

ROTOTALK

Quarterly Newsletter of Society of Asian Rotomoulders

Editorial Note

The COVID 19 Global pandemic not only disrupted but turned our organized world on its head; the unthinkable became reality as we went under total Lockdown.....carefully brainstormed activity schedule of StAR's new Calendar of Events became meaningless in the new situation. New social distancing norms stood in direct conflict with StAR's goal of bringing together as many of its members & as much of the industry for a variety of events. The StAR rethink & response was swift. Action came online, in online formats with good knowledge content, principally webinars - two per week. These are still being rolled out with participation in unprecedented numbers by both members & non members.....

Dear Reader,

Since the early 70s when rotomoulding appeared on the Indian plastics horizon the industry has been built on the solid foundation of a robust water tank industry. It experienced steady growth and qualitative changes to keep pace with other new age industries. The COVID 19 shock has now changed all that as doubts and concerns are swirling in the eco system of the roto industry. While the setback becomes increasingly pronounced the proverbial light at the end of the tunnel is as much a reality. Opportunities in different forms can still be found if you continue to look for them. They may have to be viewed differently in the changed circumstances. This issue of Rototalk as you will realise from the tone, tenor & content of articles will be trying to aid that process. StAR webinars held in increasing frequency through the lockdown period pointedly worked in that direction. Full webinars were dedicated to help you assess the new conditions to seek solutions. We fervently hope that bloom will replace gloom sooner than later. StAR will stay committed to aid a process of resurgence in whatever way it can.

S B Zaman
StAR Exec Director

U Savadekar
StAR President

ONLINE SURGE OF StAR ACTIVITIES KEEPS MEMBERSHIP & INDUSTRY BUSY DURING COVID 19 LOCKDOWN

The COVID 19 crisis took India by surprise & the rotomoulding industry as well as the rest of the Indian economy came to a grinding halt. The seemingly endless lockdown became a trying & testing time for all. StAR lost no time in planning & actioning a series of online activities free of charge for its members & non members, at this difficult time for the. This educative, interesting & useful package of frequent webinars, digital newsletter and articles in a variety of genres found audiences in growing numbers. In fact the webinar on April 17 on Rotomouldable Materials – Polythylenes & Others by Ravi Mehra was held for the full webinar capacity of 101 attendees – some could not find room. Quick thinking & action by StAR has ensured that its normal schedule of monthly webinars has been converted to weekly and then to twice a week. The enthusiasm of both members & non members has responded in equal measure with attendees per webinar going past the 40s and crossing the three figure mark in the case mentioned above. All the webinars have experienced extended Q&A sessions and discussions, while continuing feedback has sustained interest that has been generated by the webinars. Articles streamed in to quick flow have been variously labelled as Products & Markets / Technical Information / General Information. All the above listed in chronological order is illustration of the very useful & opportune work done for the benefit of its members & non members by StAR when the pandemic seemed to have overwhelmed one & all.



ONLINE ACTIVITIES FROM MARCH 22 '20 UP TO MAY 15 '20 (WEBINAR PARTICIPATION NUMBERS ARE IN BRACKETS)

March 22 '20	Rototalk online March issue
March 27	Webinar – Energy Savings in Roto Industry: By Jayant Saraf..... (42)
March 31	Article - Products & Markets : Timely Ideas! By P Trivedi
April 03	Webinar – Roto Compound: Making in house Vs Sourcing from Compounder: By Ravi Kadivar.....(44)
April 08	Article - StAR Technical Information: By Ravi Kadivar
April 09	Article - COVID Relief – StAR Information Series
April 10	Webinar – Design...Woh kya hai (What is it): By S Gokhale.....(45)
April 13	Webinar – What's your question? By U Savadekar, Dhanu Patell & Prashant Trivedi.....(44)
April 17	Webinar – Rotomouldable Materials: Polyethylene & Others: By Ravi Mehra(101)
April 21	Webinar – Post mould Applications for Label free Graphics on Polyolefin Plastics : By Konstantia Asteriadous(60)
April 24	Webinar – What is Your Question: By Ashish Baheti & Swetang Dave.....(.41)
April 28	Webinar – COVID 19 Challenges to Rotomoulding industry.....(63)
May 01	Webinar – UV Stabilization of Plastics – a science simplified: By V Bhadauria...(89)
May 05	Webinar – Re calibrating our Business models in Uncertain times: With focus on Product & Mould Development: By Mohit Shukla.....(57)
May 08	Webinar – COVID 19: Its time to introspect – Globalisation, China factor: By R Ravi Kumar.....(51)
May 12	Webinar – High Density Rotomoulding LLDPE – New opportunity: By D Sahoo.....(66)
May 15	scheduled Webinar – Innovative Solution to improve Productivity for Rotomoulders: By Vishwas Sharma

BIO WASTE HANDLING FOR HEALTH CARE INDUSTRY

The world is facing and fighting pandemic due to spread of COVID19 Virus. More than 175 countries have been affected at various levels. The main cause is connectivity and contaminated parts which are being handled or transferred. In this scenario disposing and handling of medical waste and single use plastics like PPE's are going to play a vital role in restricting spread (though scientific disposal of contaminated and used products is an essential activity). Waste Bins and Waste handling carts are being extensively used to handle such wastes and materials which are inevitable due to its hygiene concerns.

Here, Rotomoulding technology as well as products developed out of it give an ultimate solution. The material LLDPE (Linear Low Density Polypropylene) which is considered to be most inert in nature and due to its inert properties is being most commonly used in Hospitals and Medical Health centers. The medical fraternity has been using Products made out of Rotomoulded LLDPE's since decades, and has seen the benefits and usability. In need of sterilized or sterilization, Rotomoulding can also produce products like small & large containers and customized containers out of PP (Polypropylene) in very short duration. The reason is obvious, that tools are easy and fast to make and cost of the same is also not exorbitant. The benefit of Roto moulded Containers, Bins and other products is their smooth inner surface which makes cleaning them very easy and Plastics in clean form are not affianced towards bacterial or viral contaminants and in many cases can be sterilized before usage (When in Place of LLDPE we use PP). Any other materials have tendency to accommodate virus for substantial long duration. Like, was being suggested that the virus can be active for about 24 hours on

metal surface, while on fabric the duration is higher than metal. So, in such cases you need to be extra careful about using metal and Fabric/Cloth for handling and usage, and you are more susceptible to the attack and infusion of the virus. Both the materials are also not being commonly used as of now in Hospitals and hygiene areas. In case they are used and if they are not cleaned or sanitized scientifically then they can be one of the major reasons for spread of disease. Further, Bins and Containers made out of rotomoulding are strong and stress-free, and due to this basic property they can be handled in any condition and are useful for multiple cycles of handling and usages In such a Pandemic situation Rotomoulding can provide you immediate supports and supplies as there are more than 500+ Rotomoulders spread across India and can be the local support mechanism. I am sure our Rotomoulding fraternity would come forward to support and fight this situation and help the country to overcome it. Plastics can overcome the issue or reusability and act as a contaminant buster. The manufacturing process itself involves higher temperature, and further can be manufactured under controlled condition to maintain appropriate hygiene. Disposal of plastics is also easy and convenient through controlled incineration (Which is a necessity). Monitoring and disposal of such plastics needs to be done under controlled observation and impact on environment. Today, the world has seen the usability of plastics especially the disposal of plastics in Medical and Hospitals and there is no reason to blame it or curse it. The situation itself has brought honour to plastics and its application. I am not advocating use of plastics and the menace which has been created through improper disposal and littering. Though, as such many making general statements for banning of single use plastics and others is my concern. There needs to be a paradigm shift which can create awareness as well as well defining the end usage. People need to change the perception rather than following the general statement coming out of biased individuals who have less or no knowledge about this wonder material and its

unmatched applicabilities.

For medical and Hygiene Professions, Plastics, including

Single use plastics have been proven material and have been appreciated for it. Let us work in the direction of overcoming the Pandemic situation with appropriate usage of Plastics along with following religiously the guidelines provided by WHO and our country's Health departments to restrict further spread.

Prashant Trivedi

Sangir Plastics

prashant.trivedi@sangir.com

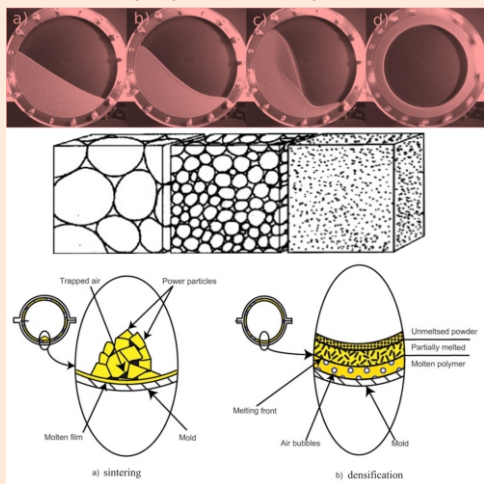
IMPORTANCE OF POWDER PROPERTIES

Summarising the Rotational Moulding Process, the cycle starts with charging of powder followed by heating process where the polymer adheres to the mold and gets fused completely process when the mould is removed from the oven and taken at cooling bay. trapped during sintering of these powders results in lowering of mechanical properties of the product. correlation between the number of bubbles in a rotomolded article and its impact performance, with a higher number of bubbles resulting in lower impact performance. internal bubbles is a characteristic normally looked after to know whether the part is rotomoulded or not. By using a right kind of powder grind, one can reduce the bubble formation density part corresponding to density of polymer compound used Let us analyse and understand how powder properties affect different phases of rotational moulding. 1) Powder Charging – There must be enough room for ensure required powder is easily charged to achieve desired wall thickness. Deeper portions of the mould should be filled first, so that there is free space for powder tumbling. Powder with bulk density of 375 to 400 kg/m³ helps in efficient powder ch powder particles have irregular, long thin protrusions, to a low packing density which in turn leads to 2) Initial Heating Phase –

The powder is just warming up

until it reaches 65 Temperature. This means it's not sticking to the mould.

throughout the mould during this phase enough heat during the initial heating phase. 3) Melting Phase – Efficient flowability of powder will ensure that the powder sticks to each and every corner & surface of mould. when the powder cannot freely flow across the mold surface. Very fine powders have low elongated shapes & sharp edges low flow high variations of the wall thickness observed. Large powder particles flow, they are bouncing inside the mold and do not stick easily to flat surfaces but accumulate in the corners of the mold leading to trapped in the corners of the mold. Also sintering of not dissolve in polymeric melt. **IMPORTANCE OF POWDER PROPERTIES** Summarising the Rotational Moulding Process, the cycle starts with charging of powder followed by the polymer adheres to the mold and gets fused completely and ends with cooling process when the mould is removed from the oven and taken at cooling bay. Unlike other plastic processing technique, the fusing of the particles occurs at conditions of nearly "zero-shear" stress, which in turn to a major problem formation which is due to powders, while overheating of the polymer melt for bubble removal results in lowering of mechanical properties of the product.



A study shows that there is direct correlation between the number of bubbles in a rotomolded article and its impact performance, with a resulting in lower impact performance. It's no denying that the internal bubbles is a characteristic feature of products manufactured by rotational moulding normally looked after to know whether the part is rotomoulded or not.

By using a right kind of powder grind, one can reduce the bubble formation and can achieve maximum density part corresponding to density of polymer compound used. Let us analyse and understand how powder properties affect different phases of rotational moulding. There must be enough room for powder in the mould ensure required powder is easily charged to achieve desired wall thickness. Deeper portions of the mould should be filled first, so that there is free space for powder tumbling. Powder with bulk density of 375 helps in efficient powder charging. If the powder particles have irregular, long thin protrusions, then this will lead which in turn leads to more air trapped in the powder pool. The powder is just warming up until it reaches 65-75 °C of Internal Air Temperature. This means it's not sticking to the mould. There should be uniform flow of powder during this phase. A uniform flow will ensure that the powder captures enough heat during the initial heating phase. Efficient flowability of powder will ensure that the powder sticks to each and every corner & surface of mould. Nonuniform wall thickness and severe corner bridging result when the powder cannot freely flow across the mold surface. low dry flow because of sharp edges of particles. With high variations of the wall thickness is powder particles have too high dry , they are bouncing inside the mold and do not flat surfaces but accumulate in the leading to bridging as air gets trapped in the corners of the mold. Also sintering of large powders creates a lot of bubbles that do not dissolve in polymeric melt. Summarising the Rotational Moulding Process, the cycle starts with charging of powder followed by and ends with cooling Unlike other plastic processing fusing of the powder particles occurs at conditions of nearly , which in turn leads problem of bubbles formation which is due to gasses being while overheating of the polymer melt for bubble removal A study shows that there is direct correlation between the number of bubbles in a rotomolded article and its impact performance, with a It's no denying that the presence of defects manufactured by rotational moulding and is and can achieve maximum Let us analyse and understand how powder properties affect different phases of rotational moulding. powder in the mould to trapped in the powder pool. C of Internal Air There should be uniform flow of powder . A uniform flow will ensure that the powder captures Efficient flowability of powder will ensure that the powder sticks to each and Nonuniform wall thickness and severe corner bridging result creates

a lot of bubbles that do 4)

Densification Phase - Particle Size Distribution tests helps in improving this phase. Powder with good content of fines ensures faster sintering, low surface pin holes, reduced porosity, improved heat transfer to the plastic and helps the powder flow by lubricating the movement of the larger particles. 5) **Cooling Phase** – The process ends with cooling of article with blowers by using ambient air. Uneven thickness may lead to warpage because the thinner wall part cools 1st and pulls the thicker wall part which is still cooling. Cooling also affects the physical properties of the product because the level of crystallisation done during cooling directly affects physical performance of the product. Knowing information on Dry Flow, Bulk Density & Sieve Analysis of powder being rotomoulded helps a rotomoulder in quality control & achieving a quality moulded part. Greenage Industries offer an economical solution on testing all 3 critical parameters of roto-moulding powder by providing a testing kit at just INR 2999/- only. Please feel free to contact us for more details.

Ravi Kadivar

Greenage Industries

ravikadivar@greenageind.com

ROTOMOULDING FOR MEDICAL APPLICATIONS

As rotomoulding is an effective moulding method that allows manufacturing of not only extremely durable products with minimum design constraints but also has relatively low cost of production. It is quick to set up thus giving flexible production for unpredictable demand. Owing to these and other advantages of rotomoulding it is one of the best process for medical & healthcare industries. Small parts like oxygen masks, container for dialysis machines, surgical equipment casing, prosthetic limbs & squeeze bulbs can be made as it is a versatile process capable of making multiple products at a time. As rotomoulding makes products with high impact resistance & good load bearing properties it's highly suitable to make products like stretchers, wheel-chair bodies, cane & bedrests sturdy enough to take full body weight. Rotomoulded hollow containers can be insulated to make products like vaccine boxes, refrigerated boxes for storage of temperature-controlled items. With so many different applications one of the most important aspect is selection of apt material. Special requirements for medical applications to be kept

in mind are material must be sterilizable, it should have appropriate non migratory additives, it should give a pinhole-free product as pinholes increase risk of contamination & also must be antibacterial. Stretchers In this time of global distress and crisis, our government is helping us in all ways they can to create facility to accommodate and give all possible treatment to COVID-19 affected citizens. Govt. is soon to face shortage of medical beds and stretchers. I'm attaching here drawing of a rotomoulded stretcher & its mould drawing which in case of emergency can be converted to a bed.



provision to attach a frame to cover with cloth for isolation. If it's possible for anyone to locally get a mould made and make this stretcher it will be of great help to the nation. Any suggestions or ideas on improvement of the product are most welcome Everybody needs to do something to support our army of doctors and paramedical staff..

Divya Raithatha
Vinodrai Engineering
divyaraithatha@vinodrai.com

"INDIAN ROTATIONAL MOULDING INDUSTRY PRE COVID19 ERA, & CHALLENGES FOR POST COVID19 ERA"

Let's start with Present Status of Industry:

- ➔ India has become a hub for low-cost machines, for the third world countries, & has **graduated to supplying Modern Machines to the Developed countries too.**
- ➔ Indian Roto moulders are importing **Raw materials** to satisfy the Demands of Special Purpose Applications in a big way, and many International resin suppliers have in India.
- ➔ **Moulding** initially was by Open Flame Rock & Roll for all Moulders. Has now graduated to Biaxial Hot Air Oven machines. Though not all Biaxial Machines available are Efficient, the large chunk of machines in use are far from to be called World Class or Efficient.
- ➔ Moulds making too has evolved, here, one section is for Low-end products mostly Tanks, High-end moulds are for Non-Tank, Products for: Engineering, Automobiles, and Custom Moulding.
- ➔ The Non-Tank products developed side by side, and they are doing well, and innovative products, being exported too.
- ➔ The Mould Makers have shown Ingenuity in exploiting, the available Technology, Skill and Material to make great moulds, & set trends in international market too. This is commendable.
- ➔ Production of Non-Tank product are still a small percentage in this big Industry, though their share is growing.
- ➔ The Quality Consciousness has improved for Consumers & in Govt. Supplies too. Poor-Quality goods are taking a beating. Industries with Low Quality Consciousness need improving, otherwise will perish soon.

MAJOR EVENT WHICH MADE A POSITIVE IMPACT ON ROTO INDUSTRY: GAME CHANGERS:

1. Setting up of the rotational moulding trade association StAR, initially in conjunction with ARM - Association of Roto Moulders of USA in India:

- ➔ Exposed / Introduced Indian industry to the world. Moulders for first time had a glimpse of what's in the industry the world over. It not only broadened the Vision of Indian Industry, but gave a Platform where they could get the information and technologies too.
- ➔ StAR (Society of Asian Rotomoulders) took interest and held regular seminars conferences all over India, which helped industry at all level to Learn & Unlearn, to Understand the processing more scientifically.
- ➔ This has been a Major Catalyst for hastening the progress of Indian Rotational Moulding Industry.

2. The Next Game Changing Event I will put to the Introduction of GST in India.

- ➔ Though it may be a Bitter Pill to correct the ailment of the industry, many dislikes this, but It made a drastic change in functioning of the industry, and put all on the same level playing field. Now the Industry is more organized, and progressive and informed.

3. Rotational Moulding Process now has Technical Academic

- ➔ From Institutes like CIPET, BITS Goa, & PARC (Product Application and Research Centre) of most Raw Material Manufacturers. RMCER (Rotational Moulding Centre for Education & Research) which is a joint initiative of StAR & BITS Goa has been bracing up with labs, equipment and other necessities to work dedicatedly in research based and technical support of the industry. These should be a great boon for Indian rotomoulding.

4. There are other institutions for training and giving

- ➔ Skilled Technical Manpower to the Industry.

MAJOR DRAWBACKS WHICH HAMPERED THE PROGRESS OF ROTATIONAL MOULDING INDUSTRY IN PRE-COVID19 ERA.

1. According to me, the Biggest Ailment is the IS Standard in India for tanks, which has become a Reference for many to do the wrong things. The Attitude has been Weight oriented rather than Design, Quality & Performance oriented.

- ➔ Many Attempts have been made to correct this Standards, by Associations, & Industry, but to little effect so far, efforts to correct are going on as I have learnt.
- ➔ My Personal feeling is to scrap present IS Standards, and rewrite it with reference of some good Standards of a few developed nations and adopt them to Indian environment. StAR has actually prepared and released above ground tank standards, following other international norms; these still await regulatory body's approval & acceptance. Leave the Making of the New Standards to the Professionals.
- ➔ Unless we correct the Tank Standards, Which Controls Manufacturing of Majority of Roto Moulding. No, progress can be made to establish Standards for other new products, to promote the industry.

2. The General Attitude of Roto-Moulding being a Low Entry Barrier Industry. Yes, it is true, but this does not help in making High Standard Products. There are many Moulders in this low-end product manufacturing, who are bringing a bad name to the industry, and also harming the new innovative concepts being brought in products and at times killing the concept too.

3. Product Design

- ➔ Need more Scientific & Professional approach.
- ➔ Rotational moulding is a peculiar process, like other plastic moulding processing, we need Designers with in-depth Knowledge of Process along with the Technical designing through CAD.

- ➔ More correct input data should be made available to designers by the Raw material manufacturers, for reliable designed product.
- ➔ Industry should learn how to Evolve a concept to local Environment, design a product, validate design. Copying products without studying & doing homework have been miserable failures with many.

4. General Reluctance in sound design, good moulds & machines and new technologies for Sustainable, for Smaller Carbon Footprint, Better Productivity & Quality Production.

POST COVID-19 ERA

Post COVID-19 Scenario will be like after the Second World War Scenario, As the economies will be in a majorly unsettled state.

- ➔ This will be a changed New Era of Socio-Economics Equations & Logics too for Industrial Manufacturing.
- ➔ There will be more legal bindings on our manufacturing methods, and the Working Conditions & Environment in which the processing will be permitted. Will need to adopt to Changed Standards.
- ➔ Gradually Automation will be the need of the hour to comply to the new standards of Manufacturing.
- ➔ Moulders should invest more in technologies, volume of production is High, so should be able to adopt the new technologies now. Will start to see few machines like Persico-Leonardo / Smart Machines along with robotic machines in India.
- ➔ There will be new materials coming into Rotational moulding. But should first be able to identify the present available materials, and use them to our advantages at the earliest.

- ➔ There maybe further developments with Stronger and Sustainable Raw-materials, which will change our working styles & designing of products, and new concepts which are not thought of till date will be cropping up. Should be open to take calculated risks, and be the pioneer in commercializing these technologies and resulting products/markets.
- ➔ The Industries' Present Fuel efficiency will not be tolerated. Otherwise may be compelled legally like in Automobile industry. We are wasting a lot of heat, in processing, which I feel is "criminal". If we don't mend our ways. The nature has already warned with COVID 19.
- ➔ People in India talk about India becoming an economic power after the COVID 19, I agree with them provided they change their attitude to produce World Class.
- ➔ Ensure Not to fall into China like trap of promoting poor quality too along with high quality.
- ➔ Be Ready to venture in unknown fields and also be ready to work in "out of comfort zone".
- ➔ The Social responsibilities will be increasing to the Industries, maybe by legislation also.
- ➔ If, the changes don't come immediately, Don't Relax, be sure the changes are on the way.
- ➔ Many of the things which are beyond our thinking will also give surprises.
- ➔ COVID 19 is not the last calamity we will face.

IN SHORT, CHALLENGING TIMES ARE AHEAD. SO: LIKE THE BOY SCOUTS, OUR MOTTO SHOULD BE "BE PREPARED"

Sailesh R. Sheth
sailesh.sheth@gmail.com

Advertise in Rototalk
for both National and Global roto industry exposure

Size	Tariff	Rates
Back Page		Rs 25,000
Full page		Rs 15,000
Half page		Rs 10,000
Quarter Page		Rs 6000

(minimum of 3 insertions)

Multi issues contract will be allowed a 15% discount.

Contact for Info
S B Zaman

Cell No : + 91 9810305356, Email: sbzamanp@gmail.com, Web: www.starasia.org

Asia's No. 1

Rotomoulding

Machineries & Moulds Manufacturers



▲

The Cutting-Edge Oven



▲

The Fundamental Oven

Presence in 80+ Countries & Pan India

SINCE 1982



▲

The High Volume Shuttle



▲

Moulds...

PROUD WINNER OF EEPC INDIA EXPORT EXCELLENCE AWARD 2015-16

N. A. Roto Machines & Moulds India

‘NAROTO’ House - 3725, Phase-IV, G.I.D.C., Vatva Estate, Ahmedabad - 382 445. Gujarat. India.

Phone : +91-79-25840374, +91 9825031748 | Email : ria@naroto.com,

Rototalk is the newsletter of Society of Asian Rotomoulders(StAR) for internal circulations only. Editorial Contributions can be sent to S.B. Zaman, Executive Director, StAR, Email: sbzamanp@gmail.com