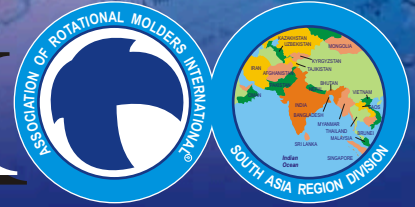


# ROTOTALK



Nov. - Dec. 08 VOL.4 No.3

Bimonthly Newsletter of ARM Int'l SAR Division

**The Rotomoulding world needs a shining StAR to disperse the economic gloom that seems to have enveloped the industry. The new Society of Asian Rotomoulders (StAR) has now emerged on the global rotomoulding horizon to work with commitment and zeal in the cause of the roto industry of its region and that of the world...**

Dear Reader,  
The StAR is finally born for the wise men of the East to join. In fact it will not just be the joining roto related companies of the South Asian region but also such companies from other parts of the world who had maintained an abiding interest in SARD and who have now expressed their desire to become members of the Society of Asian Rotomoulders (StAR). The membership application forms and other membership material of StAR are to be released soon after a meeting of the Governing Body of the society on Dec 5 '08 in Delhi. So, it is incumbent on us to introduce the first Governing Body which constitutes of the Desirous Persons who applied for formation of the society.

**Ravi Mehra** : Founding Chairman  
**A. Baheti** : President  
**J. Kirubakaran** : Vice President  
**Mukesh Ambani** : Secretary / Treasurer  
**L.K. Singh** : Past President  
**R.P. Shukla** : Governing Body Member  
**S. Dave** : Governing Body Member  
**A. Panchal** : Governing Body Member  
**S.B. Zaman** : Exec. Secretary

The first Membership Drive of StAR is to be launched shortly to enable StAR members to become eligible for concessional member registration fee for the StAR Annual Conference.

Ashish Baheti  
Chairman SARD  
& President StAR

S.B. Zaman  
Manager SARD  
& Exec. Secretary StAR

## AStAR IS BORN

Soon to be affiliate of ARMO (Global Alliance)

### PURPOSE & OBJECTIVES

- To Promote Education & Awareness of the Rotational Moulding Process & Technology.
- To Promote Awareness of existing and potential customers for the better and increased use/selection of rotationally moulded products.
- To Promote such functions as shall promote and provide for the welfare of the industry.
- To promote increased use and consumption of products produced by the rotational moulding process.
- To co-operate with other associations, organizations and educational groups within and outside India.

### MEMBERSHIP BENEFITS

- Global Networking.
- StAR Annual Conference & Joint Conferences with other Groups at Global Venues. Concessional fee will apply to StAR members
- Rototours to StAR by ARMO groups.
- Regional Meets with Special features like Mini Trade Shows and Focus on OEMs/Regulatory Agencies / Engineers / Architects.
- Rotoworld, Rototalk & Rotomail (Fortnightly StAR E-newsletter)
- Education, Training, Workshops & StAR Special Projects
- Dynamic StAR website.

### WHAT IS ARMO ? ..... & HOW STAR CAN BENEFIT BY IT'S ASSOCIATION ??

The Affiliation of Rotational Moulding Organisations (ARMO) is established to provide an equal forum for organisations serving the global rotational moulding industry. ARMO is made up of **voluntary group of organisations** servicing the global rotational moulding industry, each having their individual memberships and structure. The members of the affiliation will work together to advise the industry through their individual organisations, however the vision of ARMO will be to work co-operatively on various projects for the benefit of all members. It is envisaged that the development of ARMO will enable truly global information to be collated and diffused to the industry through its members. The members of ARMO recognise the **importance of individuality, culture, language and currency issues** affecting rotational moulding.

Following are the key points for StAR to affiliate with ARMO:

- StAR members would be invited to attend global roto-conferences & exhibitions.
- Bigger regional conferences in cooperation with other regional partners.
- A calendar of global roto-events will be created for info for all.
- A central website could incorporate details of all association events; offering calendar of global roto-events. Share news & information from all affiliates.
- Affiliation information and shared resources will be made available via a global information portal.
- Facilitates global networking.
- International business development & tie-up opportunities.
- Jointly develop or info cooperation for the development of norms & standards.
- Plant visits / tours arrangements in other regions of the world. Established members of ARMO include: ARMSA-Southern Africa; ARMA-Australasia; BPF-British; Italian; Central Europe; IRMA-Ireland; French; others considering joining are StAR; ARM-I; CEED; etc.

**RAVI MEHRA**  
Founding Chairman  
maramehra@aol.com



### Vth ANNUAL StAR CONFERENCE - FEB 1-3, 2009, HOTEL PARK PLAZA NOIDA, NCR DELHI, INDIA

**3 Action packed Days of new knowledge & networking:**

**Day 1(Feb 1) : Seminar**

Full day Seminar  
"Optimising the Rotomoulding process"  
By Dr. Gareth McDowell, 493K, UK

- "Your Business – Our Effects" - Jitendra Kapadia, Ciba, India
- "Rotomoulding Furniture- Opportunities in India" - Alamelu Pasupathy- Design & Business Ideation Consultant, Chennai
- "Indian Rotomoulding Industry - Challenges & Opportunities" - Raju Venkat, Reliance Industries Limited

This Conference concludes just in time for you to get started with PlastIndia'09 from Feb 4 to 9.

#### Room Tariff at conference hotel - Park Plaza, Noida

Room Type	Single ( INR)	Double (INR)
Plaza Room	8900	9900

5% Luxury tax will be charged extra .

Very limited number of rooms are available at the specially discounted conference room rate on first-come-first-served basis.

For more information please contact :  
**S.B.Zaman-Exec Secretary, StAR**  
Email: [arnacz@satyam.net.in](mailto:arnacz@satyam.net.in)  
[sb.zaman@starasia.org](mailto:sb.zaman@starasia.org)  
Cell: +91-9810305356



Hotel Park Plaza Noida



India Gate - India's World War memorial in the heart of New Delhi

#### Topics & Speakers for the StAR Annual Rotational Moulding Conference – Feb 2 & 3, 2009:

- "What is Happening Inside the Mold" - Bill Spenceley, Flexahopper, Canada.
- "Rotational Moulding in Italy and AISR" - Alfonso Casale, Telecom Spa, Italy.
- "Temperature Control Improves Bottom Line Profits"  
- Gary Lategan, Rotosolutions, S. Africa.
- "The Route to Successful Rotational Moulding" - Gareth McDowell, 493K, U.K.
- "High Expansion PE Foam" - Haukur Alfredsson, I-Foam, Iceland.
- "Second Generation Metalocene PE for Rotational Moulding"  
- Philippe Schuermans, Total Petrochem, France.
- "High Performance Materials for Rotational Moulding" - John Steele, ICO, U.K.

**ROTOPLAS '08 & ARM INT'L ANNUAL MEETING IN CHICAGO  
OCT 22 TO 24**

RotoPlas '08 the largest world class exhibition for rotational molding is held every three years by ARM Intl', in conjunction with their annual ARM-I meeting / conference. Without doubt it was a great success, it was well attended, extremely interesting and informative. There were over 70 companies exhibiting in more than 10,000 square feet of space. Six of the booths were rotomolders taking advantage of the opportunity to show their capabilities to non-molders that attended. Almost 1000 visitors came through in the two days of RotoPlas 08.

Most all four rotomolder supplier companies had their booths e.g. MPlast; Fixopan; NA Roto; and Shri Momai. I am very proud of these four, some are exhibiting 2nd & 3rd time at RotoPlas and are therefore getting customer recognition & confidence.

ARM's Annual Conference had a great program and was also well attended. Approx. 370 conference attendees were there to see the presentations and participate in the workshops.



Meeting Attendees from Solar Plastics



Injection Weld Demo



Daven Claerhout - incoming President ARM-I



Meeting-Conference presentations in progress



One Piece Double Wall Rotomolded Boat



LK and Tall Rotomolded Decorative Flower Pots



Fair Sex Attendees - Conchita Miranda - Mexico and Susan Gibson - Rotoworld

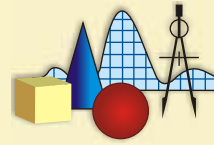


FIXOPAN - India Booth

The workshops again were on "SQDCM" – Safety; Quality; Delivery; Cost; and Moral. Noteworthy presentations were:

- A special treatment PE resin to allow much increased adhesion to PU foam; by Lectro Engineering ..... marketed by ICO Polymers.
- BASF talked about a new & FDA grade improved UV stabilizer [Uvinul 5050H] specially for long oven cycle times. CIBA has been acquired by BASF, therefore Dr. J. Kapadia, who is known to all can help guide you.
- Innovations / innovative products in rotomolding presented by Mark Kearns of QUB, very similar to the presentation we had in Goa from him.
- What is the Ultimate cycle time in rotomolding by Dr. Paul Nugent = is the one that makes desired quality products, consistently towards the best reliable profitability. Other key words & developments in the field of rotomolding mentioned by him: IFoam; Single shot PE foam; Internal pressurization & Internal cooling; Fixed demolding temperature [part] gives you the best dimensional control & consistent part quality; Micro-Pellets Vs. Powder; new roto specific additives developed by CIBA & Milliken for faster heating & densification, and faster cooling & nucleation!
- And finally a very good / timely presentation on today's employees "Gen Y" by a professional speaker >>>> visit <genwhy.com/ARMI >.

I believe everyone left with a few useful, thought provoking ideas and at least one way



**DESIGN CORNER**

**Rotational Molding Part Design-  
CAD File Part Details and Design  
Techniques Part 6**

The last time I wrote an article for Design Corner was in November of 2007. That was quite a while ago. As promised in the closing statement of the July/August publication of Design Corner, this issue will address draft, undercuts parting lines and other features that should be included in 3D CAD models for rotational molding. The majority of patterns and molds fabricated today are machined directly from a 3D CAD file provided by the designer. The tool maker typically makes little to no changes to the file with the exception of adding draft and a few features for mold fabrication. Therefore the designer must be extremely careful to include all the proper features to mold a quality part. The remainder of this article will review the importance of draft, undercuts and parting line location in the CAD file.

Unlike injection molding, rotational molding does not require strict adherence to including draft on all surfaces perpendicular to the direction of draw. This is because of the inherent differences between the two processes. Rotationally molded parts can sometimes be molded without draft and even molded with undercuts to a limited extent. This is typically true for exterior surfaces which pull away from the tool walls as the part shrinks during cooling. Polyethylene's high rate of shrinkage (between 2% and 3%) results in molded surfaces pulling away from exterior mold walls with enough clearance to be demolded without draft. However, internal mold surfaces where the plastic shrinks around the mold do require draft. Examples of such surfaces include any standing feature in the mold or any depression in the molded part. These surfaces should include a minimum draft angle of 1 degree, 2 to 4 degrees draft are preferred. If an etched texture is applied to the mold, additional draft is required. A general rule of adding 1 degree draft for every .025mm of texture depth is recommended for etched mold surfaces.

Although adding draft to a CAD model is generally straight forward for simple rectangular or cylindrical parts, it can get quite complicated for parts with complex 3D surfaces. Most 3D CAD programs do not permit the addition of draft to compound splined surfaces. Therefore one must consider adding draft to the part geometry at the very early stages of the CAD modeling process. A designer must anticipate how the part would be molded and where the parting lines appear at the very early stages of the 3D modeling process. If these considerations are not made early in the CAD modeling development, it could result in a significant amount of design rework, requiring the entire CAD model to be redone.

Undercuts are to be avoided whenever possible; however there are instances when they must be included in a part design. In some cases, undercuts can be included in a part without the need for an extra mold section by taking advantage of the shrinkage rate for polyethylene. This can be easily explained with an example. If a 1000 mm long polyethylene part was rotationally molded, it could shrink 25 to 30 mm. Therefore if one end of such a part included an undercut of 20 mm, the material would shrink far enough away from the mold wall to enable the undercut to clear the protrusion in the vertical wall. More frequent practical applications of the design technique are used to mold embossed graphics into vertical walls or adding a recess for a snap fit. It is more often advisable to mold undercuts with additional mold sections. Although additional mold sections reduce cycle time and add to mold maintenance, they are sometimes the only method for molding an undercut. When multipart molds are used, the designer should carefully consider parting line location and draft based on how the mold will be opened.

Parting lines are defined by the designer's choice of draft angles and how he envisions the part to be molded. Since parting lines are the most maintenance prone area of the mold, they do tend to deteriorate with time, resulting in cosmetic detractions. It is therefore important to locate parting lines in areas that are less visible to the viewer. Typical locations are on the underside of the part in the back. A step or recess is sometimes added to disguise the parting line. It is advisable to eliminate radii along parting lines since the tangent of the radius must be closely matched on both halves of the mold to achieve a clean parting line. This is very difficult to achieve in rotational molding and should be avoided.

These design highlights and tips should provide you with a better insight into what considerations to include in your next design project. I look forward to hearing from you with any comments or questions you may have. If you want to contact me, please feel free to contact me at my email address [paloian@idsys.com](mailto:paloian@idsys.com). Also feel free to visit our website at [www.idsys.com](http://www.idsys.com). Your feedback will help me provide content in these editorials which will be of interest to your specific requirements. Until next time, best of luck on your projects.

**MICHAEL PALOIAN**  
Integrated Design Systems  
[paloian@idsys.com](mailto:paloian@idsys.com)



Visitors from MAUS, Germany



Visitor from SUIKO, Japan



Pat Long - Formed Plastics + Rush Smith - This year's ARM-I Hall of Fame Inductee

to save time or cut costs back at the plant. Annual awards followed the gala dinner, and two of my great friends received:

- Rush Smith was inducted into the ARM-I Hall of Fame.
- George Winters was awarded Charles Frederick Distinguished Service Award.

**RAVI MEHRA**  
maramehra@aol.com

### ARM INTL SARD MUMBAI MEET

Venue : Cooch Behar Room, Cricket Club of India  
Date : Aug 30, 2008  
Attendance : 60 participants  
Joint Sponsors : NAROTO Ahmedabad, Maharashtra Maha Polyplast Mumbai, & Sharp Batteries Mumbai

The continued focus on OEMs in the second successive Regional Meet received special mention from **SARD Chairman Ashish Baheti** in his introductory remarks. He saw in this new outlook in SARD a refreshing effort to be inclusive with regard to all the stake holders particularly the end users of the industry



Mumbai Meet in Progress

Self introductions by an impressive number of 60 attendees at the Meet was followed by the first presentation of the evening **Rotomoulding Industrial Solutions** done in 2 parts by **Blaise Costabir, GMI Zarhak**. The first part of the presentation titled **Tryst with IT** took up the entire IT related gamut: hardware, application software and customized software. Software for Accounts, Production and Order Processing were assessed in terms of their utility. ERP for Order Processing was examined in its various aspects namely Customer, Production & Quality. Most important

here was to deploy the right software people to achieve the objectives of Quality, Cost, and Delivery.

The second part of the presentation on moulds was based on the presumption that if the business objective was to be a full service provider for customers who had a need for rotomoulded parts then there was much to learn from the presenter's own experience. Whether it was the case of the Renault Tractor Fuel Tank with a high tooling cost of Rs. 60 lakhs developed by their French collaborator, or redesigning a Volvo tank to solve warpage in the flap, or a successful cost solution for the Ford engine sigma cell there was plenty of food for thought.

**Material & Processing Anatomy of Rotomoulding** the next presentation made by **Dr. Sanket Nabar, RIL Mumbai** dissected and analysed the rotomoulding process in its finest technical details. The broad effect of parameters for heating it right and cooling it right was examined particularly with respect to shape and dimension affected by cooling. The presentation made a strong case for scientific steps in rotomoulding. A primary step for this was good powder characterization in terms of its bulk density and flowability. The control Parameters were shown as factored by temperature, time in oven and rate of cooling. Densification was shown as related to temperature which affected cycle time. Choosing the right density of the resin was important. Translating advantages inherent in resin characteristics for application benefits is how a grade is designed to meet requirements, and international grade specialists were listed out among the raw material companies of the world. The list of secondary producing majors also followed. A comprehensive comparative analysis of rotomoulding grades was then taken up.

**Future Needs and Challenges for Rotomoulding Application for Automobiles** was the much awaited OEM presentation by **Syamal Adhikari, Mahindra & Mahindra Ltd.** which came on next. The signature tune of the latest trends in global automobiles was stated as light weight, better fuel efficiency and clean fuel for environs to earn carbon credit ratings. The contribution from plastics could be ignored only to your peril

because of the prime context of its recyclability and fuel efficiency. Rotomoulding for auto applications would naturally lead to a comparison of the roto process with that of blow moulding. This is where the plastic fuel tank provides the perfect case study. Talking about the increasing scope and necessity of plastic use he said that out of 2000 components in the Scorpio SUV model 200 are now made of plastic. There are components of substance like Resonator, Radiator water tank, Windshield washer bottle and Plastic fuel tank. HDPE is mostly used in the Plastic Fuel Tank and the multilayer PFT would have 7 layers. Looking ahead to the role of rotomoulding in PFT the current scenario in U.S and Europe of a 60% (blow) and 40% (roto) ratio foretells the future in India when it comes to the roto process. Doing a case study for PFT in Scorpio it was revealed that there are a lot of moving parts next to it. Zero tolerance in leakage has to be ensured and the future challenge lies in innovative use of Design and Material.

Following the Break for Tea & Refreshments **SARD Manager S B Zaman** deputised to make the StAR presentation on behalf of **Ravi Mehra, SARD Rep on ARMI Board & now Founding Chairman of the Society of Asian Rotomoulders (StAR)** because of sudden indisposition. The decision of the ARM International Board of Directors to divest its international divisions like SARD had spurred the South Asian unit to form itself into an Independent Global Rotational Moulders Society. The highlights of the outstanding success story of SARD was spelt out through its achievements in the great international flavour of its Annual Conferences, Regional Meets, Rototalk and several other industry promotion activities. Independence was the way forward and all the accomplishments as a division of ARM Intl would now stand in good stead to reach greater heights as StAR. The Vision now lay in a well crafted plan full of activities and membership benefits to play a vibrant role for the growth and development of the rotomoulding region of the industry.

**Fenil Shah, Innovasis** made the next presentation on **Design skills for Non Tank/ Custom moulded Products**. Postulating that "Successful products are often associated with attractive appearance and quality" and then going on to say further that "Value is perception of Cost versus Benefits which is directly associated with Profits" the presentation underlined the importance of product development through design which imparted value to it. Developing a product without an order is never an exercise in a dark tunnel. There was sufficient experience for the presenter to tag a 30% success rate to this route. It was always important to identify a niche need and the example of the development of a newspaper vending cart in 4 weeks was quite an eye opener. The ball is always set rolling once the specifications fall into place and then the development process was nicely and graphically presented through: Brainstorming, Visual presentation, CAD model, Detailing, Validation, Mould making, Prototyping to finally to the product in use. Some of the success stories in which the presenter was involved came through exciting pictorials like the Cola Spot Bottle Kiosk, Modular Omni Kiosk and Coke Ice Cooler Box.

**Swetang Dave, Promens India** who made the final presentation of the evening began with a confession. He said that he was so inspired by the quality and content of the presentations during the evening that he used the intervening time available to him to brush up his material to make a presentation which kept in line with the trend set by some very praiseworthy presentations. He dwelt on Fuel Tanks as they were on top of the agenda for the day. From his own experience he had learnt that space was never a problem, but cost comparisons to alternative material were. When such comparison was inevitable it was necessary to justify your costs against the extra costs on the other side in the use of brackets etc. It was deduced that nylon by a long was the best solution. The presentation then moved on to Airducts for trucks.

**Mukesh Ambani, Infra Industries** who had played Champion of the SARD Mumbai Regional Meet mentioned the highlight points in the various presentations and delivered the Vote of Thanks.

**The Joint Sponsors of the Meet** were warmly thanked for their support before the Meet concluded with plenty of networking and discussions through cocktails and dinner.

A notable feature through most presentations during the evening was intense interaction between Speakers and Attendees which rendered unnecessary a Q & A Session.

**S.B. ZAMAN**  
SARD Manager  
szaman@rotomolding.org

Advertise in ROTOTALK from Jan.-Feb. 2009 issue onwards for both National & Global Roto industry exposure.

#### Tariff:

Size	Rates
Back Page	: Rs. 25,000
Full Page	: Rs. 15,000
Half Page	: Rs. 10,000
Quarter Page	: Rs. 6,000

Multiple issue contract will be allowed a 15% concession.

**ADIEU TO SARD FROM A TANK MOULDER AND WELCOME TO StAR.**

I had been informed that this issue of Rototalk will be the last from **SARD**, thereafter it will be from **StAR**. This is going to be an issue which will be telling Bye to an Era of SARD, and entering into a New Era of **StAR**. I welcome this New ERA, and will reluctantly say Bye to the era of SARD. I think with SARD around, the Rotational moulders have reached great heights in India, and have become a force to reckon with. This will be further strengthened with coming of **StAR**.

I would like to share my experience and opinions with SARD. I think for a rotomoulder from India, SARD was a catalyst for many changes and events in Rotational moulding Industry of South Asia, especially in India, and to some extent in Africa.

I will not dwell upon the history but would like to highlight one of the achievements from many accomplished by SARD.

Rotational moulding in India had been and is still based on the manufacturing of tanks. Whatever said and done, most of the rotational moulders if not all, are involved in this activity. And in this field SARD has been able to Sow Seeds of changes, and uplift of this segment of Industry.

These seeds are the following:

1. Getting all on a common platform (moulders, Machine makers, Mould makers, Designers etc..) and making them talk.

2. Exposing them about the way the things are all over the world.

From the above a section of Rotational moulders realized that we are making a mistake. It was realized that the tank standards which we are following was the reason to many ailments and mindset of Rotational moulders.

And once the realization was there, SARD with Mr. Ravi Mehra and Mr. Ashish Baheti took the initiative to define the new standards for the tank.

Mr. Ravi Mehra went out of the way to make the standards available of various regions of the globe, it included, the Australian, ASTM, South Africa, New Zealand, and to understand the things what is happening and being followed in the world over. He also ensured that to analyze these, proper technical support is available from the Vast Pool of Polymer Technologists and Engineers available with Reliance Industries, coupled with the rotomoulders, and under the leadership of a learned and qualified rotomoulder Mr. Ashish Baheti a dedicated team was formed, which went into the minute details and analyzed the shortcoming of Indian Standards, A comparison of the various standards was made and to the surprise of everyone for the first time the inadequacy of the Indian standards were highlighted. Thereafter a draft was made with recommendations and for approval of the rotational moulders. **This is still being debated.**

It is not the draft which is the achievement of the SARD, but it is bringing into light the inadequacy of our standards at last, and challenged it for improvement. As I said earlier, it may not have resulted in any change on the surface, but it has definitely sowed seeds for changes in the rotational moulding industry in India for future.

We have a habit of talking in terms of weight for any product, especially the tanks, and our standard has given us an assurance that this is the right thing. This has become the culture and mindset of most of the Indian moulders. **No specification of product is complete without the weight.**

You will be surprised I have talked on this subject with various roto moulders in India on the tanks explaining how the newer generation of polymers and design play an important part on the tank, but at the end of it they ask me "What will be the weight of the tank?" So this time I think I will say something about the tank weights, so the people can assimilate the things in right manner.

**I will take an example of 5000 liters overhead water storage tank.**

1. The Indian Standards specifies 170 Kg minimum weight
2. The Indian industry in general makes it of 100 to 125kg, depending upon their skills and their dedication of using the prime material.
3. There are moulders in Africa (Most of them are Expatriate Indians or Asian with similar thinking) who make it in 80kg with a different raw material.
4. I did some research for a African client of mine and found that if we use the same material and improve upon the design, mould quality, and doing proper processing this weight can be as low as 70 kg as indicated by the CAD & FEA.
5. Further I did an exercise for my academic interest, if we do the same in Indian condition, by making a professional design, correct processing, proper mould with the same material which we are using of IPCL or Haldia or RIL we can make a good 5000 liters tank with 80 kg also.

Please note that all the above tanks will be passing the same abuse or physical tests, and will hold the same guarantee. **Only thing is that all the things have to be done correctly.** When we narrow down the weights, we need to ensure the correctness of everything. One should be a roto moulder in true sense.

**Tanks in India till date were looked upon as a low technology item, with very low entry barrier project. The strength used by the bigger players was the financial strength to give credit to stay in the market. This is basically due to the wrong concept conceived by the present Indian Standards. Host of machine makers capitalizing this by making low end machines, even the moulders are capable of making this machines in house.**

I see a change coming in too fast in the Indian rotational moulding industry, I have been a part as a consultant to design and ensure a competitive 2500 liters tank with Indian raw materials to be shipped to a neighboring country, a single order of a few hundred tons. The requirement was low weight and high standards, with no breakage in transits coupled with a very tight delivery schedule. We designed the products and moulds using the right modern tools, we educated the moulder with the right methods; we modified the machines (Open Flame gas fired rock and roll) to ensure no degradation of polymers. And believe me we did it, and the purchaser was happy. There is one more surprising thing in this order. It was taken by an Exim House who are basically traders. **If the Traders can think so positively, I think the moulders should be more enthusiastic.**

I have ventured off my theme of Standards, with anecdotes and experience, but it is now well established and proven that it is not difficult to do the right thing and be more competitive. Also proving another point, if the moulder is not changing on his own; then the market force will make him change. If not today it will be in near future or else they Perish.

I would like to share some other experience of mine on the tanks and their standards. **I am an adherent FAN of the Australian Standards,** I was clean bowled when they had taken pain to come all the way from Australia and explain their standards to us at the ARM International Conference in Goa this year.

**I found it to be great, as it is open to ideas, with no bars attached, quality, performance, accountability and professional approach are the only demands made in the standard. They have gone a step ahead and given the ways to achieve these.**

If you are familiar with the Internet, then go to the Australian Websites of tank manufacturers, you will see many innovative tank designs. I particularly liked the Dough Nut shaped Underground water Storage tank and the Slim Water Storage Tank. They are pieces of design marvels. Thanks to the Australian Tank Standards it has induced the competition in the right direction there. I think these days are not far away in India, but the process can be hastened **if we change the concept of our standards and make them more demanding and accountable.** Further some of these tanks are being made in Australia by powder exported from India.

I will give some ideas for people to understand the uniqueness of Design.



This was downloaded from site, it is unique in a way that the top load is taken up in a innovative manner.

This tank was specially Designed by me for my African Client, for making on Rock and Roll. Though this was not approved, as it is the one from many suggested; Specifications for 15,000 liters overhead water storage tank: weight 240 kg passing all tests on CAD & FEA, more then demanded by Indian standards, Material RIL roto grade.



**So let us say thanks and farewell to SARD** (all the members, office bearers, employees etc..) and **Invite Them, New Members and the New Team in StAR, with a pledge to carry forward all the good work which has been done, and achieve the excellence in the Global Rotational moulding industry.** Any opinion or suggestions are welcome on the above.

**SAILESH R. SHETH**  
Rotomoulding Consultant  
s\_sheth@vsnl.net

**StAR ROLL OF HONOUR**

Member companies of StAR can earn special recognition by making one time payment of a minimum amount of Rs.50,000 to join **StAR ROLL OF HONOUR**

**UPCOMING EVENTS**

DATE	VENUE	EVENT
Dec. 05 2008	IPCL Guest House GK - 1, New Delhi	SARD Meeting
Feb. 1, 2 & 3 2009	Hotel Park Plaza, C Block, Sect. 55, Noida, NCR Delhi, India	Vth Annual International Conference of StAR

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*Editorial Contributions can be sent to S.B. Zaman, SARD Manager, Email: arnaccz@satyam.net.in*  
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