



# RMD News

The Rotational Molding Division  
of SPE Newsletter



2nd Quarter 2017

Volume 17 Issue

ROTATIONAL MOLDING

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CNC Business  
Manager:  
**Kevin Cook**



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### Shared Values



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plant in Sparta, TN

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Inc. announces the promo-  
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Officer



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## Chairman's Message



**Gary McQuay**

Greetings Fellow Rotational Molders,

Our division was again very fortunate this year to be given the Pinnacle Award. Our Glenn Beall was on hand at ANTEC in June to accept the award on behalf of the division. I asked Glenn to pass the award on to Larry Schneider for safekeeping since Larry took the responsibility to meet all the requirements for applying. Thanks again, Larry, for all you do for the division.

According to Denis Rodrique, who chaired the rotomolding session at ANTEC, it was a successful event for our division. The six technical presentations were very well received, and they spawned a lot of good questions and comments. Denis looks forward to an even better ANTEC in 2018. Thank you, Denis.

We are presently in the process of electing a new councilor, as well as three new board members, for our division. I am gathering the bios, and I will be submitting them very shortly to SPE headquarters for distribution and voting. When you receive the request to vote, please make sure you look over the bios and vote.

Larry Whittemore is starting to plan for our 2018 TopCon, including assembling another winning team. Just to give you a flavor of the excitement being created, several members volunteered before Larry even had a chance to

ask. Even though this TopCon falls on an NPE year, I expect there will be a full house - standing room only. Thanks, Larry, for accepting this responsibility once again.

On a final note, even though I will be retiring from Penn College, I will not be retiring from SPE nor giving up my involvement in the rotational molding division. Our board of directors is blessed with having some of the most knowledgeable and helpful professionals in the plastics industry. It may be selfish on my part, but I cannot bring myself to walk away from all that knowledge, but most importantly all that friendship.

Thank you  
Gary

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## In The News: Avantech Hires CNC Business Manager

# Avantech Hires CNC Business Manager

### NEWS RELEASE

For Immediate Release:

April 4, 2017

BAXTER, Minn. — Avantech, a Minnesota-based manufacturer of tooling solutions to the global plastics industry, recently hired Kevin Cook as its CNC Business Manager.

Cook will lead efforts to streamline, accelerate, and continuously improve the throughput and performance of Avantech's rapidly expanding CNC machining capabilities. In addition to Avantech's cast aluminum tool-building, CNC-machined tools represent a significant percentage of the company's overall manufacturing output.

Cook's machining career spans 30 years, spending the last decade in a variety of leadership roles where he oversaw a multi-location machining operation of more than 50 CNC machining centers.

"We're thrilled to add Kevin's skills, experience, and leadership to the Avantech team and to distill his vast machining knowledge into the value we deliver to our customers", said Tom Innis, Avantech's president. "We're also excited to leverage Kevin's proven capabilities in driving diversification and business growth in our CNC machining area."



Avantech has invested substantially in its CNC machining operation, in both equipment and technology. This has enhanced its capacity to provide services and capabilities and accelerated speed-to-market solutions for its customers. From involvement at the beginning stages of product design to delivering highly engineered tools used to manufacture plastic products, Avantech's customer base spans the globe.

"The company is established and well-respected in the industry, and I look forward to building upon these capabilities, driving growth, and even more expansion," said Cook.

Avantech is a trusted supplier to the global plastics industry with almost 30 years of experience in delivering value-added tooling solutions and helping its customers succeed in a wide variety of OEM market sectors. To learn more, visit [avantech.com](http://avantech.com).

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

*The submission deadline for the next edition is Sept. 1st.*

## In The News: Review of ANTEC 2017

# Review of ANTEC 2017

By Denis Rodrigue

### Review of ANTEC 2017 By Denis Rodrigue

At this year's ANTEC meeting, May 8-10, in Anaheim, CA, a rotation molding session was organized on the Monday morning to celebrate the 75<sup>th</sup> anniversary of the SPE. For this occasion a series of presentations coming from different parts of the world (Canada, China, Germany and Mexico) reported on new developments related to materials, processing and characterization of rotomolded products. The session was well-attended and generated lively discussions between presenters and attendees. A list of the presentations, authors, and presenters (underlined) is given here, along with abstracts.

#### 1) INFLUENCE OF PARTICLE SIZE IN MULTI-LAYER ROTATIONAL MOLDING WITH A MULTIPHASE INTERLAYER TO GENERATE MECHANICAL ADHESION

Martin Löhner and Dietmar Drummer, *Institute of Polymer Technology (LKT), Friedrich-Alexander-Universität, Erlangen-Nürnberg, Germany*

##### Abstract

Rotational molding shows the potential to build up multi-layer parts by sequential adding of different materials into a rotating cavity. The limited compatibility of several materials to each other reduces the potential material combinations significantly. Former investigations showed the general applicability of a multi-phase interlayer to bond incompatible materials during the rotational molding process. Within this interlayer interlocking occurs between the two materials. This work investigates the influence of particle size on the material distribution and peel strength for the material combination polyethylene and polyamide 12. It is shown that the material distribution depends on the particle size added to generate the interlayer whereas the peel strength is mostly unaffected if the interlayer thickness exceeds the particle size. For thinner interlayers smaller particles show higher peel strengths and a varying interphase region.

#### 2) PREPARATION OF PA6/LLDPE BLENDS BY ROTATIONAL MOLDING

Rubén González-Núñez, Rosa Gabriela López-GonzalezNúñez, Pedro Ortega Gudiño, Milton O. Vázquez-Lepe, *Universidad de Guadalajara, Mexico*, and Denis Rodrigue, *Université Laval, Canada*

##### Abstract

Blends of linear-low-density polyethylene (LLDPE) and polyamide 6 (PA6) were processed by means of rotational molding. Blends of 10, 20 and 30% vol. of PA6 in LLDPE were previously prepared using two methods: dry blending using a high shear mixer and melt-compounding using a twin-screw extruder. The objective of the work is to study the morphological and mechanical properties of rotomolded parts made with polymer blends. The results indicated the rotomolded parts obtained by previous extrusion generated smaller and better dispersed PA6 particles in the LLDPE matrix. The mechanical properties are also found to be influenced by the blend preparation method.

#### 3) ROTATIONAL MOLDING OF POLYLACTIC ACID AND AGAVE FIBER BIOCOMPOSITES

E.O. Cisneros-López, A.A. Pérez-Fonseca, D.E. Ramírez-Arreola, R. González-Núñez, Y. González-García, J.R. Robledo-Ortíz, *Universidad de Guadalajara, México*, and Denis Rodrigue, *Université Laval, Canada*



## In The News:

Continued from page 4

### Abstract

In this work biocomposites of agave fibers (*Agave tequilana* Weber var. Azul) and polylactic acid (PLA) were produced by rotational molding. In particular, a simple dry-blending technique was used to disperse the agave fibers in the biodegradable polymer matrix. The effect of fiber content (0, 10, 20, 30, and 40 wt.%) was studied, and the samples were characterized in terms of morphology, density and porosity in relation to mechanical properties (tensile, flexural, impact and hardness). The results showed that rotomolded biocomposites were successfully produced, but they had high porosity, leading to lower properties for fiber contents above 10%. It was possible to observe that low fiber contents produced the best morphology, indicating there is an optimum fiber content to get well-distributed fibers in the matrix.

### 4) RELATIONSHIPS BETWEEN LOW-TEMPERATURE IMPACT PERFORMANCE AND STRUCTURES OF ROTATIONAL MOLDED CROSS-LINKED HIGH-DENSITY POLYETHYLENE

Yueqing Ren<sup>ab</sup>, Xia Dong<sup>b</sup>, Xuelian Chen<sup>a</sup>, Xiaojie Sun<sup>a</sup>, Shuguang Wang<sup>a</sup>, Yafei Li<sup>a</sup>, Dujin Wang<sup>b</sup>, Wenbin Liang<sup>a</sup>

<sup>a</sup> Department of Polymer Materials, Advanced Materials Center, National Institute of Clean and-Low-Carbon Energy, Beijing, China

<sup>b</sup> Beijing National Laboratory for Molecular Sciences, CAS Key Laboratory of Engineering Plastics, Institute of Chemistry, Chinese Academy of Sciences, Beijing, China

### Abstract

The low-temperature impact performance of rotational molded specimens is of great importance for the final products. Cross-linked high-density polyethylene (XL-HDPE) is a preferred material for large chemical and fuel tanks due to its superior environmental stress crack resistance and high impact strength. In the present research the drop weight impact strength, defined as ARM impact strength, of rotational molded XL-HDPE was carried out at -40°C, and the relationships between impact strength and microstructures were investigated. The results confirmed that the microstructures of XL-HDPE molecules in the innermost surface layer dominated the low-temperature impact performance of rotational molded XL-HDPE articles.

### 5) ROTATIONAL MOLDING OF LINEAR-LOW-DENSITY-POLYETHYLENE WITH DIFFERENT CONCENTRATIONS OF GROUND TIRE RUBBER

Y. Dou, Denis Rodrigue, Université Laval, Canada

### Abstract

In this work ground tire rubber (GTR) was dry-blended with linear-low-density- polyethylene (LLDPE) to produce thermoplastic elastomer parts by rotational molding. In particular, different GTR concentrations (0, 5, 10, 15, 20, 25, 30, 35, 40, 45 and 50% wt.) were incorporated to determine the effect of the rubber phase on the processability and overall properties of the parts. Each composition was characterized in terms of morphology and mechanical properties (tensile, flexural and impact). The results show that the addition of the rubber phase decreased the tensile and flexural moduli and strengths, but the tensile elongation at break was always above 100%. This good elasticity produced impact strengths higher than the neat matrix with an optimum GTR content around 20% wt.

The next ANTEC meeting will take place May 7-9, 2018, at the Orange County Convention Center in Orlando, FL. The meeting will be jointly organized with the National Plastics Exhibition (NPE), which is the largest plastics show in North America. I personally invite you all to come and join us for this event.

**In The News: Discover innovation and inspiration at Rotoplas**

# Discover Innovation and Inspiration at Rotoplas, the International Rotational Molding Exposition

## **Discover innovation and inspiration at Rotoplas, the international rotational molding exposition**

Rotoplas is held every three years in conjunction with the ARM annual meeting. The annual meeting features top-notch industry presentations, educational workshops, and professional speakers. The all-day educational seminars are designed to help attendees increase their understanding of the rotomolding process and enhance their designs. Join us September 25-28 in Rosemont, IL.

Tours include rotomolding plants and Harley-Davidson in Wisconsin. More information at [www.rotoplas.org](http://www.rotoplas.org)

Come to Rotoplas and gain valuable insights into the rotomolding process. Buyers and sellers will converge on the show floor to discover new ideas and cost-saving methods. More than 55 booths will display all the products and services that rotomolders and their customers require.

The annual meeting includes 17 education sessions. Many, but not all, are detailed below. You can find complete information at [www.rotoplas.org](http://www.rotoplas.org)

## **Adding Value Through Design: Connecting Rotomolding with Consumer Trends**

Michelle Travis, EMD Performance Materials

How can rotomolding capitalize on consumer trends and color forecasting? How can rotomolding appear to the mass market or influence the industrial market, based on underlying consumer preferences? What is possible in rotomolding to appeal to the mass consumer market and in line with consumer social, color and design trends? Learn how custom and proprietary rotomolders can proactively take action on this knowledge to grow and revolutionize their businesses.

## **Alternatives to Polyolefins**

Dr. Nick Henwood, Integrated Design Systems, and Bobby Richards, Custom Resins

This workshop offers some practical options, both in material selection and in overcoming molding application challenges. New rotomolding applications often call for material properties that are outside what is possible with polyethylene or polypropylene. Unfortunately, the rotomolder has far fewer options than other plastic processors, and what alternatives do exist can present significant problems.

## **Buying Polyethylene: Quality Varieties and Blending versus Compounding**

Stephen Copeland, Jerico Plastics, and Owen Hodges, Nexeo Solutions

The polyethylene rotomolding market has a variety of resins of different qualities. The main categories include branded prime, generic, wide-spec, reprocessed and compounded. This presentation will define the different qualities of resin and describe situations where one quality might be more suitable than another. It will also examine the advantages of modifying polyethylene by extrusion compounding versus dry blending using medium- and high- intensity mixers.

## **In The News: Discover innovation and inspiration at Rotoplas**

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### **Collaborate for Success**

Martin Spencer, UniqueRoto

By building a team and working together, well-produced products that are fit-for-purpose can be brought to market with a much greater chance of success than those formulated by just the molder or the designer. This presentation is designed to stimulate thought about how new products are brought to market and demonstrate through 3-4 case studies how bringing all parties together at the earliest opportunity provides the greatest opportunity for success.

### **Conversion From “Good Old” Steel Mold to State-of-the-art Automatic Aluminum Molds**

Oliver Wandres, Maus GmbH

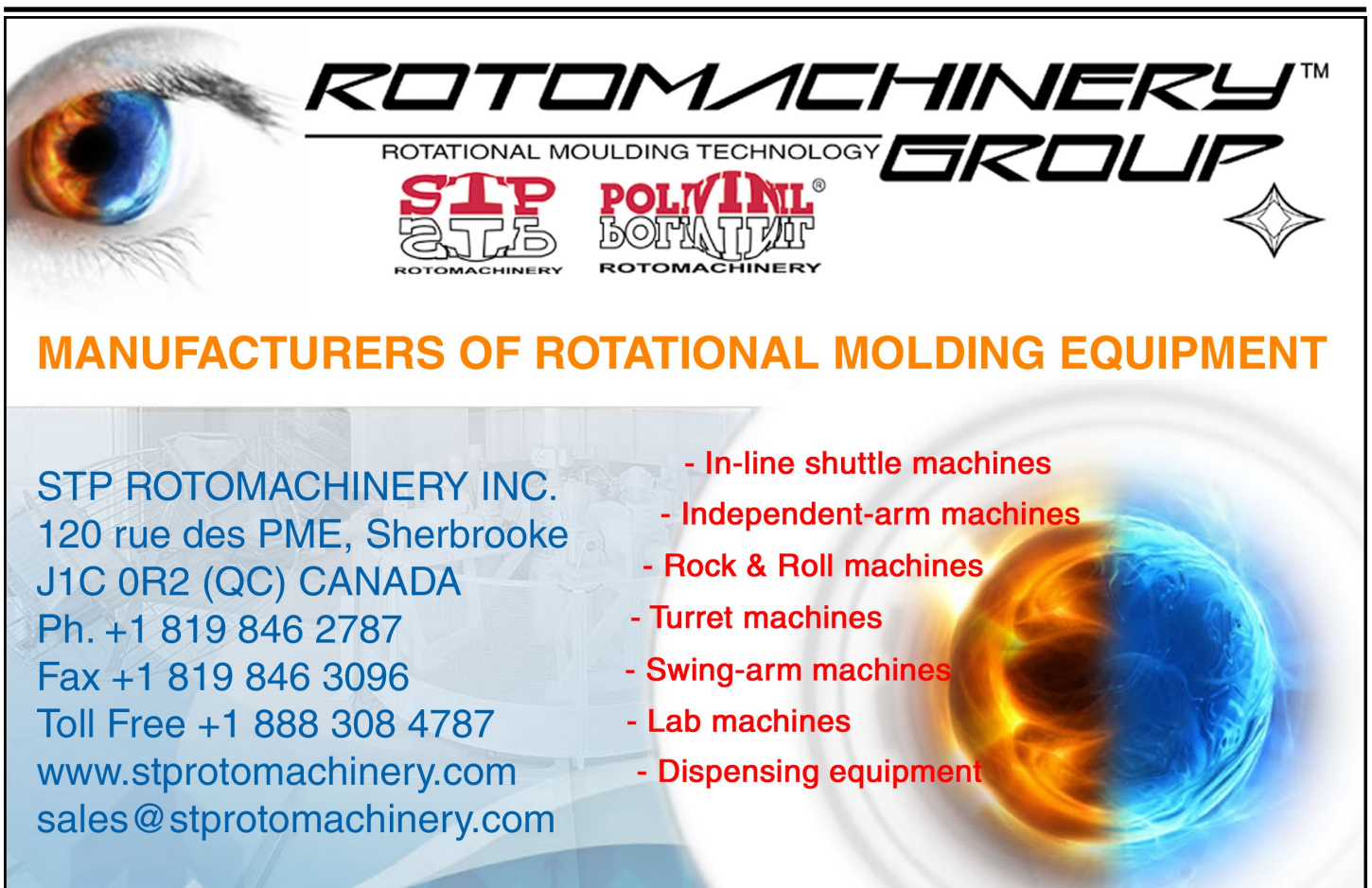
The objective of this presentation is to provide a fresh view on the latest automation techniques in molds, saving cost and hassle, addressing tolerance and quality issues, and improvements in worker health and safety. Case Study: A molder producing high volumes of a certain toilet cabinet was seeking to invest in another mold set to increase output. With minor design changes a series of high-end molds were produced, reducing time of production and failure rates and greatly improving the workplace for the machine operators.

### **Creep Modeling of Large Rotomolded Tanks**

Carmine D’Agostino and Henry Hay, NOVA Chemicals

This presentation provides an example of a test methodology, as well as insights into tank creep deformation through mathematical modelling of creep properties, based upon laser measurement techniques. The design of

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## **In The News: Discover innovation and inspiration at Rotoplas**

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large rotomolded tanks, specifically with regard to wall thickness, is dependent on two factors – 1) hydrostatic design basis (HDB) and 2) creep. HDB is well-documented and accepted within the rotomolding industry. However, creep properties, which principally affect a phenomenon called ‘elephant footing’, are less-well understood. The work demonstrates how to incorporate creep properties in addition to HDB to best take advantage of light-weighting opportunities offered by high-strength tank resins such as Surpass RMs245. A simplified technique using commercial tanks in a real-world environment is also presented, comparing light-weight tanks made from Surpass® RMs245 to standard-weight tanks using traditional tank resins.

### **Finishing With Automation: A 5-Axis Robot Case Study**

Dru Laws, Seljan Company

In this talk a rotomolder will share his company’s alternative and modern approach to the use of automation to finish rotomolded parts.

### **Forecasting: Petrochemical Industry Dynamics**

Chris Gick, NOVA Chemicals

Petrochemical producers will start up a significant number of new facilities for the production of ethylene and polyethylene in North America over the next couple of years. How the market responds to the addition of this new supply depends on many factors such as the state of the economy, the level and direction of change of petrochemical feedstock prices, demand growth drivers in key markets, supply and demand dynamics along the supply chain, and the operability of the new assets in North America and elsewhere along with the existing asset base.

### **Improving Rotomolded Part Performance Through Effective Quality Programs**

Celine Bellehumeur, NOVA Chemicals

In this workshop we will review principles and methodologies which NOVA Chemicals has implemented to improve quality assurance processes and how they may be adapted to a molding operation. As a resin producer, integrated programs to support the production and delivery of consistent-quality products are of the utmost importance to ensure resin performance at the rotomolders. Examples will focus on resin aspects such as product specifications, additives, lot-to-lot consistency, and how they affect the quality and performance of rotomolded products.

### **New Design Case Studies**

Michael Paloian, Integrated Design Systems

This workshop will review case studies for two unique and challenging rotomolded products – 1) a sectional modular children’s slide for the residential market and 2) a kiosk for automatic car wash systems.

### **Optimal Methods for Work Instruction Delivery**

Dr. Joe Butterfield, School of Mechanical & Aerospace Engineering, Queens University Belfast

This presentation will cover good practice on work instruction authoring and demonstrate the benefits an animated, digital instructional format can have on operator learning. Any improvement in learning can significantly reduce the number of hours tied up in production, thereby reducing costs, especially in the preliminary stages of new product manufacture. We’ll then place these outcomes in the context of the rotational molding process with animation examples.



## In The News: Discover innovation and inspiration at Rotoplas

Continued from page 8

### Simplifying the Complex: Thermodynamic Properties of the Rotomolding Cycle

Dan Grimes, Centro, Inc.

For years rotational molding processing parameters have been based on operator discretion and educated “guess and check” work to find the cycle time and temperature that produce optimal physical properties. But by using detailed mathematical modeling, it is possible to simulate and predict results with great accuracy. In researching the heating phenomena associated with rotational molding a few user-friendly models have shown promise in creating a full-process prediction and optimization model. Rather than selecting cycles based on historical success or simply what ensures polymer cure, this model strives to predict an optimized cycle which can achieve polymer cure in the most efficient way and predict these optimized settings based on easily measurable factors. The computer program handling the mathematical analysis of these models can be used for production optimization, new product prototyping, and even scheduling to ensure product mixes are optimized.

### Top Four Benefits of Automating Your Resin

Rob Miller, Wittman Canada

Automating of powder resin handling has many possible benefits, but the introduction of all of the benefits can cloud the opportunity to gain a firm understanding of the top primary benefits. This presentation uses case studies and testimonials to highlight the top benefits, in order of importance, common to all rotational molders.

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## In the News:    Shared Values

# Shared Values

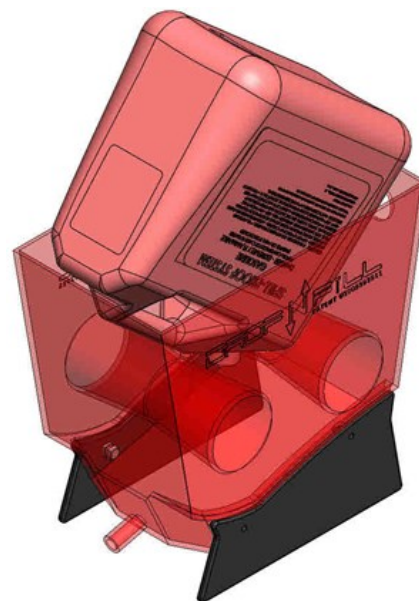
By Holly Hunter  
Marketing Manager  
Moeller Marine Products

Fans who know Cobe (the Mikker) Mikacich as a wakeboarding pioneer and award-winning coach may be surprised to learn he is also an inventor. A few years back he created HANGTYTE, the only patented boat cover suspension device. Next he figured out a way to simplify fueling ski boats. After he developed the DROP N FiLL concept, he began the six-year process of patenting the device and finding the right company to manufacture it. “The first thing I look for in a partnership is a person or organization who shares our values”, Cobe explains. “I knew from the start that I wanted to work with Moeller. I’m familiar with their products, and I like the way they do business.”

In April, Cobe and Tarah Mikacich traveled to the Moeller plant in Sparta, Tennessee, to check out the first production run of the new DROP N FiLL. “As soon as we walked in the door, I could tell that Moeller was right for us”, Tarah recalls. “As we toured the plant, it became clear that teamwork is a way of life. And I loved seeing so many strong women!”

Like most of his ideas, Cobe designed the DROP N FiLL to solve a problem. “Tarah and I spend a lot of time on the water and burn a lot of fuel. When she’s not competing, Tarah trains at Freedom Wake Park every day or we’re out with our friends and students. We found ourselves wasting a lot of time trying to access the fuel fill and refuel with jerry cans without making a mess.”

Cobe named the patented fueling device shown on the right the DROP N FiLL. “It’s the DROP N FiLL because the name describes a very simple process: you drop in a jerry can and fill your tank.” To use the unit the boater sets the DROP N FiLL on any surface which is higher than the fuel cap. The DROP N FiLL holds an upside-down 5 gal jerry can; the fuel from the can discharges directly into the main compartment of the unit. To minimize mess, the molded-in cones keep the can above the discharged fuel level. The hose which attaches to the outlet spout connects directly to the boat fill. “It’s a simple solution to a messy problem”, Cobe sums up. To see a DROP N FiLL in action, check out the video at <https://vimeo.com/211423505>.



Cobe and Tarah admire the DROP N FiLL workmanship.

Bill Brackney, who heads up Moeller’s product development, is excited about the fueling device and the collaboration. “We’re proud to be working with Cobe and Tarah. They understand innovation. Lots of people have ideas, but making them happen is what counts. And making them happen is the essence of innovation.”

Being innovators is just one thing that Cobe and Tarah share with the Moeller Team. “It’s easy for people to assume that wakeboarding is an individual sport because it’s pretty exciting to see a boarder in the air. But it takes a team to make it happen. At Freedom Wake Park, we take teamwork seriously, and we know it when we see it”, Tarah says.



## In the News: Shared Values

Another Mikacich/Moeller point in common is a healthy attitude toward winning. Both as riders and coaches, Tarah and Cobe focus on enjoying the experience. “We play to our riders' singular strengths, teach them how to gain a better understanding of each move, and help them become stronger. Not everyone can be a champion all the time—what counts is growing as an individual.”

Moeller Division President Doug Linder agrees. “We are thrilled to be working with Cobe and Tarah. When some people talk about winning attitude, they focus on winning. At Moeller, we focus on attitude. We are the best we can be, day in and day out. To the Moeller Team that’s success. That’s winning.”

### About Cobe & Tarah Mikacich and Freedom Wake Park

Cobe and Tarah Mikacich, widely recognized as an “awesome couple”, are icons in the water sports industry. Tarah is the 2016 World Wakeboard Council Female Rider of the Year, and Cobe is one of ten recipients of the Legend Award in Wakeboard. In 2012 they established Freedom Wake Park - a safe, encouraging environment to help others advance their riding skills and learn about the wakeboarding industry. Recently the Water Sports Industry Association named Freedom Wake Park the 2017 School/Camp of the Year. For more information, phone 407-257-4325 or go to <http://freedomwakepark.com>.

### About Moeller Marine Products

Moeller furnishes custom and off-the-shelf fuel systems and other components for vessels which range from bass and ski boats to off-shore saltwater fishing craft. The company is ISO 9001:2008 certified, and all Moeller products meet or exceed applicable USCG and ABYC requirements. Moeller offers a line of open stock portable, topside, aluminum, and permanent tanks as well as delivery systems, livewells, water and waste tanks, seat substrates, and interior components for boaters and builders. For more information, phone 931-738-8090 or go to [www.moellermarine.com](http://www.moellermarine.com).



In the process of developing the DROP N FiLL concept, Cobe taught himself to weld. Here Ron Dodson, who built the DROP N FiLL mold, gives Cobe and Tarah a few technical pointers



Manufacturing Technician, Joanna O'Connor, demonstrates the finishing process to Cobe, Tarah, and Moeller Regional Sales Manager William Gregg.

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## In the News: News Release

# Jerico Plastic Industries, Inc. announces the promotion of Brandi K. Frey to Corporate Operations Officer

Jerico Plastic Industries, Inc., is pleased to announce the promotion of Brandi K. Frey to the position of corporate operations officer. Most recently the customer support manager, Frey has been an active member of the Jerico Plastic Industries management team for over 15 years. During her employment she also held the positions of office manager and logistics manager. Frey is a stockholder and a member of Jerico Plastic Industries' corporate board of directors.

In this new position Frey will be active in developing, improving, and implementing internal operations, procedures and policies. She is also charged with improving company information flow, ongoing customer fulfillment improvement programs, and customer service management.

Frey graduated magna cum laude from Walsh University in the Business Management Baccalaureate program. She is married to Christopher Frey, and they have two sons, Caleb and Logan. Her interests outside the office include traveling, reading, and watching her children play sports.

With manufacturing facilities in Minerva, Ohio, and Greensboro, Georgia, Jerico Plastic Industries is committed to excellence in rotational molding and custom compounding. As a custom compounder of color, recycled and specialty resins, the company currently offers rotational molding polypropylene, cross-linkable polyethylene, flame-retardant polyethylene, and special-effects polyethylene compounds.

For more information contact Steve Copeland, president at (330) 334-5244 or [info@jericoplastic.com](mailto:info@jericoplastic.com).



## Designer's Corner



### DESIGNER'S CORNER

Part #9

## FREE VERSUS RESTRICTED CORNERS

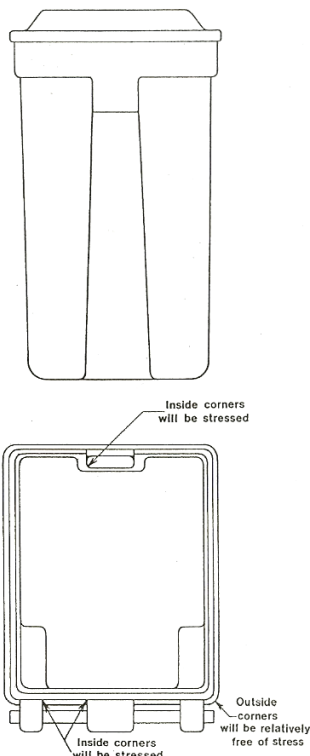
By: Glenn Beall

#### Editor's Note:

This is the 7th 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.

Rotationally molded parts are known for their relatively low level of molded-in stress. There are, however, exceptions. The proper use of corner radii can result in reduced levels of stress on restricted or confined corners.

Many molded parts contain both inside and outside corners. Rotationally molded parts are produced in open molds with no internal cores. Outside corners are free to pull away from the cavity as the part cools and shrinks. The plastic material in these corners is free to shrink, and these corners if properly molded will be virtually free of stress.



Inside corners, such as those on the refuse container handle supports and around the lifting hook recess (Fig. 15), are formed over a core pin. The core pin prevents the plastic material around the core from shrinking the normal amount. All the inside corners in these areas will contain molded-in residual stress. The larger these inside corner radii are, the lower the stress will be. This situation explains why inside corner radii on rotationally molded parts should be larger than those specified on outside corners.

The recommended inside and outside corner radii for the commonly molded materials are listed in Table 3. As far as radius is concerned, bigger is better. The ideal corner radius for a rotationally molded plastic part is the largest radius that the functional requirements of the product will allow.

Figure 15 Confined inside corners that shrink onto cores will contain more stress than outside corners that are free to shrink away from the mold. See Table 3

## Designer's Corner

**Table 3 Recommended Radius Size for Commonly Molded Materials**

Plastic material	Outside radii		Inside radii	
	Min. mm (in.)	Better mm (in.)	Min. mm (in.)	Better mm (in.)
PE	1.52 (0.060)	6.35 (0.250)	3.20 (0.125)	12.70 (0.500)
PP	6.35 (0.250)	12.70 (0.500)	6.35 (0.250)	19.05 (0.750)
PVC	2.03 (0.080)	6.35 (0.250)	3.20 (0.125)	9.53 (0.375)
Nylon	4.75 (0.187)	12.70 (0.500)	6.35 (0.250)	19.05 (0.750)
PC	6.35 (0.250)	19.05 (0.750)	3.20 (0.125)	12.70 (0.500)

All of the different types of molds utilized for rotational molding are capable of providing inside and outside corner radii. Electroformed and cast cavities are formed with patterns. It is relatively easy to provide radii on the corners of these patterns. Fabricated molds are produced by forming and welding two-dimensional sheet metal plates. Providing rounded corners on all of the corners on fabricated molds can result in an increase in cost. This increase in mold cost does not justify eliminating the radii on the corners of rotationally molded parts.

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](mailto:hanser@ware-pak.com) or phone (877) 751-5052.



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## RMD Interim Financial Report

SPE's Rotational Molding Division  
Annual Financial Report 2015 -- 2016  
July 1, 2015 to June 30, 2016

	Actual	Budget
Cash Balance: Beginning Period	\$73,873.70	
Cash Receipts in Period		
SPE Rebate	\$581.26	\$1,100.00
Interest	\$34.25	\$50.00
Bank fee reimbursement	\$20.00	
Newsletter Ads/Sponsorships	\$2,500.00	\$2,000.00
TopCon 2016	\$282.00	\$20,000.00
* Interest--should be on last yr	\$3.61	
Total Income in Period	\$3,421.12	\$23,150.00
Cash Disbursements		
Postage	\$6.10	
Awards	\$1,656.04	\$1,500.00
Bank Fees	\$6.00	
IDES show	\$1,871.00	\$3,000.00
TopCon 2016	\$16,505.41	\$1,000.00
Board Mtg		\$1,000.00
Website		\$500.00
ANTEC student activities		\$1,500.00
Advertizing		\$3,500.00
Total Disbursements	\$20,044.55	\$12,000.00
Balance at end of Period	\$57,250.27	
<hr/>		
Balance is made up as follows:		
Checking Account	\$5,861.85	
Savings Account	\$51,388.42	
Total Balance	\$57,250.27	

\* interst payment made 6/30/15 which should have been included in last years statement but was

Respectfully submitted  
By Russ Boyle

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Marshall Lampson	2002-2003	Greg Stout	2008-2009
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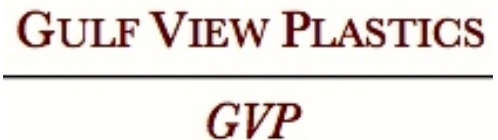
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