RMD News

The Rotational Molding Division of SPE Newsletter

1st Quarter 2015 Volume 15 Issue 1

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Chair's Message

Hello Fellow RMD Members

If we are going to talk about the weather the best place to start is the Atlantic NE. It seems daily we hear of record snowfalls and cold that has come with it. To you folks; I wish a long and warm summer because you all deserve it after this crazy winter you have had. Everyone please enjoy the spring, take some time and literally smell the flowers. This summer is heating up to be very busy and we won't have the opportunity.

We have accomplished a lot over the winter months.

- The RMD website committee has been transitioning our website to be a part of the main SPE site, as a micro-site.
  - Creating consistency in capturing the formatting and marketing from SPE Corporate.
  - It allows our members to find all their plastics information in one area.
  - Please visit the site and provide feedback and suggestions.
  - Please feel free to offer pictures for inclusion.
- The RMD Technical committee has set up a session at the 2015 ANTEC in March in Florida.
- We are planning a joint funding (and representation) of Rotational Molding as a Market, at the Industrial Designers Society of America Conference in Seattle, August 22, 2015 with the Association of Rotational Molders (www.rotomadelocal.com)
- RMD TOPCON coming in June 2016, in Independence, OH is beginning to call for speakers and sessions. Feedback and suggestions are welcome.
- We are gathering bio's for our election of new board members and allotting volunteers for ad hoc projects.

Spring is always the time of renewal and growth. We are always in need of volunteers to contribute to any or all of these activities both directly and indirectly. The time commitment can be as minimal as you make it. Nothing makes you feel better than giving.

Thank you for your continued support of the SPE Rotational Molding Division.

Yours in Rotomolding,

Rob Donaldson
Rotomolding Division Chair.

Newsletter Comments/Questions? Contact:

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Meet Our Members

Larry Schneider

Schneider Plastics, Inc.

Editor's Note:

This is the start of a new series of articles highlighting a Division Board Member or Officer. This is a great way for the community to learn more about the individuals who support RMD with their time and energy.

President and founder of Schneider Plastics, Inc. located in Wadsworth, Illinois. The company was formed in 1999 to provide product design and consulting services for all processes in the plastic industry. Prior to forming Schneider Plastics Larry worked at Glenn Beall Engineering for sixteen years as a Project Coordinator for plastic product design and as a consultant for all plastic processes. Prior to that Larry worked at Outboard Marine Corporation for twelve years as a Die Designer for die cast dies.

Larry has been a Senior Member of the Society of Manufacturing Engineers since 2001. He is Past Chairman of the Design for Plastics Technical Group for the Society of Manufacturing Engineers. He has also been a member of the Society of Plastics Engineers since 1983 and in 2006 was named an Honored Service Member of the society. Larry is a Past President and was a Councilor for the Rock Valley Section of the Society of Plastics Engineers. He is Past Chairman of the Rotational Molding Division of the Society of Plastics Engineers, as well as a member of the Injection Molding Division and Treasurer for the Product Design & Development divisions of the Society of Plastics Engineers. In addition, he is a design member of the Association of Rotational Molders International and a past committee member of the International Trade Advisory Committee for the Society of Plastics Industries. Larry also served on the advisory committee to Rock Valley College for their Plastic Technology Training Program from 1995 to 1997. He was also named a member of the Plastic Pioneers Association in 2005.

Larry presented "Plastic Product Design Before Rapid Prototyping" for the Society of Manufacturing Engineers at the Rapid Prototyping & Manufacturing Conference in Chicago in 2004. He has also presented several papers on product design for injection molding at various section meetings for the Society of Plastics Engineers. In April, 2010 he presented "Rotational Design of a Plastic Product" at the Society of Plastic Engineers' TOPCON.

Larry's article entitled "Residential Water Tank Design" was published in three languages in the November/December, 2005 issue of RotoWorld magazine.

Larry holds several U.S. and International patents and is a graduate of United Technical Institute in Milwaukee, WI with an AS degree in Mechanical Design.

In The News

Pennsylvania College of Technology Receives Valuable Donation from Paladin Sales

By Terry Gillian

Pennsylvania College of Technology is a strident supporter of rotational molding and features rotational molding as part of their academic curriculum. Students have 16 weeks of lecture and hands-on labs during their sophomore year and are exposed to an advanced program for rotational molding and thermoforming in their junior year.

"The Pennsylvania College of Technology Plastics Innovation and Resource Center has been instrumental in providing formal classroom training and high-level technology in rotational molding to students seeking plastics process knowledge and education," said Terry Gillian, owner of Paladin Sales. He continued, "Additionally, their yearly Hands-On Rotational Molding Workshop is an excellent platform for any rotomolding company to provide advanced training for their process engineers, quality personnel and machine operators.

"As a long-time supporter of the college, Paladin Sales is proud to donate our Paladin EZ Logger In-Mold Air Temperature Monitoring System to Penn College. The Paladin EZ Logger will aid in their rotational molding training and help to teach scientific solutions to molding problems by showing what is occurring inside the mold during the oven and cooling cycles," Terry said.

He continued, "The Plastics Innovation and Resource Center has injection molding, extrusion, blowmolding, thermoforming and rotational molding machines as well as all types of testing and monitoring devices for the various plastic processes. We know the EZ Logger will be an important addition to the hands-on training that students receive while operating the rotomolding machine."

The Paladin EZ Logger is small and lightweight, portable, easily mounted to molds or spiders, easy to use, easy to maintain and includes easy-to-manage software that will fit nicely into the curriculum.

Rotomolders have known the importance of recording and understanding the internal air temperature (IAT) inside a mold during the rotational molding process for over 20 years. With the introduction of the compact, easy to operate Paladin EZ Logger more molders are actually taking advantage of this valuable information.

Paladin Sales developed the Paladin EZ Logger last year and introduced it at RotoPlas 2014 in Chicago last fall. This wireless, single-channel device will monitor and record the temperature data inside a mold in real time during the oven and cooling cycles. The data can be displayed as a graph and saved for later study.

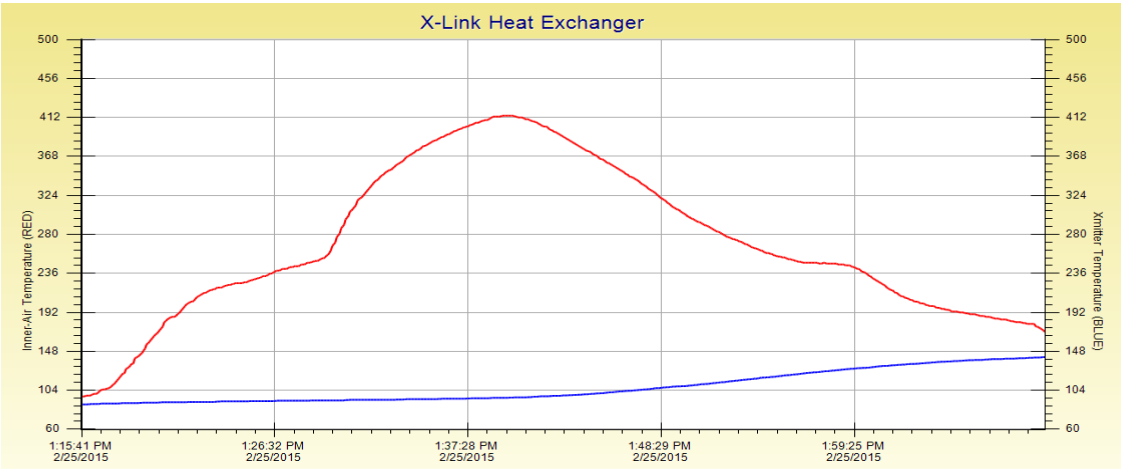

Figure 1 - Typical Inner Air Graph for Crosslink PE.

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In The News

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Figure 1 shows an actual Paladin EZ Logger graph for a crosslink part. The red trace is the Internal Air Temperature (IAT) of the mold; the blue trace is the transmitter temperature.

Information provided in real time on the graph includes:

- When the material begins to stick to the mold
- When the last of the material sticks to the mold
- When to remove the mold from the oven
- Peak Internal Air Temperature (PIAT)
- Cooling rate
- Crystallization period
- Temperature to remove part from mold

This information is critical to maintaining consistency, quality and optimum properties in rotomolded parts.

Figure 2 - Paladin EZ Logger in Protector Case

The Plastics Innovation and Resource Center will utilize their new Paladin EZ Logger during the Hands-On Rotational Molding Workshop on May 19 and 20. Terry adds "If you haven't signed up for the workshop, please do soon before it fills up. I always look forward to working with Paul Nugent, Jerry Ramsey, Gary McQuay, Hank White and the students and staff at the Plastics Innovation and Resource Center in Williamsport. They are all very nice, friendly and knowledgeable. The workshop is informative, fact-filled, fun and suitable for those who know all about rotomolding and those who want to learn more. You'll go back to your company with more than enough knowledge and cost-saving ideas to pay for the trip."

For more on the Hands-On Rotational Molding Workshop go to www.pct.edu/pirc.
For more on the Paladin EZ Logger go to www.paladin-sales.com.

Terry Gillian has been in the rotomolding industry for over 35 years and has gained a wealth of knowledge in rotational molding through his visits with molders around the world. He started Paladin Sales, a manufacturer's representative company dedicated to and catering to rotomolders, in 2006. Terry was the 24th inductee into the Rotational Molding Hall of Fame in 2005.

Industry News

Horizon grows steadily, adding fourth rotomolding machine

By **Michael Lauzon**
Plastics News
CORRESPONDENT
Published: February 19, 2015

There's a new kid on the block in Wisconsin's rotational molding community.

Horizon Manufacturing Group LLC is ramping up production in Lake Mills, Wis., as it approaches its third year in operation.

"In 2011 we were looking for an opportunity," said Keith Krausse in a phone interview. "We started with a small facility and two used rotomolding machines which went into production in April 2012."

Since its inception Horizon has spent about $2 million in buildings and another $1 million on equipment. Recent investments included tripling of floor space to 45,000 square feet with the purchase of an adjacent building and the addition of a fourth rotomolder.

Horizon is owned by the Krausse family, many of whom had work experience in rotomolding so it was easy to choose which business the family would start up. Keith Krausse is general manager and his father, Ed Krausse, a 35-year veteran in the industry, is president. Employment in the company has grown to 30.

Keith Krausse said Horizon's rotomolders go up to a 105-inch machine swing diameter. The firm processes common thermoplastics as well as urethanes for markets as diverse as material handling, medical, construction, consumer, recreation, transport and storage tanks. The company is now running at about 70 percent of capacity on three shifts.

Next on Horizon's plate is addition of CNC machining and expansion of finishing and assembly capabilities. Its current secondary services include foam filling, metal fabrication for mold building and other products, part design and prototyping. Keith Krausse said as the company grows it likely will need 10 to 15 more employees.

Some of the Krausses obtained rotomolding experience while working with Seljan Co. Inc., also based in Lake Mills.

http://www.plasticsnews.com/article/20150219/NEWS/150219899/horizon-grows-steadily-adding-fourth-rotomolding-machine

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Designer's Corner

Product Design Considerations

By: Glenn Beall

There are hundreds of interrelated details that combine to produce a rotationally molded product or part. All these details can be divided into four broad categories or elements, which are:

- The design of the part;
- The choice of the plastic material;
- The design and construction of the mold; and
- The actual molding of the part.

All four of these elements must be handled correctly in order to produce the optimum part.

Editor's Note:

This is the first of 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.

All four elements are of equal importance; however, everything starts with and is influenced by the design of the part. Without a part design, there is no need for a material, a mold, or a molding process. All the different plastic materials, molds and processing techniques have their own advantages and disadvantages. A successful part design is the result of the design engineer's awareness of these capabilities and limitations, coupled with meticulous attention to design details.

During the rotational molding process, a hot mold is biaxially rotated through a puddle of liquid or powdered plastic material to coat the cavity and form a part. The process is at its best producing hollow shapes with contours that blend smoothly into each other. A round ball is the ideal shape for rotational molding. The process is also capable of producing complex shapes in those cases where the design engineer understands and takes into account the requirements of, and designs for, the process.

The design of a plastic product to be produced by the rotational molding process is no different than the design of a product to be made in a different material by some other process. Before design engineers can design anything, they have to know what the product is and what it has to do.
The single most important thing that a design engineer does in a new product development project is to define what is required. Many new products have failed or not achieved their full potential because, in the excitement created by a new product opportunity, no one took the time to thoroughly define what was wanted. These product requirements should be written down into what will become a design checklist.

Once the designer has a clear understanding of what is required, the actual design work can begin. This part of the work is the conceptual design phase. This is the exciting and just plain fun part of the process. It is also one of the more important things that design engineers do. The designer's company will rely on and proceed with one of the concepts that the designer creates during this phase of the project. The designer's reputation and the company's financial well-being are put to the test with every new product. This work must be done as carefully and as thoroughly as possible.

The conceptual design phase starts with the designer studying the product requirements and thinking about the product. This is a mental exercise, where the designer draws on accumulated knowledge and past experiences. As the designer thinks about a new project such as a refuse container, images of all the containers of this type observed in the past will be mentally reviewed. Some of those containers were larger than others. Some were tall, and other were short. In cross-section, they were both round and square. Some had wheels

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and handles. They were made out of welded steel, molded plastic, and combinations of the two.

A creative product designer is not limited by what has been done in the past. A study of existing products is, however, a good way to start a new project. A successful product has already proven its acceptability in the actual in-use environment. Actual use by the customer is always a better evaluation of a product than any pre-introduction laboratory testing program.

If the designer specifies steel for the container, there will be no concern about strength or flammability. On a volume basis, steel costs less than plastic. Steel has a long history of successful use in this application. On the negative side, steel is heavy. Welding is slower and more labor-intensive than molding. The steel will require painting and repainting.

A plastic refuse container would be lighter in weight and quieter in use. Color, labeling, handles and other features could be molded in. A plastic container will not rust.

Plastic is not as strong as steel, but the designer will recall having seen a lot of plastic refuse containers being used. It would, therefore, be safe to assume that plastic is strong enough. Fabricating a welded steel container would require only a minimum initial investment in tooling. Molding plastic would require a mold, but the manufacturing cost would be lower.

If the designer chooses to pursue molded plastic, the next question then becomes which process is the best. An astute designer would already know that refuse containers have been successfully produced by rotational molding, injection molding, thermoforming, blow molding, and injection molded structural foam.

Injection molding and structural foam, followed by blow molding, would require the highest initial investment in molds, but their part cost would be low. All three process would be ideal for refuse containers, but not for the limited quantities required.

Injection molding and structural foam would require separate molds and molding procedures for the body and lid of a refuse container. The molded part would, however, be ready to assemble with no secondary operations. Blow and rotationally molded, and maybe thermoformed, containers could be produced in one molding operation. All three process would produce containers that require secondary machining operations before assembly.

If rotational molding is to be the process, what plastic material will be specified? In general, the ideal material for any product is the lowest cost plastic material that is readily rotationally molded.
All things considered, it is safe to proceed on the assumption that the new refuse container can be made by the rotational molding of PE.

To be continued….

This article is a condensed extract from G.L. Beall's Hanser Publishers book entitled "Rotational Molding Design, Materials, Tooling and Processing" available from SPE.

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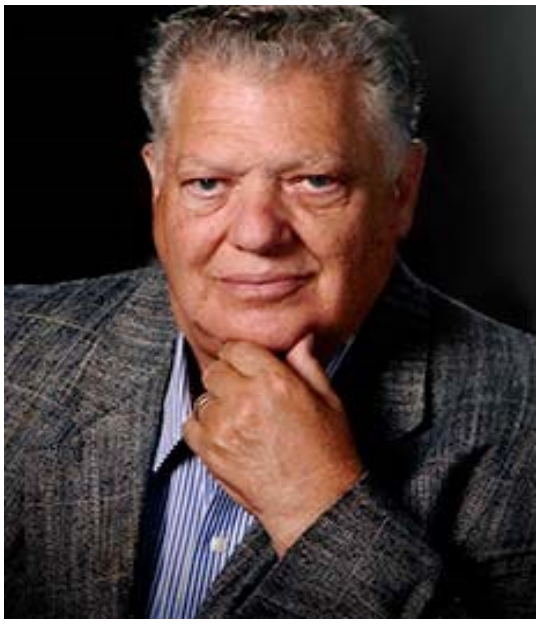
Consultants Corner with Bruce Muller

CLEANING HIGH INTENSITY MIXERS
Also PADDLE PLOW MIXERS



The Problem
Cleaning mixers that have mixed dry color and powdered resins can be a difficult, labor intensive, time consuming job.
Dry color pigments get packed into every crack and crevice in the mixer and under the blades. Powdered resins have static charges that make them difficult to remove from the inside and outside of mixers.

Color Progression
Mixing colors in color progression is extremely important no matter which cleaning method is used. An example of color progression is: start with white, then yellow, then green, then blue, then red or violet, then dark grey and then black. Often it makes good sense to reverse the color progression as: black, then dark grey, then violet or red, etc.

The Method
There is a method to clean High Intensity Mixers in which they partially self clean, reducing time and labor.
Filling (or partially filling) the mixer with a clean out batch of the proper material and then running the mixer will start the cleaning process. It will clean the most difficult to reach parts of the mixer. The bowl bottom, the blade, the discharge chute, and the bottom third of the bowl are the most difficult areas for the operator to reach and clean.

The Procedure
The clean out batch material should be inexpensive,* reusable, abrasive, non-flammable, and non toxic. The solution is dry ground calcium carbonate (CaC03).** CaC03 has a specific gravity of 2.65 compared to LMDPE at about .938. Therefore, generally speaking, the mixer cannot be filled to the same level as the powdered resin, during production mixing. Filling the mixer from 1/3 to 1/2 the resin level with the CaC03 is normal. Adding a small amount of powdered scrap resin to the CaC03 may improve the mixers ability to move the clean out batch. After sweeping all of the production powder out of the mixer, close the discharge and add the preweighed clean out batch into the mixer. Close the mixer cover (lid) and start the mixer. The run time will be determined by the difficulty of the required cleaning.***
While the mixer is running, the exterior of the mixer may be cleaned using CaC03 also. With a handful of CaC03 in a rag, wipe down the mixer starting at the top. Then sweep the outside with a 4" or larger house type paint brush. If some of the CaC03 falls on the floor it will help clean the floor when swept up much like sweeping compound. After stopping the mixer, open the lid and again by taking a handful of CaC03 in a rag, clean the inside of the lid and the bowl in all of the areas the mixing action did not reach. In most cases the blade will not have to be removed. Open the discharge chute, discharging the clean out batch back into containers so that it may be reused.**** Sweep out the mixer completely and then clean the discharge chute.

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Consultants Corner with Bruce Muller

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Re-sweep the mixer exterior, the platform and the floor before starting the next production color.

Tips

Never use an air hose when cleaning, as it only moves the powder and dust to another area. An air hose cannot clean, only contaminate. An industrial vacuum cleaner will come in handy in the mixer cleanup process.

During each cleaning, small amounts of CaC03 will be lost. Add make up CaC03 to the batch when required. That addition will continually keep the clean out batch a little cleaner.

When a clean out batch gets very dirty use it for dark colors only. You may need to have a second cleaner batch for light colors. Extremely dark colors may require cleaning with both the dark and then the light clean out batches.

CaC03 is not toxic, but avoid breathing the dust.

A 150 liter High Intensity Mixer should clean up in about 15 minutes.

* About 16 cents per pound in 2500 pound quantities.

** The grades to use are Atomite, Camelwhite, Hubercarb, Q-3, Camelfil or equivalent.

*** A High Intensity mixer may require mixing the CaCO3 for 5 to10 minutes.

**** 10 - 15 gallon garbage cans, with lids, are useful to store the CaCO3. Don't fill the containers with more weight than the operator can lift and dump into the mixer on the next cleaning.

Written by **Bruce Muller** **772-781-6699** **PlasticsC@aol.com**

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

The submission deadline for the next edition is May 1st.

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RMD People in the News

About the Editor: Melissa Inman

Melissa Inman is part owner of Gulf View Plastics, a sales organization specializing in advanced products for rotational molding, including Custom Resins Inc.'s Nylene rotational molding materials. After living overseas in both The Republic of South Korea and Germany for the nearly seven years, Melissa returned to The United States and joined her father, Russ Boyle at Gulf View Plastics. She has been an SPE Rotational Molding Division Member for four years and works as the Division's Publications/ Newsletter Chairman as well as the Web Page Chairman. If you have any questions, comments or suggestions please email Melissa at melissa.inman@gulfviewplastics or call 919-888-0940.

Got a comment?

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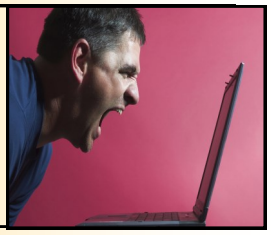

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RMD News From the

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Demographics

Job Function: *(choose only one)*
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O General management
O Library
O Manufacturing
O Maketing/Sales
O Other
O Purchasing
O Quality Control
O R & D
O Self Employed
O Retired
O Student Tech Support
O Tech Support

Materials: *(choose all that apply)*
O Composites
O Film
O General Interests
O Nylon
O PET
O Foam/Thermoplastics
O Polyolefins
O Polystyrene
O TPEs
O Thermoset
O Vinyls
O No Interests

Process: *(choose all that apply)*
O Blow Molding
O Compression
O Compounding
O Engineering Properties
O Extrusion
O Fabrication
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O US ($140.00)	O US ($253.00)	O US ($30.00)
O Euro** (€124.00)	O Euro** (€224.00)	O Euro** (€23.00)

Students must supply graduation date: _____

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Primary Division FREE

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O Additives & Color Europe (D45)
O Automotive (D31)
O Blow Molding (D30)
O Color & Appearance (D21)
O Composites (D39)
O Decorating & Assembly (D34)
O Electrical & Electronic (D24)
O Engineering Properties & Structure (D26)
O Extrusion (D22)
O Flexible Packaging (D44)
O Injection Molding (D23)
O Marketing and Management (D37)
O Medical Plastics (D36)
O Mold Making & Mold Design (D35)
O Plastics Environmental (D40)
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O Polymer Modifiers & Additives (D38)
O Product Design & Development (D41)
O **Rotational Molding (D42)**
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O Thermoset (D28)
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Additional Division(s)
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WWW-RMD

RMD Interim Financial Report

SPE's Rotational Molding Division
Annual Financial Report 2013-2014
July 1, 2013 to June 30, 2014

	Actual (proposed)	Budget
Cash Balance: Beginning of Period	$61,391.45	
Cash Receipts in Period:		
SPE Rebate	$1,018.76	$1,160.00
Interest	$40.33	$32.00
Newsletter Ads/Sponsorships	$0.00	$2,000.00
Scholarships/Grants Fund	$20.00	$0.00
TopCon (TopCon 2013)	$2,885.82	$6,000.00
Total Income in Period	$3,964.91	$9,192.00
Total Cash to be accounted for	$65,356.36	
Cash Disbursements in Period:		
Board Meetings (teleconference)	$0.00	$500.00
TopCon (TopCon 2014)	$5,500.00	$500.00
e-Newsletter Printing/Mailing	$0.00	$0.00
Awards (Student Papers)	$0.00	$0.00
Scholarships/Grants	$0.00	$2,000.00
ANTEC Expenses	$0.00	$200.00
BOD & ANTEC Speakers Awards	$814.17	$1,500.00
President and Past Presidents Awards	$114.97	$500.00
Membership Outreach	$0.00	$250.00
Website Hosting	$269.86	$200.00
Election, Ballot, Postage	$0.00	$0.00
RMD Design Competition	$9,889.47	$2,000.0
Website Domain name (2013-2022)	$440.80	$0.00
Webinar	$0.00	$0.00
MISC (Plastics News Advertisement)	$3,600.00	$0.00
Checking Accounts Check-Leaves	$33.15	$0.00
Checking Statement expenses	$6.00	$0.00
Total Disbursements in Period	$20,668.42	$7,650.00
Cash Balance End of Period $	44,687.94	

The Cash Balance is made up as follows:

Scholarships/Grants (savings acc.)	$2, 042.69
Checking Account	$261.71
Savings Account	$42,383.54
Total Cash Balance	**$44,687.94**

Respectfully submitted
By
Rex Kanu
Treasurer RMD

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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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