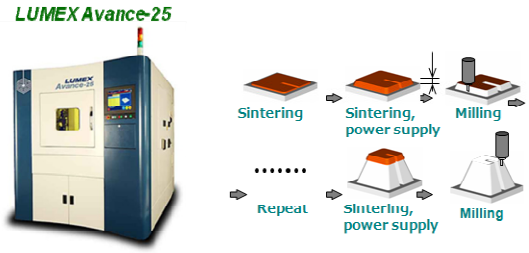
Course Content

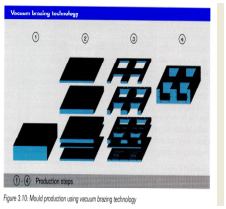
This course will begin with the theory of heat transfer in the mold i.e. heat conduction, convection, and radiation. Then the concepts of conformal cooling are discussed – both design and manufacturing methods. In order to find out potential issues or confirm parameters in designs, a CAE simulation technique for conformal cooling is introduced. CAE results can unveil to us how the designs affect process and product quality. Finally, three cases are investigated including high H/W ratio product and product with complex geometry. The results demonstrate that conformal cooling can shorten cycle time, improve product warpage, and save manufacturing costs.

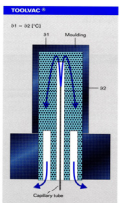
Participants

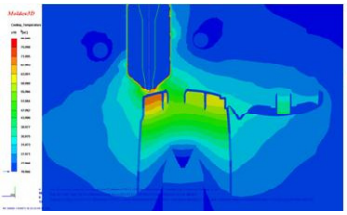
- Enterprise owner
- Engineer(RD、Manufacturing、Product design、Mold design etc.)
- Mold manufacturer
- Material supplier
- Academic
- Whoever interested in advanced plastic process manufacturing

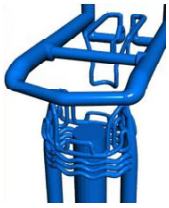


Laser Sintering Machine (left) and its process (right)


Vacuum brazing technology


Mold cross section


CAE analysis


Conformal cooling design

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. In 2009, Dr. Hsu worked in National Taiwan University as a post doctoral researcher for one year. In 2010, Dr. Hsu joined CoreTech System and continues 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.