

June 2021

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The Newsletter of the Institute of Inventors and Innovators

III – A non-profit organization. A Home for inventors. Run by inventors. Supporting inventors.

III – South Africa - Business Award Winner – MEA Markets 2019

<https://www.mea-markets.com/q1-2020/> Page 10

Manufacturing Processes: A look at Injection Moulding



How you manufacture your invented product that you know is going to market will depend on what you have invented. That statement is obvious of course – but when you walk around the shops and see items

similar to what you want, maybe you are an inventor with a sound idea but no understanding of how to make it become real. Well, if it is a solid shape and can be made out of plastic, one way is using the process of injection-moulding. Read on.



We were very pleased at the last Eureka!MEET on 12th May to have the MD of Kariega-based (used to be Uitenhage) MCR Plastics, **Morgan Waterboer** address us on this very subject. It was obvious right from the start that Morgan is a professional and a specialist at what he does. He has around 20 years experience as a Plastics Technologist with considerable proficiency gained both locally and internationally, in developing and implementing effective quality control processes and structures in both the manufacturing and corporate environments. Besides this, his overall project management expertise and sound understanding of plastics manufacturing processes makes him and 'his' company the place to go to.



What made the presentation more interesting was that, for his talk and explanation of this method of manufacture, Morgan was able to use a South African invention called Spinning Lizzie (designed by Nick Neil-Boss and featured in the October 2020 issue of Eureka!NEWS) which his company produced.

The process of plastic injection moulding (see end of the article for an easy summary) requires an injection moulding machine, raw plastic material, and a machined mould. The raw plastic material (that comes in many colours) is first melted in the injection unit and is then injected into the mould—most often machined from steel or aluminium—where it cools and solidifies into the final plastic part. Sounds simple? Well I suppose it is like most of life when you reduce anything to a simple formula. Much can go wrong here and it takes refined skills, the right machinery and products as well as the expertise and



close management to get it right ... because it has to be right, especially when you could be making thousands (or more) of parts. Nobody needs the expense and wasted resources of producing large numbers of injection-moulded parts that are flawed!

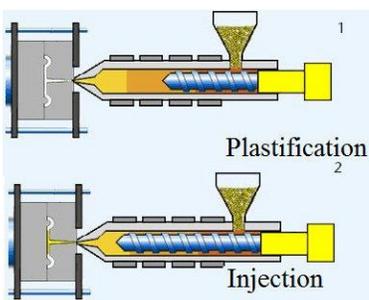
When producing parts, precision and cost-effectiveness are two of the most important considerations that most inventors are looking for. This is why it's not surprising that a process such as injection moulding has become so popular and has been used both for smaller runs, as well as large-scale production of parts with tight tolerances. For good reason too, with those large runs, 3D printing cannot compete currently on price or time.

The primary advantages of injection moulding is the ability to scale production to a customer's specific needs. Once the initial costs have been paid (the costs of producing a mould are punitive!) the price per unit during injection moulded manufacturing is extremely low. The price also tends to drop considerably as more parts are produced. Other advantages include a reduction of waste, the process is easily repeated, high volumes can be produced, different types of plastics and polymers can be used, labour costs are for the most part low and if all is right, little or no finishing is required.

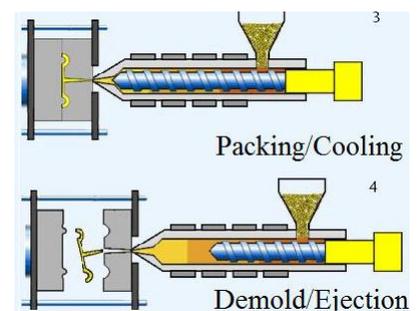
At MCR Plastics, first the client's injection moulding online quote is reviewed, and then they consult with the customer to ensure specifications, lead time and price fit the project needs. Then the 3D part data is used to CNC machine a high-quality injection mould. Once the mould is created (art and science rolled into one), MCR sends samples for approval. Production begins only once the mould has been refined and approved to the exacting standards needed.

Now that paragraph was easy to read wasn't it? The thing is, with MCR they use around a 40-step Production Timing Plan for each customer which has a forward project-planned and dated format. Every step from the initial consultation to the final quality check on parts produced is plotted on a fixed plan which takes into consideration high days and holidays so that the programme is seen in its entirety. The customer is involved at regular intervals and steps; and the checks and balances that are in place ensure the high standards MCR seems well-known for. At the Eureka!MEET Morgan answered questions about possible problems during the manufacturing process, and it became apparent yet again, that each product is different and treated individually with the close involvement of the customer.

The process in summary



1. The mould tool with the hollowed out shape of the part to be produced is the grey block shown on the left.
2. The mould is firmly clamped together, and under pressure plastic is fed from the hopper/funnel into the barrel and rotating screw.
3. The plastic granules are then made into molten plastic liquid, using heat, friction and force.
4. As the screw is rotated, the molten plastic is forced forward through a check valve towards the mould tool. By pushing the material towards the front, the screw is forced backwards and the process is repeated



Morgan gave an interesting and very useful talk on a subject that he obviously knows a lot about. The MCR company mission is 'Meeting the most demanding requirements of the Market and Creating Value, in a sustainable way for the Customer'. It seems that they practise what they preach. Spinning Lizzie inventor Nick Neil-Boss said "I shopped around and really looked hard for a company I could trust with my business – and when I found Morgan and MCR Plastics, it was a relief I can tell you."

P. S. You are invited by the MD to visit MCR Plastics and see the factory in action anytime. It's an open invitation, so if you are in the Eastern Cape area, call Morgan, make an appointment and tell him you were referred to him by The Institute of Inventors and Innovators. You will be made welcome.

Digital Manufacturing Industrializing Africa 2 and 3-5 November 2021

This is a call to arms for everyone in advanced digital manufacturing industries

- to accelerate Africa's inclusive economic growth
- to increase the competitiveness of its economies, and
- to improve the livelihoods of its people.

Rapdasa aims to bring together key decision-makers from African governments and leaders in the industry to connect with local industry and academia to grow the next generation of advanced manufacturing enterprises across the continent.

The **RAPDASA conference**, (co-located this year with the **RobMech** (Robotics and Mechatronics) and **PRASA**, (the Pattern Recognition Association of South Africa) **conferences** will take place over 3 days, **from 3rd to 5th November 2021**. BUT WAIT! There's more! The main conference will be preceded on the **2nd November 2021** by a self-contained preconference on **Metal Additive Manufacturing** with a focus on **titanium**.

For the first time, this event will bring together experts in the fields of additive manufacturing, electrical engineering, pattern recognition, robotics and mechatronics to present research and network thereby uniting and expanding the fraternities that have been built previously by the three conferences.

The CSIR International Convention Centre in Pretoria is the main venue and will host the event safely and comfortably in a hybrid format (physically and online). **READ MORE HERE:**

<https://site.rapdasa.org/annual-conference/>

June is YOUTH month in South Africa...

and a really good way to celebrate it is to **put Youth Inventors under the global spotlight in all sorts of exciting ways**. The III has the KIDS CLUB for one (first Wednesday of every month via Zoom) and then there is news below about the **INVENT FUTURE Global Challenge**.



INVENT FUTURE
GLOBAL

The **IF.G Food System Challenge**, coming up in July, is a great event and a wonderful opportunity for students to grow in their problem-solving skills and learn as they work with other students from around the world to address the United Nation Sustainable development Goal #2 - Zero Hunger.

Watch these two short videos then take action.

<https://www.dropbox.com/s/lekycgsiz3ava8l/Food%20Challenge%20Promo%20JEM.mp4?dl=0>

<https://www.dropbox.com/s/3g0zcy7i3amgg2g/Food%20Challenge%20Promo%20V6%20.mp4?dl=0>

In summary: **WHO?** Students from 15 Countries aged 9-18 years **WHAT?** Students collaborate with other worldwide student innovators to solve real food and nutrition problems. **COST?** Around R650 per entry. **WHEN?** 2 options of 5 x 90 minute sessions either this week July 19-23 or this one July 26-30 **AND THEN?** Each Student will receive a Certificate of Achievement, a letter of congratulations from a UN SDG representative and a global experience they will never forget!

REGISTRATION IS NOW OPEN

The registration for the Food Systems Challenge is now open and the spots for this amazing program are filling up. There is still room, but as time goes on, the available spaces will be fewer and fewer.

Students should **sign up soon**, contact Celeste on celeste@iii.org.za for more information.

INVENTIVE minds at work ...



Foldable tent <https://www.youtube.com/watch?v=J5FhgyQtYLQ> 58 secs

This is another one of those good examples of a 'sizzle' video that introduces and explains some smart inventive thinking which this time results in a very useful and versatile pop-up and foldable tent that looks smart enough to entertain in.



Social drinking fence You Tube <https://www.facebook.com/watch/?v=237962217573966>

'n boer maak 'n plan so they say! As all know, Covid is still very much with us and there is a lot of talk about the third wave that it cutting into communities again. We have to remain vigilant and safe and careful, this is not the time to relax the rules. Here is a social distancing socially friendly solution that may just suit a fence near you.



With **Adjustable Everyday Glasses**, you can set your own requirements for your eyesight ... and each eye has its own chance. They are useful for both close work and distance sight settings, and all at the turn of a dial which is designed as part of the adjustable frame. It seems that the continuously adjustable lenses in these

durable and lightweight glasses are perfect for any task. A perfect example of an acceptably-priced solution to a 'popular' problem ... just right for Inventors.

Advice for Inventors and Entrepreneurs?



Barbara Corcoran, Founder of The Corcoran Group based in New York had this advice to offer entrepreneurs. Could be that with a bit of tweaking, it is also good advice for Inventors.

"My mom was my mentor and taught me more about business than any fancy textbook ever could. Here are 5 things I learned from my mom that helped me build my business:

1. Everybody has a gift. Find that gift build on someone's strengths. I wasn't good in school, but my mom always reminded me that my imagination would take me wherever I wanted to go in life.
2. You can't do it alone. If you're part of a family, everybody's gotta pitch in. The same is true in business. If one person doesn't do their share, the whole team is at fault.
3. Surround yourself with good people. People either build you or drain you, there's nothing in between. I learned that a miserable friend, bad boss or co-worker steals your energy and takes you down. I surround myself with positive people because I want to be happy.
4. You need to have a system. If you're going to do something more than once, create a system. My mom ran our house like a boot camp and at the Corcoran group, everything has its place too. Good systems make you more money.
5. Use what you've got. Know what you have, and learn to use it to your advantage. It was my first big lesson in sales."

What's in a name? Take a Smile break and see what Mr Bean thinks!

There's so much in a name. An evocative and compelling name is the first step toward creating a brand around your product/invention, especially if it's catchy, descriptive, fun and establishes positive connections in customers' minds whenever they hear it. Before watching this bit of nonsense below, consider what you might call (or have called) your product. *This a serious subject for inventors which we can cover in depth another time.*



Anyway - Rowan Atkinson and Elton John discuss '**what's in a name**' in the You Tube video, link. <https://www.youtube.com/watch?v=N10HqIbX7dc> 5.46 mins

Pitch it to the Panel™

Do you have an invention idea or a product or something to innovate?

Come to the next **PITTP** session on

Saturday 17th July 2021

Here there is a confidential focused meeting of minds where you can speak to a panel of experts - all subject specialists - who can offer the kind advice and guidance that you need.

Click on the Services/PITTP page on the website www.iii.org.za read all about it, meet the panelists too – and note, because this meeting is run via Zoom, anyone from anywhere in the world is welcome to participate.

Secure your place soon.

For many years, I have been interested in disability and education and disturbed by the news reports on the difficulties confronting physically disabled learners in the classroom. I decided to design an easy-to-use and affordable solution for the postural problems of physically disabled students and workers. For the past four years our team has been developing our product. In hindsight, we didn't have clarity on our product which I realised was hindering our progress, but this all changed once we heard about III.

We presented at the **Pitch-it to the Panel in October 2020** where we had a positive experience with the Panel. They asked us challenging questions and gave us plenty of food for thought for our next steps with our invention. It felt great to have a community that understood and encouraged us. We were no longer people with a good idea, but inventors!

Since that meeting, we have gone through further validation processes with our target market and their inputs have been instrumental in improving our design. This process was often undertaken with a minimal budget, but we are motivated to continue.

We have entered a number of competitions, submitted an application for protecting our Intellectual Property, continue to seek funding for the manufacture of minimum stock and commercialisation, and other logistics plans, as well as participated in an international inventors' conference. Along the way we have connected with many other innovators and inventors.

This would not have been possible without the guidance and services from III. While we are still in the early stages of our invention, I feel that we have made more progress with III's support than alone. Thank you for the professional support, guidance, wisdom that you generously share with new and seasoned inventors. It is priceless and greatly appreciated!

Simangele Mabena - PhD candidate, Faculty of Education, University of British Columbia

THE INVENTORS CLUB

on the FIRST, SECOND AND THIRD Wednesdays of the month ... JOIN US in our zoom room!

Our next Eureka!MEET is on 14th July when 10 lucky inventors will get their personal IP questions answered by a Patent Attorney. Make sure you are there to get some smart and useful answers. 5h30-6h30 pm CAT [See the last page of this newsletter for connection details.](#)



Are You Using the Right Tool for the Right Job with Your Invention?

Ever try and use wire cutters to hammer a nail? Watch (about 10 minutes) as Don Skaggs of Empowered Inventing shows why trying to do the same thing with different parts of developing your product or business can be just as disastrous as using the wrong tool ... and how to avoid it. The idea is simple enough – but do we heed it?

<https://www.youtube.com/watch?v=WXXKD4IHPrU>

Aaron McGill invented the Yarykidz snap on Potty Trainer for independent kids.



He had this to say:

“Success is costly, and it's paid upfront ...

and that's why you have got to love whatsoever you want to do. Again, success is one of those things that you have to pay the price upfront. You can't get it without first paying for it. There will be many obstacles along the way, but the good news is that it's achievable if you are prepared and not afraid to fail. Failures and rejections are all part of the payment, but allowing yourself to make mistakes is an essential factor in success.”

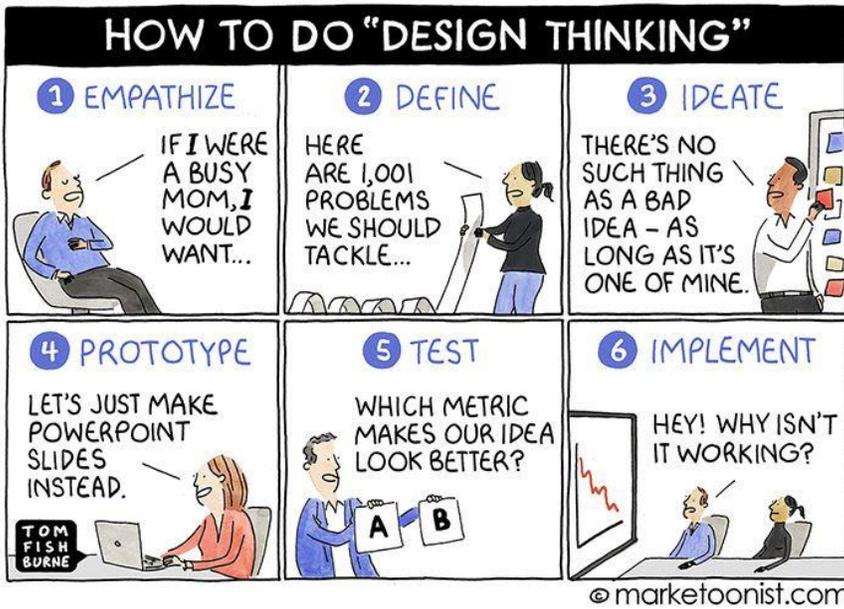


Are you still remotely interested?

Has being 'out of the office' helped or hindered your inventing actions? What have been the advantages of this workstyle for you? Disadvantages? Opinions are divided but not down the middle. Are you solving more problems or getting more problems to solve? Are you more distracted now with too much to do that gets in the way of your 'invention thinking' time, or do you have you too much time that is not being used as you would want? Complacency is the enemy. Maybe you feel like Sally Sheepdog – things are just not the same!



Design Thinking is an iterative process which helps us to understand and define 'the problem';



challenge our assumptions; redefine our thinking; identify alternative strategies and solutions; and solve challenges. Just what an inventor needs! It is a way of thinking and working as well as a collection of practical methods. It isn't the exclusive property of designers - all great innovators in, art, music, literature, science, engineering, and business have practised it, so it works, QED. Why call it Design Thinking? The thing is, it helps us extract, teach, learn and apply human-centred techniques systematically in order to solve problems in creative and innovative ways ... and in all aspects of our lives, not only when we are inventing. It sort of reminds one of going around in circles as reported in the last issue of Eureka!NEWS. Look it up why don't you? www.iii.org.za

Some of the world's leading companies like Apple and Google, have adopted Design Thinking as a management approach, and it is taught at leading universities around the world. We have even used the model at our III KIDS CLUB on Wednesday evenings.

Because it just makes sense, it is in great demand now, and even though it's not new (been around since at least the late 1970s) a lot of people are teaching and promoting it. The joke above by the marketoonist Tom Fishburne puts Design Thinking into perspective ... and simply gets a smile.

<p style="text-align: center;">UP-COMING EVENTS</p> <p style="text-align: center;">THE INVENTORS CLUB</p> <p style="text-align: center;">Wednesdays 17h30-18h30</p>	<p>Join Us!</p> <p>On the first three Wednesdays of the month via MeetUp and Zoom!</p>		
	<p>JUNE 2nd</p>	<p style="text-align: center;">KIDS CLUB</p> <p>Session 5 of Design Thinking Hosted by Petra Rees</p>	<p>Discussions today will be all about your invention and getting it to market ... its commercialisation.</p>
	<p>JUNE 9th</p>	<p style="text-align: center;">Eureka!MEET</p> <p>Hosted by Ill and Rina Gunter, Patent Attorney</p>	<p style="text-align: center;">Q&A ON IP PROTECTION</p> <p>10 lucky people will get personal advice from our expert! ALL YOU NEED TO KNOW FOR this invention and for this invention will not be revealed so it will be confidential for you. You'll need to give enough general detail for a decent answer.</p> <div style="background-color: red; color: white; padding: 5px; text-align: center;"> <p>Postponed to 14th July Load-shedding won.</p> </div>
	<p>JUNE 16th</p>	<p style="text-align: center;">CLUB NIGHT</p> <p>Hosted by Jose Ventura</p>	<p>A look at the Licensing option and Sharing Ideas via Prototypes to Pitching with sizzle videos ... such interesting stuff!</p> <p style="text-align: right;">JOIN IN!</p>
<p>Below is the standard link to ALL Club meetings.</p> <p>TO GET TO THE ZOOM ROOM, COPY THE LINK BELOW INTO YOUR BROWSER</p> <p><u>https://iii-org-za.zoom.us/j/93217339232?pwd=NvhQSmRFdkgrNkM5ME5zNTAzMnBMZz09</u></p>			

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➡ **As always, make what you read, see, or listen to anywhere is fit for your own purpose.**

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Share your ideas and suggestions with us – we'd love to hear from you.

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Don't cling on to a mistake because you took a long time making it Anonymous.