



The RCCPPIA publishes a remarkable historical review of the first 30 years of the industry in China.

New Materials - New Opportunities

Here's a quick test. What's the first question a rotomolder asks when they hear about a new material?

- A. What opportunities does it open up?
- B. What performance boundary can we break?
- C. What new aesthetic appeal can we offer?
- D. How hot, how high, or how long can it go?
- E. How much does it cost?

The ideal answer, of course, is 'all of the above' but if it is more expensive than polyethylene some molders won't even take a second look. And if it requires special attention such as controlling temperatures in production, drying materials, multiple layers, foam structures, high surface gloss, or demanding tolerances for contamination

and aesthetics then, as they say in New York, you can 'fugetaboutit'.

Many molders live in a proverbial flat, under-cured, minimum-cost polyethylene world. Raising their vision beyond this to new horizons may be a greater challenge to material development than creating the new recipes themselves. Moving forward requires both the commitment of molders to improve their processes to handle new technology and the willingness of material companies to invest in new grades. Molders may even have to reconsider how and where they market and promote their capabilities.

Over the years, molders have been frustrated by promises of performance which never materialized and suppliers have often been equally frustrated by commitment which never



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materialized. The list of materials which have been evaluated over the years is long but the list of those in common use has remained stubbornly short. However, our understanding of what is needed to make a material work in rotomolding has improved dramatically with the advent of rheological studies and process control. A combination of material supplier expertise and an expanded approach by molders may help change the landscape of material choices.

So what do molders using other processes do? Look for applications for polyethylene? No, they find applications that customers need and then figure out which material will suit their needs and

adjust their process accordingly. Cost will always be a factor but not the key – if the application demands it and the end-user has a demand for it, the cost of the material is essentially immaterial. Of course, moldability of the material is a major factor – not all materials work under rotomolding conditions – but what is required technically? Low shear material properties in the mold are a key factor but they are not simple and need careful design. Maintaining physical properties after molding is also key: a nice looking part that is brittle under normal operating conditions will suit no-one; long-term properties may not be of immediate concern but for those making large tanks it could be crucial.

Material suppliers want to make the adoption of a new grade simple so single layer solutions are ideal. They also strive to ensure that molding cycles are reasonable. However, multiple layer parts offer new options in areas such as aesthetics (clear coating and visual depth), surface gloss, greater stiffness with foam structures, and chemical resistance and permeation. It is at this point that many developments are slowed or stop: the practical issues associated with multiple layers can present a hurdle that many molders are not capable of surmounting. There are solutions available but more work needs to be done to simplify this part of the process.

So as new materials such as biopolymers from Total Petrochemicals, PEEK, composites, flame retardant grades, conductive materials, and fuel tank grades to replace cross-link are becoming available, molders' options are opening up. As they do so, molders willing to expand their boundaries in terms of processing requirements needed to encourage this developmental work and turn them into viable projects. There are a few material suppliers currently committed to expanding the palletete for molders and I

am confident that there are some molders out there who are willing and capable to make them work but more are needed.

Here's to a new era of materials built on the ingenuity of suppliers and molders together.

China – The First 30 Years

The Rotomolding Committee of the China Plastics Processing Industry Association (RCCPPIA) has just published a remarkable historical review of the first 30 years of the industry in China. This 235 page glossy tome documents the development of molders and markets from humble beginnings around 1983 when both local and the first international machines were introduced. It lists the key events in terms of exposure to

international groups and conferences and the development of local technology including machines, process control, material, molds, and technology. The growth rate has been equally remarkable: by 2012 they estimate that there were 800 rotomolding operations with a further 100 suppliers across the country. Most are relatively small with few large scale operations but the industry is clearly developing strongly. Images of the products produced by many of the companies fill out a large section on ideas for rotomolding and they also include lists of the equipment makers, mold makers, and the largest molders. A fascinating review, it is an excellent reminder of how well rotomolding suits the entrepreneurial spirit in new markets. **R**

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