

# Advanced Light RTM Tooling

## June 20 - 24, 2016

Limited number of spaces available.  
Register online via the link below or email  
your registration form to  
[rachel.menges@compositesone.com](mailto:rachel.menges@compositesone.com).

<http://goo.gl/forms/YFTeCLgPqY>

**See registration form for payment details.**

### Location:

43 First Ave.  
Vanastra, Ontario  
Canada  
T: +1 (519) 482-1464

### Cost:

\$500 USD per person  
(Lunch and graduation  
dinner included)

### Hotel Accommodations:

Benmiller Inn and Spa  
81175 Benmiller Line  
Goderich, ON N7A 3Y1  
Canada  
T: (800) 265-1711

PARTICIPANTS UNDERSTAND THAT THEY WILL  
RECEIVE CONFIDENTIAL INFORMATION AND USE OF  
LIGHT RTM MOLDS AND THEY WILL NOT COPY SUCH  
INFORMATION IN WHOLE OR IN PART.

## Schedule of Events

### Monday, June 20 - 9:30 AM - 4:30 PM

- Economics of LRTM
- Product Design for Process and Flange
- LRTM Injection Demonstration
- A-Side Mold Construction
- Steps in LRTM Mold Building
- LRTM Demonstration

### Tuesday, June 21 - 8:00 AM - 4:30 PM

- Waxing Techniques
- Waxing Demonstration
- Design First Layer of Wax
- LRTM Injection Demonstration
- Waxing First Layer

### Wednesday, June 22 - 8:00 AM - 4:30 PM

- Second Layer of Wax
- LRTM Injection Demonstration
- Waxing Flange Details
- Start Lay-Up on B-Side

### Thursday, June 23 - 8:00 AM - 4:30 PM

- More Laminates on B-Side
- MVP Equipment
- LRTM Injection Demonstration
- Supplier Presentations
- Finish Wax and Laminate on B-Side
- Graduation Dinner

### Friday, June 24 - 8:00 AM - 1:00 PM

- Mold Repair and Maintenance
- Gel Coating, Glass Loading, and Troubleshooting
- Questions and Answers
- LRTM Injection Demonstration
- Introduction to Flex Molding (Silicone Bag System)

# ClosedMold Alliance

Composites One • MVP  
RTM North Technologies

Advanced Light RTM  
Composites Tooling Training

**5-DAY HANDS ON TRAINING**

June 20 - 24, 2016

Vanastra, Ontario  
Canada



# Hands On Light RTM Composite Tooling Training

## You will learn the basics of Light RTM Tooling including:

### WHY RTM?

- Advantages and other options

### PATTERN DESIGN AND PREPARATION

- Flanges, draft angles, and undercut considerations

### BUILDING THE FACE TOOL

- Materials, their properties, and temperature controls
- Designing, building, and attaching the back-up frame
- Accurate location clamping and attachment system

### DEFINING THE PART TO BE BUILT

- Working with dimensional wax
- Designing product cut-offs, vents, and peripheral seals
- Injection port location, multiple injection ports, and sensors
- Designing for ribs, cores, inserts, etc.
- Handling complicated shapes, undercuts, etc.

### HOW TO ENSURE PART ACCURACY

- Controlling the problem of laminate shrinkage

### BUILDING THE BACK TOOL

- Designing the frame and locking accuracy

### TOOL LIFE AND CARE

- Replacing the tool faces

### FINISHING AND PREPARATION OF THE TOOL

- Preparing the tool surface
- Release agents and their application
- Installing the mold seal
- Reinforcement materials replacement

### GETTING STARTED

- Materials and resources

### COSTING TOOLS AND PARTS

- Materials, wastage rates, and formulas for costing

### RESIN SYSTEMS AND REINFORCEMENTS

- Review of available resin systems and properties
- Review of reinforcement applications and sources

### FILLERS AND THEIR EFFECTS

- Impact on surface finish, part cost, and fire retardant
- Surface finish requirements

### INJECTION MACHINES

- Features and benefits
- Catalyst and cure systems, production rates
- Preform materials, manual to fully automated

### FLEX MOLDING

- Review of silicone bag systems
- Features and benefits
- Materials and start-up



## Registration Form

Light RTM Composite Tooling Training

June 20 - 24

\$500 per registrant Full Payment is required with registration prior to

June 13, 2016

Name: \_\_\_\_\_ Title: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Products currently being manufactured: \_\_\_\_\_

Please circle one: Fabricator      Supplier      Distributor      Other

## Registration and Payment Due June 13, 2016

You may register online via the link below or email your registration form to [rachel.menges@compositesone.com](mailto:rachel.menges@compositesone.com)  
<http://goo.gl/forms/YFTeCLgPqY>

Please send payment to:

**RTM North**  
Attn: Doris Smith  
43 First Avenue  
Vanastra, ON N0M1L0

Please make checks payable to RTM North. Full payment is required with this registration. Registration will not be considered final until payment is received. All cancellations made ten working days prior to the commencement of the workshop will receive a full refund. Cancellations made less than ten days prior will be subject to a refund if there is a confirmed alternate. All cancellations must be made in writing.