

How to Optimize Your Mold Cooling to Drive Down Costs and Drive-Up Part Performance

The seminar is being offered at two locations and is **free of charge**.

Wednesday– September 12th, 2018

Waukesha County Technical College - Waukesha, Wisconsin

9:00-12:20: Presentation/ 12:30-1:30: Tour of WCTC Plastics Facility

- **How your Cooling Line Layout and Mold Design Are Influencing your Part Costs and Performance**

Erik Foltz, *The Madison Group*



- **Why You Should Consider High Temperature Water Cooling Units**

Dan Luke, *Norstech*



- **The Effect of Glass Fiber Length on the Short-term and Long-Term Behavior of Polypropylene**

Dayton Ramirez, *The Madison Group*



Tuesday – September 18th, 2018

University of Wisconsin – Stout - Menomonie, Wisconsin

9:00-12:20: Presentation/ 12:30-1:30: Tour of UW-Stout Plastics Facility

- **How Your Cooling Line Layout and Mold Design Are Influencing your Part Cost and Performance**

Erik Foltz, *The Madison Group*



- **Why You Should Consider High Temperature Water Cooling Units**

Dan Luke, *Norstech*



- **Going Beyond Single Point Measurement: Practical Uses of IR Cameras and DMA Data to Optimize and Troubleshoot Your Mold**

Sean Mertes, *AMCO Polymers*



For more information, please go to our website: <https://www.madisongroup.com/events.html>.

To register for each seminar, please email Erik Foltz at Events@madisongroup.com.

Attendees will have a better understanding of the role of injection molding on the performance of plastic parts and how to optimize part performance.

Educational Outreach Sponsored by:

- Society of Plastics Engineers
- UW-Stout SPE Student Chapter
- Waukesha County Technical College
- The Madison Group
- Norstech
- AMCO Polymers



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How Your Cooling Line Layout and Mold Design Are Influencing your Part Cost and Performance

Erik Foltz, The Madison Group

Cycle time optimization is often one of the main objectives when designing and constructing the mold. However, the majority of a molding cycle is often dictated by the cooling time. Therefore, it is strange that in the mold design process the integration and design of the cooling line layout and high conductivity inserts is often left toward the end of the design process where the design envelope has been drastically reduced. It is also commonly believed that the placement of the cooling lines is the only driver for properly cooling the part, and its design only influences the manufacturability of the part. This presentation will highlight the importance of all aspects of the mold cooling design on molding efficiency, and will also highlight how decisions on this design aspect of your mold actually influence the end performance of your plastic part. These points will be illustrated through practical engineer calculations and validated through case studies.

Why You Should Consider High Temperature Water Cooling Units

Dan Luke, Norstech

High temperature mold water control unit devices (HTCU) began to appear in small quantities in the US since about 2,000. These pressurized water devices, commonly but incorrectly called 'steam units', come in many configurations and can be sized to handle the smallest to the largest of molds, and water temperatures ranging from 285 °F to 420 °F. There are indeed many advantages to the use of water versus oil as a high-temperature mold cooling fluid, which is one reason water based devices have proliferated over the last 10 years especially. Even so, there is still much misunderstanding and unfamiliarity surrounding these devices and their applications. Luke will talk to the practical application of HTCU technology, starting with some background, sizing and purchase considerations, expected benefits of use, requirements for successful factory implementation, and also to the common problems and pitfalls to avoid.

Going Beyond Single Point Measurement:

Practical Uses of IR Cameras and DMA Data to Optimize and Troubleshoot Your Mold

Sean Mertes **, AMCO Polymers

It is well understood in the industry that proper cooling of molds is critical for optimizing cycle time and dimensional stability of plastic parts. However, often times it is assumed that the mold temperature is the driving factor for optimizing these parameters, particularly cycle time. Additionally, when characterizing mold temperature it is often simplified to a single value for each half of the mold. This simplification is due to the fast cycle times and dynamic mold temperatures, which makes it difficult to reliably measure the mold surface temperature in multiple locations.

There has been a slow, but steady evolution in the industry to move away from accepting single point data and rather demand multi-point data particularly when troubleshooting or optimizing injection molds. This presentation will highlight how the use of infrared (IR) thermal imaging cameras can help to troubleshoot and optimize mold performance. Additionally, the presentation will highlight how the material being molded actually, can have a critical role in influencing the dimensional stability and cycle time for the part. Particularly, how dynamic mechanical analysis (DMA) data can be used to gain insight on the role of the material on these critical metrics.

The Effect of Glass Fiber Length on the Short-term and Long-Term Behavior of Polypropylene

Dayton Ramirez **, The Madison Group

The plastics industry is utilizing glass fiber reinforcements within the polymer matrix to create composite materials that match the specific properties required for the application. However, the choice of the correct composite material for manufacturing is a complex task for a designer. During processing of the glass fiber reinforced materials, it is expected that fiber attrition will occur. Typical datasheet values are measured at one fiber length that is not regularly given with the data. Therefore, although the requirements for the application may be met with data sheet values, the designer has to consider how the manufacturing of their part will affect the final properties. This study will provide information on how the glass fiber length will affect both the short-term and long-term properties of polypropylene.

**** Rotating Speakers**