

Introduction

As part of Nampak Plastics drive to diversify and expand its product range the company is challenging product design students to come up with an innovative packaging product capable of entering the packaging market place.

The competition starts at the end of March. Submission in full to be completed by end of May with feedback on the designs by the end of July. There will be 3 short-listed designs and they will have the opportunity to present their design solutions in front of the Nampak's Board of Directors via Skype. It should be noted that this on-line competition is being ran in conjunction with 3-5 (depending on annual take up) British universities and the short list will be from all submissions of all types.

A £500 cash prize will be awarded to the individual that has come up with the best design and who has been able to identify a possible gap in the market and think outside the box.

For outstanding packaging solutions there is the potential for the product to be developed and brought to the market*. Furthermore, for students who show a real passion for the project as well as a strong work ethic throughout there is the potential to be offered summer work placements.

**You should note that any IP that is generated during this project will be owned by the sponsoring company (see page 4).*

The Company

<http://www.eu.nampak.com/>

Nampak Plastics Europe

With nine sites in the UK including one site in Northern Ireland, Nampak Plastics Europe are leaders in the manufacture of HDPE (High Density Polyethylene) bottles for the food and drink industry. Nampak's expertise in in-plant blow-moulding technology can also be applied to a wide range of other markets. These include but are not limited to; household goods, health & beauty, pharmaceuticals as well as the automotive industry.

Nampak Plastics Europe pledges extensive expertise with in-plant packaging supplies on Customers' premises as well as strategic support site operations. Nampak extends on this to work in partnership with its Customers to provide principal product design, brand development, laboratory testing, along with specialist technical expertise and advice.

History

Providing packaging solutions for industries worldwide is at the heart of Nampak's worldwide operations. The parent organisation of Nampak Plastics Europe is based in South Africa with operations throughout both Africa and Europe. Nampak Plastics Europe was formed in 1999 when two well-established UK blow-moulding companies, Plysu and BlowMocan, were merged by South African-owned organization Nampak.

Plysu was founded in 1945 initially to manufacture mackintoshes using high frequency welding to join the polymers (PVC) together. It was not until 1964 that they started blow-moulding rigid containers. Plysu was the first company to launch the 'poly-bottle' in the UK in 1982 – having seen the concept introduced into the American market a few years earlier. BlowMocan was founded in 1976 by ex-Plysu employees who saw a niche in the market. Nampak acquired BlowMocan in 1994 and Plysu in 1999, to form Nampak Plastics Europe.

Plastics packaging

Nampak Plastics Europe's primary focus is High Density Polyethylene (HDPE) single layer containers for the food and drink industry. These containers come in a range of practical shapes and sizes and are therefore perfect for a variety of applications. However, the majority of the containers produced by Nampak Plastics are bottles of varying shapes and sizes for milk and juice.

HDPE is the result of 'cracking', a process where intense heat is applied to petroleum to produce ethylene gas under controlled conditions. The gas molecules produced then link together to form long chains of polyethylene - a substance similar in appearance to liquid porridge. A constant stream of this material is then forced through holes to form strings, which in turn are cut to form polyethylene granules. The conditions of this process determine whether the polyethylene produced is High Density (HDPE) or Low Density (LDPE).

Currently approximately 4% of petroleum is used for plastic production.

HDPE bottles are manufactured using 'Extrusion Blow Moulding' (EBM) technology. EBM involves heating the plastic to a temperature of approximately 170°C before feeding it between two halves of a mould.

These two halves are then closed and compressed air is blown into the mould to form a bottle. The plastic bottle is then cooled, trimmed and quality tested before being released to the customer.

HDPE is an extremely versatile packaging material. Its strength and resistance to heat makes it a particularly appropriate product for the food and drink market. The ability to tint it in a variety of colours (or leave it translucent) makes it the solution to a range of branding requirements too.

Due to its complex polymer-based structure, HDPE can be blow-moulded into an extremely light weight density without any loss of durability. The functionality and durability of the milk bottle has enabled the delivery chain to avoid the need for secondary packaging – something less sturdy containers rely on.

HDPE packaging goes on to succeed further. It will not flavour its contents, the size parameters are suited to the bottle itself needing to fit into a fridge, and consumers can easily see the amount of contents remaining. It also satisfies the needs of the children who are the largest group of end users of milk. The handle makes it easy to pour and the addition of a cap makes it easily re-sealable.

More information on HDPE and its environmental credentials can be found at www.bottle2bottle.com.

Infini

Infini is part of Nampak Plastics' drive to reduce its own carbon footprint and also provides its customers with the opportunity to respond to environmental impact pressures while making a contribution to cost savings.

The new infini bottle has been specifically designed to be light weighted and its launch coincides with the increased focus on the carbon impact of grocery packaging in Courtauld Commitment 2. Nampak's total production of milk bottles - currently >2 billion per annum - will move to the new light weighted design over the next few years.

The key objective in designing the bottle was to reduce the weight of materials used in its production without affecting the bottle's integrity and its requirement to be 'fit for purpose'.

The Infini bottle design offers an average of 15% weight saving across the range with specific bottle sizes achieving weight reductions up to 25% (depending on size), whilst at the same time continuing to meet Nampak customers' current performance specifications. In February 2013 Nampak created a 32g, four-pint Infini bottle – representing 20% savings on the standard bottle and a world first.

The bottle has also achieved widespread industry recognition. Accolades have included the 2012 International Dairy Innovation Awards for Best Dairy Packaging Innovation, the Starpack Award of Excellence and a highly coveted World Star award.

For more info visit www.infinibottle.com

Task

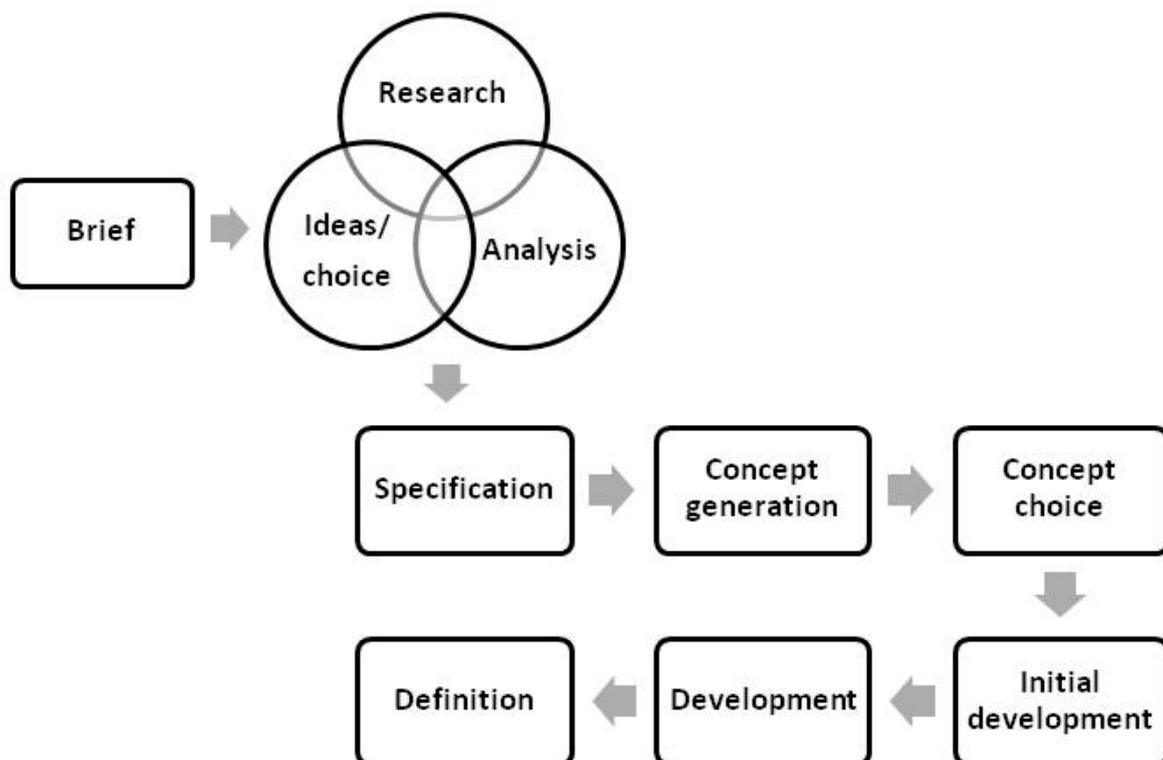
Nampak Plastics would like you identify a new packaging product that can be manufactured using Nampak Plastics' current extrusion blow-moulding technology . You will need to identify an innovative market and customer for the new product. Whilst Nampak currently focus on food packaging, your new packaging product does not need to be constrained to food packaging

You are asked to –

- Investigate the important parameters, benefits and limitations of 'Extrusion Blow Moulding' (EBM) technology.
- Undertake the ideation phase to identify new potential customers and target market and generate ideas.
- Choose a single idea and produce a PDS
- Generate concepts and make a final choice by evaluating against the design specification.
- Define and Present your design solution.

Design Process

This simplified model of the design process may be useful as a guide during the project.



Submission

1) A PDS

A well considered PDS that outlines the key parameters and requirements

2) An A4 design summary (1 page PDF) including

- Participant's name
- Image of the design
- The market that their product is intended for
- The product that it is to be used for

3) Three presentation boards

- a) The visual and functional aspects of the detailed design solution*
- b) The design for manufacture and assembly of the design solution*
- c) The key aspects of the design solution*

4) CAD

A PDF of the CAD model
A PDF of the CAD drawing

N.B. *The above should be submitted prior to the presentations.*

5) A power-point presentation to a panel of Nampak employees (Dragon's Den Style) via video conference call

A presentation 'selling' your design solution in terms of Market, customer, visual, function, manufacture and economics.