

*The supply line to the vital talent pool which is so necessary for robustness in an industry needs to be nurtured with care. The Seminar in Mumbai for DSK's Design students from Pune proved to be an important cog in the wheel of the StAR campus Programme of 2010 to roll on...*

## STUDENTS SEMINAR IN MUMBAI INITIATES 2010 STAR CAMPUS PROGRAMME

DSK International School of Design, and Design Directions, both based in Pune visited well known Rotomoulding Company **Infra Industries** at their Khopoli (near Mumbai) works on the 20th February. **Mr. Ravi Mehra** – StAR Founding Chairman, and Managing Director of Norstar International USA who does NOT require any introduction was kind enough to take time out to spend over three hours (On his holiday in Lonavala) for an introductory session on rotational moulding with the students and faculty and walk them through - What is rotational moulding, its advantages and a lot other details like different manufacturing processes, materials which can be used etc.



A point of discussion at the seminar.

DSK ISD International School of Design is based in Pune and is a branch of 23-year old ISD School from France created in association with local DSK group. They had attended the recent Goa ARMO conference along with Design Directions, the Pune based design consultancy, to learn more about rotational moulding process, and to create connections with the local/international industry. **Mr. Satish Gokhale** – Director, Design Directions is involved in the school as an advisory committee member with a keen interest on design for rotational moulding. For the three hour session people present were Mr. Ravi Mehra, Mr. Satish Gokhale, **Mr. Mukesh Ambani** – Managing Director of Infra Industries Ltd., **Mr. Guillaume Zaslavsky** (Head of Product Design Studies at DSK ISD), **Mr. Thomas Dal** (Head of Transportation Design Studies at DSK ISD) along with the students. A special thanks to Mr. Mukesh Ambani in making this visit successful and for the cause of education. This visit would not have fruited without his help. Everyone got to see the moulding process in operation. Mr. Mehra also explained the types of moulds like sheet metal, machined Al and cast Al moulds and the difference between them. These students (a blend of Indian and French) had a lot of questions to both – Mr. Ravi Mehra and Mr. Mukesh Ambani on the process, materials etc. This visit has created a great amount of interest and enthusiasm amongst the students who are already working on projects related to rotational moulding with Design Directions. Rotational moulding is a wonderful process, quite ignored by designers in the past. The goal of DSK ISD and Design Directions is to create an Excellence center for design in rotational moulding design in Pune – India. They are jointly working on 2 confidential projects along with an Indian company.

*Dear Reader,*

*A highly notable feature of the recent ARMO 2010 Conference in Goa had been the unusually high constituent of foreign participants in the delegates list. The signs of the Indian rotomoulding industry assuming a global outlook were clearly emerging. The primary gain for the industry in such a situation is that it acquires a sustainable bottom-line of globally acceptable quality standards. A manifestation of global outlook in an industry is regular Industry level exchanges with other countries. So the new trend continued for the Indian industry when a delegation of rotomoulders from Thailand came calling in the middle of March. They visited important centres of the industry in India, and you will get to read all about it in this Rototalk issue. ARMO as an entity got further crystallised at the Goa Conference, and one of the immediate benefits was seen in the approval and release of the ARMO Funnel along with the relevant standards for the Dry Flow Test of powder. This significant development in ARMO at the functional level is covered in this issue; and the stage seems well set for many more activities and developments to be featured in future issues of this newsletter. Happy Reading!*

**Mukesh Ambani**  
President, StAR

**S.B. Zaman**  
Executive Secretary, StAR

Once again we are thankful to Mr. Ravi Mehra and Mr. Mukesh Ambani for sharing their knowledge and experience.

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## A DAY WITH ROTATIONAL MOULDERS FROM THAILAND

I had the opportunity to be with a Delegation of Rotational Moulders from Thailand in Ahmedabad for a day on March 15, '09. The Delegation consisted of about 20 rotomoulders from the South East Asian country. The Delegation had arrived from Vadodara after having spent 14th March in that city. The Delegation had begun its India visit from Delhi where it made plant visits on March 13. The visit of the delegation to India had been co-ordinated by well known Thai supplier company **SCG Chemicals Co** whose **Managing Director Mr Yuttana** also was part of the Delegation. The fact that SCG's Rotomoulding Manager, Technical Services Engineer, and Product Designer also came along on this trip was an indication of the importance and effort their company had put into organising the Delegation visit. The Thai Rotomoulding industry with annual raw material consumption of about 30,000 tonnes has begun drawing considerable interest of Indian mould and machinery companies and that was quite evident during the visit of this large group of rotomoulders. The group included well known moulding companies like **Aqua Nishihara Corp**, **Cosmos Corp**, and the **Diamond Brand Group** among others. When I met them, it was their last day of the tour; they were to leave for Thailand in the evening. They had

arrived by a special coach from Vadodara. The main objective of this tour was to visit the Machine and Mould Manufacturers in India, and also have a feeling of Indian Rotational Moulding Industry.

I was with the Delegation during its plant visits such as to NAROTO in Ahmedabad and I thoroughly enjoyed a session with them during which I made a presentation on the Indian Rotomoulding Industry and answered their questions. What was most satisfying for me was that my apprehensions of facing a language barrier in communicating with them was quite misplaced. Most of them seemed to understand English quite well, and the few who had difficulty managed to follow the content of the talk and discussions with a little help from the others. In my presentation while I gave an overview of the Indian rotomoulding industry, I focussed on Indian moulds and machines which was the subject of their main interest.

**I formed my own impressions from all the interactions I had with members of the Delegation, which I will now share with ROTOTALK readers:**

- First of all I would like to mention the really commendable efforts of a resin supplier company like SCG Chemicals to organize such a tour, for their clients. It is not only the moulders who benefitted, but also themselves. It will be highly appreciated by our moulding industry if Indian Resin Manufacturers take a cue from this.
- The Delegation was really representative of the Thai moulding industry; there were moulders of every size, the biggest I was told was doing above 350MT of rotational moulding per month.
- The delegation had many ladies, and all of them had good knowledge of rotational moulding. In fact the team Leader was Ms. **Sirinun Mahachassada**, from SCG Chemicals.
- Most of the moulders were in the business of Water tanks, and many were into Septic tanks, Underground Sumps etc. One was even moulding Canoes and Boats.
- Like their Indian counterparts they too are heavily dependent on the Water storage and Water disposal Systems, but when I checked product profiles on their websites they seemed to be more innovative and with better USPs than what we are used to in our industry.
- Their range of septic tanks and other water treatment systems are so good, Indian rotational moulders can learn quite a lot from them.
- Most of the moulders were well informed about rotational moulding.
- When we talked about business in India, they were



Keen interest in Indian machines

surprised at the ruling sales price of the tanks in the market. They said they would not like to sell tanks in India with such low price realization.

- During their visit to Indian Moulders, on my enquiry, they said they too have similar working conditions at their work places.

**My concluding comments are:**

- We have a lot to learn from Thailand, and at the same time we can offer them a lot. Having with similar weather, culture and economy, the assimilation of the technology or knowhow can be much faster and custom made. We can look East for development.
- The Polymer suppliers should also do more for the rotational moulding industry. It pays rich dividends if you invest on your clients.
- Even in a scenario of continued predominance of Tank Manufacturers in the Indian industry, we need to be more innovative. And to bring about the change, even the small manufacturers should be involved and educated on the finer points of rotomoulding.
- We need to realise that rotomoulding has the potential to grow very big, provided moulders are given better education on the subject, particularly with regard to processing techniques.
- Last but not the least, Indian Tank Manufacturer instead of competition on the price front in the market, needs to earn more and invest more in the improvement of the product quality and reliability.

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**ARMO FUNNEL USE BY StAR COMPANIES NEEDS TO BE ENCOURAGED**

At a time when there is increasing realisation in our region of the importance of the right Powder Properties for good rotomoulding, the launch of the ARMO Funnel and adoption of Standards for Dry Flow Test has come as cheerful news to the industry. The fact that the funnel will carry the ARMO logo will symbolise both ARMO approval as well as the growing role of the ARMO entity. Powder dry flow properties determine how well the powder tumbles in the mould, which affects heat transfer in the powder bed and distribution over the mould surface. Flow depends mainly on particle size and shape. Processing the resin into powder can affect dry flow results. This is why ARMO recommends to all member moulder companies of ARMO affiliate organisations to invest in this basic equipment. This will help them to understand and assess the materials they use.

It has been happy coincidence that approval of the ARMO Funnel and the adoption of the global Standard for Dry Flow Test have happened around the same time.

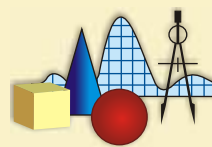
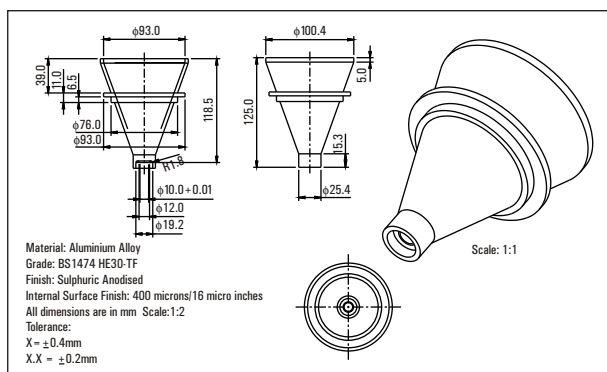
ARMO partner organisations ARMA and ARMI ( Rotomoulding associations of Australasia & North America respectively) worked jointly to finalise the global specifications.

It may be recalled that an 'in principle' agreement was reached by ARMO Board members at the Belfast 2008 meeting to adopt this new funnel.

The specifications for Dry Flow funnel were provided to the global industry on the basis of which ARMA developed the funnel and made it available for purchase in 2009. Information for the benefit of StAR companies had been provided in an issue of ROTOMAIL in 2009 on how the funnel could be procured through ARMA. The Specs and photos are being reproduced again as since the re-affirmation of the adoption of the funnel by ARMO in its Feb 2010 Board Meeting in Goa the use of the funnel needs to be promoted among StAR companies in the interest of better rotomoulding; the standardisation of test equipment and test methods will realise tangible quality improvements.

Main specifications for the new funnel are :

- 1) Exit hole is 10.0mm, with tolerance of +/-0.01mm.
- 2) Internal surface finish is now specified.



**PALOIAN'S DESIGN CORNER**

**Rotational Molding  
The Concept-It Starts Here**

Designing is a process which involves thinking, creativity and knowledge. The end result of this sometimes complicated activity is a functional item that never existed before. Although the process is often initiated by a need, the final solution is always based on some initial concept from which all subsequent decisions are derived. Creating the initial concept is therefore one of the most important steps in the design process. Concept development is based on a number of parameters which often include appearance, cost, function, environment, and manufacturability. This editorial will highlight some of the considerations and activities which should be applied to developing viable concepts for rotationally molded parts.

The first step in concept development is defining the product requirements and gaining a thorough understanding of the application. This phase is critical since omission of any potentially important design factor could adversely affect the final solution. Identifying design parameters is as critical as defining the specific requirements for each parameter. In other words it is extremely important to list design criteria related to a particular application and prioritize them in order of importance. For example, factors influencing the design of a water tank would include capacity, temperature range, height, plumbing, fittings, orientation and support. In addition, regulatory requirements will also affect the concept and overall design. Designing a child's chair will depend upon age range, anticipated use, safety, stability, appearance and image. Human factors and appearance are significant requirements for a chair as opposed to a water tank which is more dependent upon functional criteria.

After the basic design parameters have been defined, sketches and imagination are used to develop creative solutions. Typically many ideas are explored and critiqued during the early part of the concept development cycle. Concepts are reviewed based on their viability and potential for successfully addressing the design criteria. Sometimes models are constructed to verify overall shape, human factors or even structural integrity. For example, if a pallet concept included a tubular handle along one side which was supposed to withstand a specific maximum load, a model could be constructed using polyethylene tubing and tested according to the anticipated performance requirements. Another example would be the design of a school desk with an integral chair. In this case the clearance between the chair and underside of the desk as well as the desk surface area would be critical to the student. Human factors are often best evaluated with full scale models.

Concepts also dictate how a product will eventually look and be presented to the customer. A playground for example might be conceived as a learning center with many moving parts. These parts could be interrelated and progressively challenging based on a specific age group. Size, shape, motion and overall experience will influence the entire playground system, its installation, number of parts and overall attractiveness. If totally ill conceived, the entire product line could be a disaster. Conversely, a well designed and safe system could propel a company's profits to record breaking levels.

These are only a few examples and considerations which govern concept development and the eventual product design. The process and end results are dependent upon the creativity and skills of the design team. Concept development is the core to any successful new product and it is what distinguishes market leaders from followers. Next time you are thinking about a new product explore as many options as you can before settling on a particular direction. You could be the next market leader in your business. Visit [www.idsys.com](http://www.idsys.com) for further examples of design innovations and creative solutions.

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For the information of StAR companies several material suppliers, additive & masterbatch developers and pulverizer manufacturers apart from moulders are already using the new funnels for testing.

### STANDARDS FOR UNDERGROUND TANKS BY StAR

It took 2 years of painstaking effort by an Ad-hoc Committee chaired by Ex StAR President & Head of its Technical Committee **Ashish Baheti** to formulate **Overground Tank Standards by StAR**. The BIS standards had been found grossly inadequate in the context of existing international standards. The standards by StAR now fulfill the needs of modern and internationally accepted norms of tank manufacturing. Overground tanks standards by StAR can be accessed on the StAR website > [www.starasia.org](http://www.starasia.org).



Underground Water Tank

**Blaise Costabir** of GMI Zarhak is now spearheading the new StAR Project of formulating **Underground Tank Standards by StAR**

StAR's new project has been launched in recognition of the fact that the most promising growth area for rotation moulding in India is in the infrastructure sector where underground tanks, septic / holding tanks and manholes hold out huge prospects. The products have been in use for more than 2 decades in countries in Europe, Australasia, and North America. South Africa and Israel have also been known for their manufacture of various underground tanks. So there is substantial standardization material already existing which can be used for reference in the formulation of Standards for StAR.

The formulation of Standards for StAR will be most timely since it is estimated that the market for underground tanks in India will be as large as that for overground tanks. This is currently in the region of over 65KT per annum

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### CURRENT INDIAN ROTOMOULDING SCENARIO

If you were to look at the current market scenario and identify sectors in the Indian rotomoulding industry which would help realise the growth potential of the Indian rotomoulding industry they would include tanks (water, chemical storage, septic, water treatment etc), outdoor furniture (playgrounds, toys, bus shelters, kiosks), material handling containers (litterbins, textile / fabric handling containers, bins in food processing industry), automobile (diesel fuel tanks, tractor roofs, bus bumpers, dashboards, bus seating etc), road safety (barriers, anti glare screens etc) & other custom made products specific to industries.

However it will require a closer study of some of these sectors to be able to assess the nature of their growth impact:

**Automobile sector:** With more and more international vehicle manufacturers setting shop in India, it is opening up avenues for supply of rotomoulded parts for these vehicles. Rotomoulded fuel tanks, canopies, door covers, dash boards etc have been in use in trucks, buses, earth moving vehicles, tractors etc for a long time in US, Europe and Australia. With the Indian automobile industry in high growth mode the scope for resultant growth in rotomoulding is quite significant.

**Road Safety:** Frontier Polymers today is known throughout the country for its road safety products, these include water filled barriers, Bullnose barriers, anti glare screens, traffic cones etc. This sector is bound to grow as major plans are already in place for infrastructure development in the shape of roads, highways, airports etc to come up. There is definitely an increase in public awareness and the requirement of road safety products is bound to increase.

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**Outdoor furniture:** something which has not seen much so far but has a tremendous growth potential is the outdoor furniture segment. This includes bus shelters, lamp posts, seating, fountains, planters etc. High end luxury apartments built on acres of land with well defined internal roads only helps this segment.

New technologies and improved processing techniques will be key factors in providing the expected impetus to growth. New strategies will be playing an important part in the growth process, like the one to identify the sector you want to target instead of blindly following the competition.

**New developments on the supply front of rotomoulding raw materials where international manufacturers have entered the Indian market augurs well for generating new growth dynamics. Moulds, rotomoulding machines, and their new abilities are playing an important part in the modernisation and progress of the Indian rotomoulding industry.**

India does not lag behind in quality moulds or Roto Machines. The issue is how many are willing to invest in these two areas. At the moment we are not at par with the Americans and Europeans in terms of Aluminium moulds, but the time is not far when this will change. But for sheet metal moulds, India has produced some of the most well made and finished moulds.

When it comes to issues that concern designing new products, with the focus having stayed primarily on water tanks, designing had taken a back seat. But in sectors like automobile components, road furniture etc, you cannot work without a good design. There are a number of design houses in India specialising in rotomoulded products using the best of software.

When we look at the most likely development scenario the industry is headed towards, for Frontier Polymers the focus is on road safety products and outdoor furniture. Everyone needs to identify their core competence and choose a line which best works for them. We were the first to establish the market of foamed white tanks. Today this is being done by many.

I feel time has come for another face lift in the water tank industry. To position the poor "pani ki tanki" as a consumer based product, to provide better features to a water tank is going to be another one of our focus this year.

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**REVIEWING ROTOMOULDED WATER TANK INDUSTRY ACROSS CONTINENTS.**

During a recent trip to Africa I took a close look at how large size water storage tanks fulfill unique needs in that continent. Similarly, water tanks play varying roles in the water management systems in different parts of the world. So I thought it may be a good idea to use my 2-1/2 decades old experience in the rotomoulding industry, and exposure to its oldest segment namely water tanks, in different countries of the world to look at the interesting variants of the role it plays.

1. Tank Business pattern is not the same all over; the trends are decided by the Water Management Systems and Water Distribution Infrastructure.
2. Tank business thrives where there is no proper supply of water to people, so in countries where water is available without a proper water distribution system, the business of water storage tanks thrives.
3. In a situation where there is proper and timely distribution of water, as in many parts of Europe and in China there is little role for water tanks.
4. In India where the distribution system exists but where supply is not reliable or regular in many parts, again the tank business thrives.
5. In India and in countries where water management is similar to that in India, there is a very big demand for smaller sizes of tanks of up to 1000 litres; almost half of the total demand.
6. There is a shift towards bigger capacity tank sizes when the distribution system is deficient or absent. People would like to hoard the water they import into their areas. This is the case in Eastern Africa, and many other parts of Africa. Nature has given them abundant water, but the distribution system is not in place. Here 10,000 litres and above tanks sell like hot cakes.

There can be many more reasons about the need for Rotomoulded Water Storage Tanks but what is certain is that in the absence of reliable water distribution systems the requirement of tanks will be high.

As far as the quality of water tanks is concerned, there is much to be desired everywhere. It has to be understood that the tank is an engineering product, which is subjected to pressures, heat, wind, cyclic loading pattern etc. The Rotomoulders are known to talk of the weight of the tank they produce. Very little thought is given to the Design, Raw Material, processing capabilities etc. This outlook needs to change.

For most people if we make a product with more weight it will be good, and for this they ask for a premium price. The supplier never thinks of improving his design or processing skills; he hides all the inadequacies by making a product with more wall thickness, and sells it under the guise of a good product.

There is a unique case of what the proper standards of the land can do to the industry. This is observed in Australia. They have a very well defined standard for tanks, and this they have developed due to strict laws of quality which are prevailing with the technically sound standards in place, the Australians have come up with a complete range of new tank products, like Slim Line Tanks, Doughnut shaped underground tanks, and many unique designs, all technically correct.

So having well defined and well documented standards can also make a drastic change in the market; it not only builds up reputation, and wins the confidence of the customers, it stops many customers from going for tanks made by other processes.

I was really impressed while I was in East Africa, where the demand is good for bigger tanks. Moulders have come up with a unique Idea of increasing the Diameter of the tank, till the height fits into a truck. Normally people limit the diameter in India to fit into a

lorry easily, and height is free. This concept improves the geometry and look of the tank. A photograph of the tank is shown, I am five feet seven inches, you can guess the diameter of the tank, and there are still bigger diameter tanks being made by the same processor.

I will appreciate if you have any questions to ask on the above subject, you may mail your queries to sailesh.sheth@gmail.com I will try to reply you.

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**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**

**FORTHCOMING INTERNATIONAL ROTOMOULDING EVENTS**

DATE	VENUE	EVENT
18 Jun 2010	Alessandria /Italy	Quality in Rotomoulding. Advanced training course for intermediate technicians
20 - 23 Jun 2010	Heritage Hotel Queenstown, NZ	ARMA Rotomould 2010
July 2010	Mumbai	StAR Meet
4 - 7 Aug 2010	Hilton Portland and Executive Tower Portland, Oregon, USA	2010 IDSA International Conference and education symposium
Aug. 2010	Chennai	StAR Meet
9 - 10 Sep 2010	Euphoria Golf Estate and Hydro Naboomspruit, South Africa	Rotation 2010 Conference
Sep - 10	Italy	Fall Training course for Rotomoulding technicians
22 - 23 Sep 2010	Lyon/France	AFR Annual Conference
2 - 5 Oct 2010	Hilton Montreal Bonaventure Montreal, Quebec, Canada	ARM International Annual Meeting Theme: "The Global State of Rotomoulding."
Oct-10	Slubice/Frankfurt Oder Poland/Germany	CEE ARM/ARM CE Conference
Nov-10	New Delhi	StAR Meet
23 - 25 Jan 2011	Mumbai	StAR Annual International Conference

**WELCOME! NEW MEMBERS**

StAR heartily welcomes the following new members who have joined the 2010 StAR Roster.

Company	Category	Primary Contact
Kentainers Limited	Moulder	Chandu Shah
The Supreme industries	Moulder	Uday Naidu
Veerkrupa Roto-Machinery	Supplier	Vikul Panchal



The author with the 10000 ltr tank

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