RMD News
The Rotational Molding Division of SPE Newsletter

2nd and 3rd Quarter Volume 16 Issue

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The ARM Annual Meeting is One Month Away!

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www.rotational-molding.4spe.org

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Chairman's Message

Gary McQuay

Greetings Fellow RMD Division Members,

June 8th marked the conclusion of an at times challenging effort by a team of ten hard-working and committed RMD board members to organize TopCon 2016. I want to personally thank Peter Mooney, Russ Boyle, Melissa Inman, Sheri Muller, Bruce Muller, Denis Rodrique, Tom Innis, Tom Steele, Jon Ratzlaff – and above all Larry Whittemore, TopCon chairman - for all their hard work that culminated in a successful conference.

When the numbers were tallied, there was a total of 98 registered attendees, 23 tabletop exhibits, 18 sponsors, and 24 new members. There were 24 presenters in all, including 4 keynotes and one path-breaking multi-media address. SPE managing director, Russell Broome, addressed the board during our Sunday evening dinner and the whole gathering as part of the awards ceremony.

The presentations were primarily technical, covering a range of topics intended to disseminate firsthand experience and knowledge for the benefit of the entire rotational molding industry. The atmosphere throughout the conference was invigorating, and I am anxious to get started planning for TopCon 2018.

Thank you all for your continued support.

Gary

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In The News: Winner of Design Competition Announced

Winners of the 2016 Rotational Molding Product Design Competition Announced

AKRON, Ohio, June 22, 2016 – Winsell Incorporated today announced the winners of the 2016 International Rotational Molding Product Design Competition. The goal of this annual contest is to inspire emerging industrial design students to create breakthrough consumer products that utilize the latest technologies in rotational molding. Judging criteria includes: originality, process-ability, growth potential, beauty and visual appeal, tool building compatibility, and use of appropriate materials.

This year 66 students participated in the design competition. The entries included the following design schools: The Columbus College of Art & Design, Penn State Erie the Behrend College, the University of Wisconsin Stout, Purdue University, Milwaukee Institute of Art & Design, Carleton University and Northern Michigan University.

First Place was awarded to Sarah Gustafson of Purdue University, for her design of the Casper Stool. The Casper Stool is a cushioned, modular stool that helps to organize the classroom. The stool is perfect for any classroom or home with young children. The chair has a unique cutout on the back for the storage of a small child's backpack. Small rungs on the front and back base allow children to rest their feet while sitting or use the rungs for carrying and moving the stool around. The shape of the stool is perfect for a variety of modular setups such as a circle, semi-circle or any creatively winding form.

First Place winner: the Casper Stool by Sarah Gustafson of Purdue University

Second Place was awarded to Suzi Biehl of the University of Wisconsin Stout for her design of Bloom Seating . This outdoor seating **d**esign is an aesthetically pleasing piece of furniture that integrates nature into everyday living while utilizing the rotomolding process. Along with the seating, Suzi designed planter pods which are removable, interchangeable pods that can be used for storage. Bloom seating is water resistant, energy efficient, lightweight, durable and more.

Second Place winner: Bloom Seating by Suzi Biehl of the University of Wisconsin Stout

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10 **Honorable Mentions** were awarded to the following students:

Milwaukee Institute of Art and Design (MIAD): Thuy Khuu, Emily Siira, Randi Degg, Keegan Phillips
Purdue University: Evan Brown, Sam Bucciferro, Gabrielle Bennett,
University of Wisconsin-Stout: Kevin Kalmon,
Northern Michigan University: Nathan Warwick
Columbus College of Art & Design: Elizabeth Jackson

The Rotational Molding Product Design Competition is organized by Winsell, Incorporated, with support from 2016 sponsors : Diversified Mold & Castings, Hedstrom, M. Holland and Polimeros USA.

"The rotational molding industry is fueled by the creative ideas of product designers" says Fred Shockey, Chairman and CEO, Winsell Incorporated. "When we cultivate and celebrate emerging talent in the field, we will thrive. The Product Design Competition gives us a glimpse into the future of rotational molding, while also ensuring that future."

About Winsell Incorporated

Winsell Incorporated, headquartered in Akron, Ohio, is the world's only 100% dedicated supplier of granite-effect colorants for rotational molding applications. Through extensive research and continuous innovation of granite formulations, the company provides trouble-free processing solutions to rotomolders. To learn more, read about the Winsell Granite Difference. Visit Winsell online at www.winsellinc.com, Facebook and follow us onTwitter

Industry News: SPE Announces a Practical New Program

SPE Announces a Practical New Program

Leveraging a long association with universities and a large number of plastics industry professionals, SPE has created an Industry Academia interface.

This activity's goal is:

to promote mutually beneficial collaboration between industry and academia by facilitating research and development projects relating to plastic materials, processes, products and technologies.

Many companies are now unable to find enough technically competent employees to research new material or to develop new machinery, products and emerging markets. Many universities have the technical expertise to undertake research or development projects of this type on a contract basis. These need not be large-ticket, multi-year projects. Small projects will be treated with equal respect.
SPE's Industry Academia Committee members will review project requests and put the applicants in contact with universities equipped and staffed to handle that type of project.

For additional information:
1. log on to www.4SPE.org;
2. click on to "Resources";
3. click on to "Industry Academia collaborations"

or

Contact IAC Chairman Dr. David Bigio at dbigio@umd.edu

Industry News: ARM Annual Meeting

The ARM Annual Meeting is one Month Away!

The ARM Annual Meeting is one month away! Join us in New Orleans for the 40th Anniversary Celebration filled with valuable speakers, technical content, new product information and networking in the Crescent City September 24-27, 2016.

You can learn more about the speakers, seminars and three tours planned for ARM's Ruby Anniversary.

We have a wealth of great presentations for the 40th anniversary meeting and we are currently working to fit all of them into the schedule. As the SPE Newsletter went to press, we had announced our opening talks for each day of the meeting by Disney's Dennis Snow, Paul Nugent, and Mark Kearns. Learn more about these talks below and visit www.rotomolding.org for more information.

The program will emphasize value for many different roles in your organization including technical, sales, purchasing, human resources and more. Rotomolders will receive a $150 discount on each registration after the first two paid at full price.

To celebrate this special anniversary, we're encouraging luminaries from the rotomolding industry to attend the meeting. Please encourage any retired members or those no longer in rotomolding or related industries to register for the meeting at a discounted rate by contacting ARM staff or visiting www.rotomolding.org

You won't want to miss this historic meeting, celebrating the past and embracing the future of rotational molding.

Fabulous at Forty? by Paul Nugent

The rotomolding industry of today has certainly advanced in many ways beyond its fledgling state when ARM was formed in 1976; in many ways, however, it has not. Many molders are Gloriously Fabulous of course, but while there are many developments that can help push rotomolding into new territories, on a day-to-day basis there are too many mundane issues that stubbornly hold it back. As we look ahead to the next 40 years, what can or will change? Not just in terms of technology but in terms of attitudes, industry dynamics, market position and perception. What forces will affect molders and who will drive or respond to the changes that arise? This presentation will take a look at where we have come from – technically, commercially and as a community – and consider industry and societal factors that might affect rotomolding by mid-century.

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Industry News:

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The Rotomolding Factory of the Future

by Mark Kearns, Queen's University Belfast

Significant technological advances in production methods, control, automation, robotics and innovative materials are already having an impact on rotomolding today. As ARM celebrates its establishment 40 years ago, this presentation will address how the rotomoulding industry might evolve, develop and transform over the next 40 years. What impact will the 4th Industrial Revolution have on the shape of the rotomolding factory of the future? How will rotomoulding machines, moulds, materials, markets and factories change over the next 40 years? This presentation will look at the Rotomolding Factory of the Future and identify some future trends and technologies detailing their potential impact on future rotomoulding technology, production and markets.

Industry News

ANTEC 2016 REVISITED

Denis Rodrigue
Technical program chair

The 2016 version of the SPE ANTEC conference was held in Indianapolis, IN, from May 23rd to the 25th. As they do every year, the rotational molding division organized a session on the morning of the 23rd. This year the presentations were truly international as two came from Canada, two from Mexico, and two from Europe (UK and Germany).

Different subjects were presented and discussed, making the session very general and broad. First, Professor Michael Thompson from McMaster University presented a paper on polymer particle sintering using an automated imaging system. Then Abu Saifullah from Bournemouth University reported on the impact properties of polyethylene and polypropylene over a wide range of temperatures. This was followed by Martin Löhner from the Institute of Polymer Technology at the Friedrich-Alexander-Universität in Erlangen-Nürnberg, presenting some experimental results on multi-layer polyethylene-nylon parts using a multiphase interlayer to generate mechanical adhesion. Professor Rubén Gonzalez-Nuñez from the University of Guadalajara discussed the processing of three-layer foamed composites. Then Erick Omar Cisneros-Lopez, also from the University of Guadalajara, discussed the effect of fiber surface treatment to increase fiber content in agave-LMDPE composites. Finally, Professor Denis Rodrigue from Laval University revisited an analysis of the rotational molding cycle using internal air temperature profiles with a focus on foamed polyethylene applications.

Overall the session was very successful since the technical quality of the presentations was very high. A copy of the written papers can be obtained via the SPE web site (http://www.4spe.org/Resources/technicalresources.aspx?navItemNumber=657) for members.

I hope you will be able to attend next year's ANTEC conference which will be held in Anaheim, CA, May 8th through the 10th. More information is coming on the SPE web page at: https://www.eiseverywhere.com/ehome/184555. Please consider attending the conference and even presenting a paper as we will be celebrating the 75th anniversary of ANTEC.

Submit your news story or technical article to the RMD Newsletter !

The submission deadline for the next addition is Dec 1st.

Industry News

The Rotational Molding Division Thanks the Generous Sponsors of the 2016 TopCon.

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In the News: 2016 RMD TopCon

Rotational molding veteran says 'one size doesn't fit all'

By Bill Bregar

Plastics News

Cleveland — Ken Bather, a 32-year-veteran of rotational molding, thinks the process is amazing.

"Rotomolding is a very strange bird — I loved it ever since I first saw it," said Bather, plant manager at Hedstrom Plastics' factory in Dunkirk, Ohio.

The same goes for employees. "I am passionate about the people that work on the shop floor," Bather said.

Bather gave a presentation about hands-on management during the Society of Plastics Engineers' Rotational Molding Conference in Cleveland, held June 5-8.

Speaking in his Scottish accent, Bather gave a glimpse into the factory floor that was funny and entertaining — he started out by imitating Scotty on Star Trek.

He talked about his pet peeves, including lousy molds. "Why do you hate your operation so much? Why make them suffer with a bad mold?" he asked.

Rotational molding employees build up myths about the process, Bather said. They see patterns and think they are 100 percent correct. They will argue about things such as bolts vs. clamps to hold the mold closed. What's the answer? It depends, he said.

"One size doesn't fit all in rotomolding."

Bather said it's important to listen to machine operators, who see problems first. "When I walk up to a machine, I go up and treat it as if it's their office," Bather said.

At the same time, managers have to "control the terminology" when explaining the process, and decisions.

"You have to take as deep breath," he said. "Please have people sit and use their eyes before they use their mouths."

Bather said work instructions need to be updated and changed to make them as clear as possible. Plant floor workers are responsible for inspecting for quality at the Dunkirk factory.

In response to audience question, Bather said the Dunkirk factory starts new employees as parts finishers, then moves them to operators later. That way, he said, as finishers they see first-hand problems that can come from bad molding work.

In the News: 2016 RMD TopCon

Automation finding its place in rotomolding

By Bill Bregar

Plastics News

Kent, Ohio — Automation and temperature control are keys to modern rotational molding machinery, according to a Rotoline USA Manager Alain St. Pierre.

Rotoline USA exhibited at the Society of Plastics Engineers' Rotational Molding conference in Cleveland, and the company hosted attendees for lunch and a tour on June 8.

St. Pierre led the tour of the 38,000-square-foot plant in Kent, which opened in late 2013 by Brazilian rotational molding machinery manufacturer Rotoline Industrial Equipment Ltda.

The operation now has six employees, including rotomolding veteran St. Pierre, recently hired sales head Mike Pierron, and Jovan Calhoun, who handles everything from parts and service to installation of machines at customer plants.

Major components of the rotomolding machines are shipped to the Kent operation from Brazil. In Kent, Rotoline USA handles assembly and controls, and sources some components from U.S. suppliers. The Kent facility usually houses about six machines, St. Pierre said. Three machines were in various stages of assembly during the rotomolding conference tour.

Rotoline had sold machines to the United States and Canada for years before it started the U.S. operation. St. Pierre said about 120 Rotolines have been installed in the two countries.

Attendees watched a video showing large-volume rotomolding of rooftop water tanks — a big market in Brazil. The high-volume tank machines featured automated mold opening and closing, and a dosing system that automatically moves a chute in place to deliver the correct amount of powder into the mold, then retracts away from the molding area.

St. Pierre said the automation can be retrofitted on existing machines, including any brand of rotomolder.

Rotomolding is known as a labor-intensive process, but that is changing. "We're headed toward automation," he said. "We're moving more and more to automation."

Another feature of Rotoline machines is the RWTC, or Rotoline Wireless Temperature Controller, which monitors internal temperature control of the mold during the entire production cycle, from heating in the oven through cool-down. The cycle time is controlled by temperature, which he said is more accurate than simply measuring the molding cycle by time.

Designer's Corner

DESIGNER'S CORNER

PARALLEL WALLS

By: Glenn Beall

Editor's Note:

This is the fourth in a series of twenty-six articles that will review how to design rotationally molded plastics parts and products. We look forward to publishing these articles over many issues. This is a great opportunity for newcomers to the community as well as an always appreciated chance for review of important information.

Rotational molding excels at producing hollow parts with closely spaced parallel walls such as the cross-section of the boat shown in Figure 7 where the inner and outer hulls are molded as one large, integral part.

Insulated food containers ice chests tote bins, and cushioned shipping cases all rely on this technique. The small double-walled flower pot shown in Figure 8 uses this capability to produce a one-piece structure. Most other plastic processes would produce this flower pot as two parts requiring assembly.

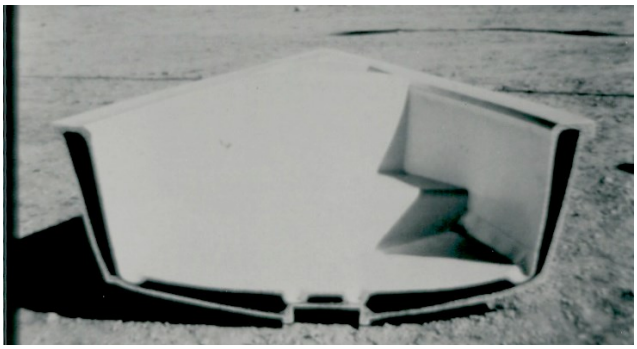

Figure 7 Cross-section of a boat hull with closely spaced parallel walls.

Closely spaced parallel-walled parts, such as the boat and the flower pot, present two problems. When the depth of the recess is greater than the width across the open end of the part, it becomes difficult to adequately heat the mold at the inside bottom corners. If these locations on the mold are slow in reaching molding temperature, the molded parts will contain thin walls in those areas. The shallow depth-to-width ratio of the boat minimizes this potential molding problem. The flower pot presents more of a mold heating problem. There are methods for forcing heat into these inside bottom corners, but they are all costly. The best approach is to avoid designing parts with these proportions. When this situation cannot be avoided, this undesirable detail should be reviewed with a knowledgeable molder before finalizing the part design.

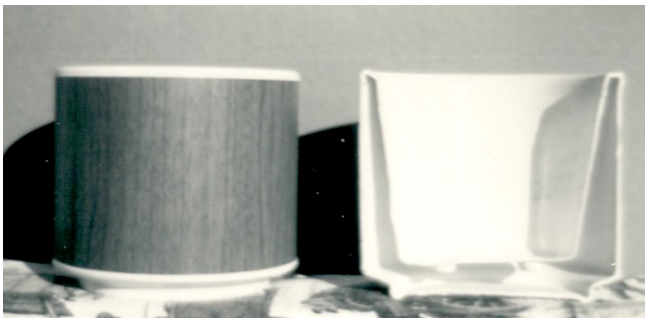

Figure 8 One-piece, rotationally molded, double-walled flower pot with closely spaced parallel walls.

The second problem associated with closely spaced parallel walls is providing enough volume in the cavity for the plastic material. Finely ground powdered plastic has a bulk density factor at least three times greater than the same material molded into a solid part. The distance between two parallel walls must provide adequate volume for the powdered plastic and enough space for the material to flow through the mold and uniformly coat the cavity walls. Flat panels with closely spaced parallel walls, of the type required for a cart door, table top, or business machine housing panel, are produced in cavities that severely limit the space available for the powder.

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Designer's Corner

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The cross-section of the part shown in Figure 9 has parallel walls that are too close together. In this case the plastic has partially bridged the gap between the two walls. The resulting part is no longer completely hollow. Once these bridges are formed, they restrict the free flow of the plastic powder through the cavity. The plastic material bridging the gap was intended to be somewhere else on the part. This condition requires the use of more plastic material in order to avoid a thin wall at some other critical location on the part.

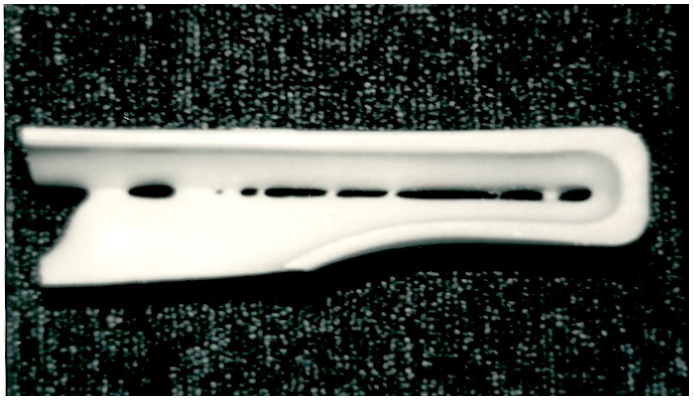
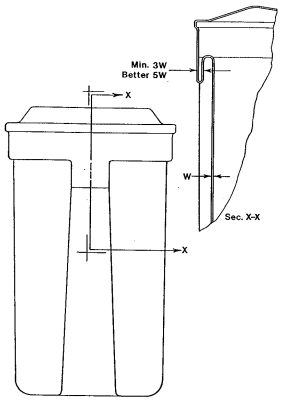
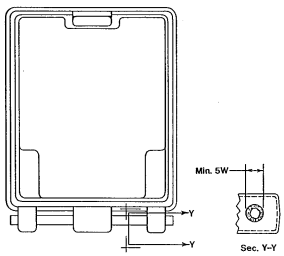


Figure 9 Closely spaced parallel wall with undesirable





The refuse container (Figure 10) has more than enough volume in the cavity to accept the full charge of plastic powder. There are, however, powder flow problems in the closely spaced walls that form the pickup truck lifting hook recess and the handles.

The absolute minimum distance between two walls must be three times the nominal wall thickness for the efficient molding of good quality parts. A distance of five times the nominal wall thickness is desirable. The lifting hook recess, shown in Section X-X, is relatively open and easy for the powdered plastic to reach and coat.

The handle, as shown in Section Y-Y, is much more restrictive to powder flow. In structures such as the tubular handle, the minimum distance between walls must be five times the nominal wall thickness.

This handle could have been designed to extend all the way across the container, but the center support adds a lot of strength to the handle. Of equal importance is that this hollow handle support provides a third opening for powder to flow into the handle while reducing the length it has to travel.

Referring to the refuse container in Figure 10, if the lifting hook recess and the handle cross-sections were specified with a width of less than three times the nominal wall thickness, the molding process would try to produce a solid part in these locations. The powder would not be able to penetrate into these restricted areas and the process would produce a partially filled, porous, solid section. The thicker sections would stay hot longer and shrink more than the rest of the part. This would encourage warpage and molded-in stress. Molded-in stress will weaken the lifting hook recess, which needs as much strength as possible. These two details could be molded as solid sections by processes such as injection-molded structural foam or reaction injection molding, but they should be designed as hollow sections for the rotational molding process.

This article is a condensed extract from G. L. Beall's Hanser Publishers book entitled "Rotational Molding Design, Materials, Tooling, & Processing" available at hanser@ware-pak.com or phone (877) 751-5052.

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☐ Thermoplastic Elastomers - 006

Recommended by (optional) _____ ID# _____

PE15

RMD Interim Financial Report

SPE's Rotational Molding Division
Annual Financial Report 2014-2015
July 1, 2014 to June 30, 2015

		Actual (proposed)	Budget
Cash Balance: Beginning of Period		$44,687.94	
Cash Receipts in Period:			
SPE Rebate		$890.64	
Interest		$49.48	
Newsletter Ads/Sponsorships		$0	
Scholarships/Grants Fund			
TopCon (TopCon 2014)		$35,473.77	
Total Income in Period		$36,413.89	
Total Cash to be accounted for		$81,101.83	
Cash Disbursements in Period:			
Board Meetings		$265.81	
TopCon (TopCon 2014)		$500.00	
e-Newsletter Printing/Mailing		$0.00	
Awards (Student Papers)	$0.00		
Scholarships/Grants		$0.00	
ANTEC Expenses		$0.00	
Postage		$45.14	
Awards		$1023.98	
Memorial		$331.01	
Website `		$2799.88	
IDSA		$1000.00	
Donation—Plastics Pioneers		$500	
Website Domain name (2013-2022)		$	
Webinar	$0.00		
MISC (ARM booth	)	$738.83	
	Bank Fees		
$23.48			
Total Disbursements in Period		$7228.13	
Cash Balance End of Period		$73,873.70	

The Cash Balance is made up as follows:

Scholarships/Grants (savings acc.)	$0	
Checking Account		$5,246.83
Savings Account	$68,626.87	
Total Cash Balance		**$73,873.70**

Respectfully submitted
By Russ Boyle

SPE's **Digitized Presentations** are multimedia recordings of past e-Live™ Presentations.

Available for purchase on CD-ROM, they include presentations on more than 15 different plastics processes. Past e-Live™ Presentations are archived weekly. Go http://www.4spe.org/elearning/ for more information.

Interested in sponsoring the RMD Newsletter? Please contact : Russ Boyle at Russ.boyle@gulfviewplastics.com or call at (727) 379-3072

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Past Division Chairman
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SPE International President

Rotational Molding Division Past Chairs

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Barry Aubrey	2000-2001	Ken Wessler	2006-2007
Jon Ratzlaff	2001-2002	Michael Paloian	2007-2008
Marshall Lampson	2002-2003	Greg Stout	2008-2009
Ken Pawlak	2003-2004	C. “Hank” White	2009-2012
Larry Schneider	2004-2005	Rob Donaldson	2012-2015

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The Rotational Molding Division would like to acknowledge and thank the following organizations that share their resources with the RMD by allowing and encouraging their employees to serve as members of the RMD Board of Directors.

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