

# ROTOTALK

Quarterly Newsletter of Society of Asian Rotomoulders

## Editorial Note

As we face increasing impact of the COVID 19 pandemic which has torn asunder economic activity in our country we wish our roto industry all the resilience & resolve to re - emerge with minimal damage. StAR did what it knows best.... keeping up an unflagging spirit within the industry by ratcheting up useful online activities and maintaining a high level of interactivity within the membership & the industry. There being nothing more mitigating than sharing.....both the pain of the adversity, as also ways to overcome it with new knowledge & collective action. Most notable during this time has been the continuing success story of StAR webinars.

## Dear Reader,

The need for collective thinking and unified action within our industry is paramount today. We all have to take responsibility to identify and implement courses of action which will turn around the present troubling times.

StAR has prepared some practical measures that could have crucial positive impact:

- ➔ **Technical solutions:** To establish this route StAR has introduced a new position of Technical Advisor with the highly experienced Silessh Sheth in charge.  
A principal activity will be running of the "Technical Inquiries Corner" interactive feature on the StAR website [www.starasia.org](http://www.starasia.org)
- ➔ **Special initiatives:** Think Global Act Local
  - Databank to identify sectors & companies to cash in on the new opportunities for Indian rotomoulding emerging out of changes in the global supply chain....China factor
  - Training – to overcome deficiencies created by loss of migrant labour
  - Develop new mould capabilities – leveraging existing foundry strength for cast aluminium moulds. Also developing CNC machine moulds
- ➔ **Special industry promotions** like ARMO promo video in conversational Hindi

Much more can be thought of and planned for industry to work together.

S B Zaman  
StAR Exec Director

U Savadekar  
StAR President

## WEEKLY StAR WEBINAR GROWS IN CONTENT & POPULARITY

When the lockdown due to the CAVID 19 pandemic had imposed a shutdown on StAR activities the StAR webinar at a frequency of twice a week took over as the principal StAR activity of great value to its membership and industry. Audience size grew substantially and a wide variety of topics by speakers from the broad spectrum of our membership & industry has generated considerable interest.

With relaxation of the lockdown accompanied by resumption of offices & factories work schedules have taken over and the StAR webinar has adjusted itself as a weekly event to the new available time.

Continuous attendee feedback indicated particular appreciation of content of these webinars and who better than the new Technical Advisor at StAR, Silessh Sheth to do a technical assessment of the webinars as they happened week after week. Attendee connection number for these webinars have ranged from the 40s to the 60s, 70s & more

**Design Kya Hai? By S. Gokhale, Design Directions – April 28:**

Presenter views were enlightening. We cannot have a product for Covid19, but can think of products for such future situations, which can also be used otherwise.

## StAR Webinar Calendar

Date	Webniar Topic	Presenter
JULY 2020 17th	Key Improvements Indian rotomoulders can make - from my experiences & observations	Dhanu Patell, Director, Reinhardt Teknik, Vadodara
24th	Implementation & Scope of KAIZEN in Rotational Moulding	Jayant Saraf, Director, Mahajan Polymers, Jalna
31st	"Are you ready to make the change to take control of your rotomoulding process"	Dr Gareth McDowell, Managing Director, 493K, UK
AUGUST 2020 7th	Testing of Raw Materials & Rotomoulded products by following different reference Standards	Sahil Asrani, Director, Deepak Polyplast, Ahmedabad
14th	Rotomoulded automotive tanks glimpses beyond present	V.Khairatkar, ARAI, Pune
21st	Custom Moulding in India and its Challenges	Akshay Saini, Director, BD Industries, Mumbai

It is worth investing in design. It is not just spending but value addition.

### UV Stabilization of Plastics – a science simplified: By V Bhaduria, Alok Ind – May 1

A simplified presentation: easily understood, which could be seen in the Questions that followed. This tells a lot about the present lot of Rotomoulders fast maturing in India

### Recalibrating our business model in uncertain times :By Mohit Shukla, MPlast – May 5

Good views on mould design, deeply thought out, great Information for sharing.

This Webinar made it clear that Roto Moulders in India are more concerned about the Product Weight, that is the Raw Material.

They feel that the mould and designs are off the shelf items. Emphasis was rightly made on getting FEA done for optimization of design.

### Covid 19 – it is time to introspect:

#### By R Ravi Kumar, Roots Multiclean, - May 8

Sequencing the flow of information, and explanation at each stage were notable & provided clarity.

“COVID19 is a catalyst which will bring about a revolution in human thinking.” & realign economics to a new equation. As correctly said Economics will no longer be Competitive but Co-operative.

### High Density Rotomoulding

#### PE: By Dhananjay Sahoo. Indian Oil Corp, - May 12

The presenter shared in-depth knowledge.

So necessary for Raw material manufacturers to share information with Rotomoulders. Question revealed deficient availability of special grade.

Moulders asking for good materials instead of less costly ones is a good sign. Competitive pricing of good material is a must if Indian products have to be in the global market

### Innovative solution to improve productivity: By Vishwas Sharma, Chem-Trend India - May 15

Presenter kept it simple which was good for a neglected area in rotomoulding like release agent. So important to look at Effectiveness beyond release. Since processing parameters vary from moulder to moulder it is important to understand details. Rework, rejections etc need to be factored into cost effectiveness.

### Smart Manufacturing: By Rajnish Gera, Sintex Industries - May 19

Another point of view is to remember the people behind the processes & machines. Presenter's approach was very scientific but you will also need the right conditions for it. Every organization's unique identity & culture has to be kept in mind while adopting modern systems

### Improving production & business of traditional Indian roto products: By Harsh Agarwal, Oriplast - June 19

Bright ideas, and is innovative approach, trying to break free from current Mindset of Rotomoulders in tank industry. People should not talk of raw material prices only and not the quality or properties. GenNext is picking up the right path.

On the questions front "Economics' law of diminishing returns on the investment made". needs to be understood. Now we are in a phase where the Returns will be high on small investments for

improvements.

The Missing Link: By

Dr Jitendra Kapadia, Henkel India - June 26

Trading mindset in our industry

has to

go. Cost

of production is

not just within the

factory. Productivity

is not understood or

considered as cost, when

they have enough work

to load their machine full time.

Much needed "out of the box" thinking was delivered with "Eagle's Eye View" -

panoramic holistic view. Large tank

industry segment has to improve for the rest of industry to improve. Very important for investments to come into industry to improve its. Has to be delivered to keep the unorganized sector at bay.

### How are Underground rotomoulded products different from Above ground products: By U Savadekar, Phychem Technologies - July 10

Subject was need of the hour to bring clarity because of misconceptions and confusions with regard to Materials, Processing, Design, Understanding; each and every aspect of the subject matter.

A single webinar is not enough to deal with such a topic although much was covered





# EXPLORING ROTOMOULDABLE POLYETHYLENES

## Processing XLPE Vs PE:

Typical heating & cooling cycle differences between the two .....

During the heating or cook stage of rotomolding standard PE grades, two things need to be achieved:

- Sintering – making sure that the powder (particles) melt and fuse together on the inner mold surface. This normally happens at an IAT of ~ 130 C.
- Densification – allowing additional oven cycle time for the trapped air/gases in bubbles to pop & escape or be dissolved in the melted polymer. This is normally accomplished at an IAT of 200 C.

During rotomolding of XLPE grades, besides the two steps above the following needs to take place:

- Crosslinking – XLPE grades contain special peroxide additives that form side links to bind all molecules, the crosslinking. For this third step to happen, additional time and temperature in the oven is required. For this the IAT needs to be above 200 C for additional time, approx. 2 to 3 minutes or more depending the part wall thickness.
- If the part is over-cooked you may experience “coining”, appearance of local depressions on the part surface (coin size). Reducing the oven temperature could help this, but may need to lengthen the oven time to complete crosslinking.
- If crosslinking has not fully taken place, part is under cured, full physical properties are not realized, may even be less than properly cured regular polyethylene.
- It is best to use an IAT [internal air temperature] measuring tools to develop a precise cycle.
- Degree of crosslinking achieved is measured by toluene boiling test, as a percentage undissolved residue; good crosslinking is at above 90%.
- A quick indication of crosslinking is appearance of glossy inside surface, and a typical acrid smell. A strip cut from a properly cured part can be bent fully in both direction, and it should not develop any stressing marks or tendency to break; which regular PE will.

**Note:** Some information in this article is from a blog recently written by Dr. Nick Henwood, ARM Technical Director, Rotomotive Ltd., UK

## POLYETHYLENES & COMONOMERS:

Three main comonomers for of polyethylenes are:

- **C4 BUTENE:**  
4 Carbon Atoms present
- **C6 HEXENE:**  
6 Carbon Atoms present
- **C8 OCTENE:**  
8 Carbon Atoms present

Comonomers are used during the production of different polyethylene [PE] grades. Comonomers are introduced into polyethylene reactors in order to reduce and control the density of PE grades being made; in other words, control the proportion between crystalline and amorphous phases. PE is a semi-crystalline material. Comonomer quantity directly reduces the density of PE being produced. The comonomers form branches on the main PE backbone chains, which lowers the crystallinity and thereby the density.

The proportion of crystalline versus amorphous phases has a big effect on the PE characteristics. High crystallinity grades [higher density] are stiff and brittle; whereas low crystallinity grades [lower density] are more flexible and less brittle / are tougher. Density of PE is a direct indicator of relative proportions of crystalline and amorphous regions. Roto grades in the density region of 0.935 – 0.945, represent reasonable balance between crystalline and amorphous phases. In other words, reasonable balance between stiffness and toughness.

Comments here are specific to the linear medium density [LMDPE] grades used for rotomoulding. These grades have commonly been termed as linear low-density polyethylene [LLDPE]. Further, densities below 0.937 have commonly been referred to as LLDPE and above to 0.945 are LMDPE or even as HDPE!

The main area of performance where we may see difference between different comonomer based rotomoldable PEs [primarily Butene and Hexene with same melt flow and density] is in the long-term properties. The normal [but not direct] measure used for this is ESCR – environmental stress crack resistance. ESCR provides only a rough differentiation between grades, by rating ESCR as “poor”, “good”, or “excellent”.

In semi-crystalline materials the areas between crystalline & amorphous are the weak points and are prone to environmental / chemical attack, causing stress. This can be improved by increasing molecular weight, which in turn can be achieved by using lower MFI grades, OR by using higher carbon content comonomers like hexene [C6] or octene [C8].

LLDPE grades with a melt index of 5 and above will have “poorer” ESCR, whatever the comonomer; this is because melt index has a greater effect on ESCR than anything else. LLDPE grades with lower melt index [between 2 – 3.5] will have “good” ESCR. This is also where you can observe the difference due to comonomer choice. Hexene grades tend to exhibit higher ESCR values than Butene grades. Further difference / improvement between Hexene and Octene is harder to see in the rotomoldable grades of PEs, in the LMDPE range. Besides ESCR there may be some improvements in other properties, including low temperature impact strength.

Bottom line: Differences between Butene versus Hexene comonomers based PEs are:

- Typical roto grades, 5 MI and above, you will not experience a lot of difference in performance.
- Typical Tank Grades, 3.5 MI and below, you may well see a difference in performance.
- The main difference in performance will relate to long-term performance factors.

So be informed and choose PE grades wisely for the application intended. Your resin suppliers can be the best source for further information on the grades they offer vis-a-vis the use intended application.

**Note:** Some information in this article is drawn from a blog recently written by Dr. Nick Henwood, ARM Technical Director, Rotomotive Ltd., UK

**RAVI MEHRA**  
StAR Founding Chairman  
[maramehra@aol.com](mailto:maramehra@aol.com)

## ENERGY SAVINGS OPPORTUNITIES IN ROTO INDUSTRY

Why is Energy-saving required? What are the Pros & Cons? How to plan your approach towards achieving maximum energy efficiency?

Energy is one of the most important resources in the Industry. Similar to metals, Plastic processing also demands large quanta of energy.

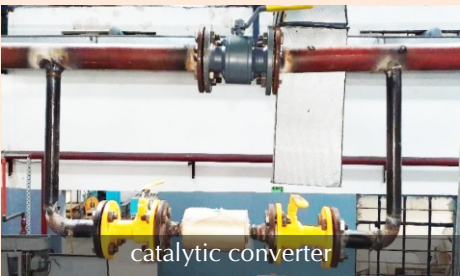
In the Rotational Moulding industry, Energy consumption is the heaviest cost-incurring division after raw material. As rotational moulding is a two-stage process, the total consumption is also almost double compared to other polymer processes. This consumption is in the form of both Fuel & Electricity.

An interesting point to note : USA + China + India combined consume 54% of the world's fossil fuel, and the global reserves are drying out at alarming rates.

This motivation is ample for industries to focus on conserving energy, and reduce their dependence on non-renewable sources.

India has taken a pledge to reduce its Fossil fuel consumption to 65% of its present value.

Industries, with an aim to keep themselves lean and ahead in the race, are trying to find multiple ways to conserve fuel or shift to better alternatives.



catalytic converter

**“ENERGY SAVED IS MONEY PRODUCED”**

A simple and lucrative advantage of saving fuel is the reduction in manufacturing and processing cost. Such measures also open opportunities to those areas which lack sufficient supply. As a nation completely dependent on foreign oil reserves to meet our local demands, reduction in fuel consumption also equates to increase in FOREX reserves.

It serves the national interest on multiple levels.

From our experience, Industries are usually oblivious to their energy consumption patterns.

This allows for lax operational behaviour and incurs completely avoidable costs.

Energy-saving solutions promote awareness and a sense of responsibility within the operations team to ensure efficiency and look after their expenses.

In the roto industry, opportunities begin from the Roto machine.

Not all energy saving solutions mean PF Control or Solar Panel Installations. Here we will be discussing innovative solutions other than unconventional energy sources

1. Crude-oil based fuels – Oven Burners - Diesel, LPG, PNG (common in Gujarat / North India) (5-12% savings)

By providing inline catalytic converter , which can utilize the unburnt energy which goes in the exhaust .

standard payback period is 10-12 months only. Due to higher fuel prices in Africa payback period will be in 8-10 months only.

2. Induction heating – for compounding machines, Barrel heaters(45% + savings).

To install induction heating system by replacing present generic heating system. It eliminates heat dissipation loss, heats faster , provides uniform temperature. Std pay back period - 15-18 months only.

3. Electricity – Main Motors of pulveriser & compounding machine (8-10% savings ) need to verify the present efficiency class of motor & replace it with higher which allows these large motors to perform more efficiently .

Std payback period is 14-18 months only . with good machine utilization.

As we have observed that in most of the places these motors are in operation, since long. After the high efficiency motors are in system for long they need to get replaced.

Using either one or a combination of the above options, we bet that you can reduce your energy consumption by up to at least 10-12%



Induction Heating System



3High performance motors



THE COVID-19 PANDEMIC HAS COME WITH A SILVER LINING.

We have time to think about our present and plan for our future. Aiming towards reducing operational costs will be beneficial for all of us in the long run.  
Stay Safe and Secure.

Jayant Saraf  
Mahajan Polymer Industries  
jbsaraf@gmail.com

THINK GLOBAL – ACT LOCAL. NEW MANTRA FOR SUCCESS

COVID-19 is changing everything about life and work, “AS WE KNOW IT”. Even before CORONA, economic downturn was visible for most of the businesses; COVID-19 accelerated it.  
For many, the toughest LEADERSHIP test is now looming:  
Whatever we may do, the industry is not likely to crank up that quickly.  
And once we crank up, we do not know if demand is going to come back that quickly either.

WE CANNOT BE DOING THE SAME THINGS IN THE SAME WAY AS WE DID BEFORE CORONA.

Here are the few thoughts for the Indian Rotomoulders to ponder upon to shape up our future.  
First lesson to learn from COVID-19 crisis is GLOBALIZATION as a trade philosophy is no longer sustainable. Every country is locked up and cross border economic activities, movement of people are curtailed.  
The changing geopolitical situation, with China’s position as the hub of manufacturing facing possible challenge , can provide impetus to Indian companies to grab the opportunity.

The future is – Growth shall be nationally driven – “THINK GLOBAL & ACT LOCAL”

THINK GLOBAL

Indian rotomolders are predominantly focused on WATER TANKS – Single layer, Multi-Layer, Colours etc., Now time has come to enlarge our vision beyond WATER TANKS.

First, we need to change our approach from Moulders to Solution Providers i.e., Rotomoulding as a manufacturing process is just a dot (element) in the TOTAL SOLUTION. From Short-term gains we move to Long-term Growth.

To make this change happen, we can work on converting to ideas suitable for India for now and for the world later. Made in India – Made for the World.

Next, we need to start market research to find out the roto products that are being imported into India to get a fair idea about the Indian Market and start thinking about developing indigenous alternate solutions.

ACT LOCAL

ACT LOCAL means harnessing the potential of all resources available – Within the nation, state, district and YOUR PLACE. Resources include Raw Materials, Machines, Technology, Men, Market.

➔ **Market development**  
The whole world sees India as a big market place and wants to do business in India. Then why not we, Indian Rotomoulders.

- Develop solutions and do concept selling to the target customers – Particularly in Engineering, Automotive, Warehousing, Mobility etc., where use of roto-products has great scope for improvement.
- Potential to convert from traditional ways to Roto Solutions –

With Government giving lot of thrust to build SMART CITIES, there is a big opportunity for rotomolders.

- **Developing niche markets.**  
Silos for storage of food grains – food grain is wasted due to rotting and rodents. We can develop solutions to this.

➔ **Product development**

- Develop the products / solutions thru’ innovation that add value to the customer.

➔ **Skill development**

Continuous upgrading skills is the key to competitiveness.

- Develop locally available human resources as operators / technicians This will also give insurance against migrant labour problems

➔ **Collaborate.**

- Develop partnerships and collaborative networks with others in the value chain and the people to conceptualize, design, develop and offer END-TO-END solutions based on the collective idea to make a big impact.

To conclude,  
Think Global, Act Local and Ride over the COVID-19 Storm.

R Ravi Kumar  
Roots Multiclean Ltd  
rk@rootsemail.com

Advertise in Rototalk  
for both National and Global roto industry exposure

Tarriif	
Size	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.



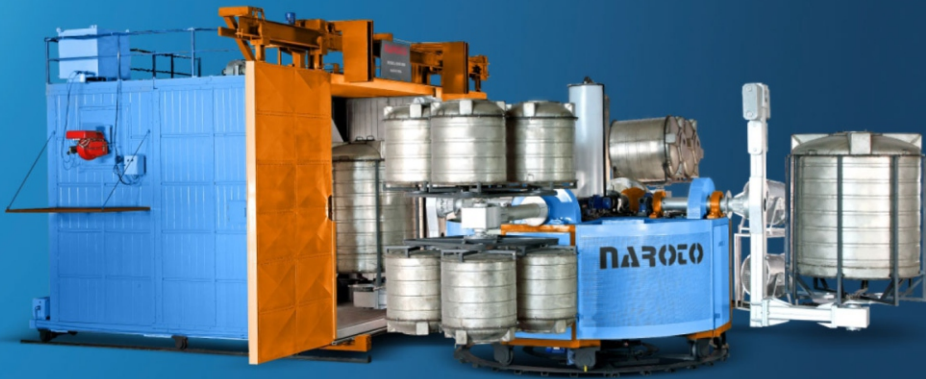
[www.naroto.com](http://www.naroto.com)

✉ [ria@naroto.com](mailto:ria@naroto.com)

WORKING  
**LOCALLY**  
SERVING  
**GLOBALLY**

MOULD IT LIKE  
A MAESTRO  
WITH NAROTO  
MACHINES

Naroto Machines possess the art of creating Masterpieces and making Plastic Industrialists, the Maestros of Moulding. We are known for innovation in Moulding Technology with **38** years of experience in providing Turnkey Solutions to Rotomoulding Industry. Over **1250+** satisfied clients in **86+** countries is our stronghold.



**ASIA'S NO. 1** ROTOMOULDING MACHINERY,  
MOULDS AND ANCILLARIES  
MANUFACTURER

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](mailto:sbzamanp@gmail.com)