We are delighted to announce the PepsiCo Design Innovation competition for 2013. PepsiCo are currently supporting packaging and smart design applications within Product Design at NTU. The competition is open to all postgraduate and undergraduate design students within Product Design based in the School of Architecture, Design and Built Environment at Nottingham Trent University.

PepsiCo Europe is the leading food and beverage company in Europe. The company has a presence in 45 countries in Europe and has a broad range of offerings including Frito Lay Snacks, Pepsi-Cola beverages, Gatorade sports drinks, Tropicana juices and Quaker foods. Some of the most popular products in the region include Walkers Crisps, Quaker Oats, Paw Ridge, Pepsi, Diet Pepsi, Pepsi MAX, Pepsi RAW, 7UP, Copella, Doritos, Gatorade, Red Sky, V Water, Planet Lunch, Lays, Cheetos, Smiths, Duyvis, Snack-a-Jacks, Quaker Cruesli, Looza, Twistos, Solinki.

It is the aim of PepsiCo to delight their consumers with every product they buy and this is managed by their dedication to producing and delivering the safest, highest-quality and best-tasting beverages and foods in every part of the world.

Performance with purpose:
"use design to eliminate waste, ensure quality, value for money, delighting consumers."

Background
The profession of design has largely grown out of the industrial capacity for mass producing goods during the late 19th and 20th Centuries. Good design has been an integral part of the best products and services of this period. The skilled application of aesthetic judgement and an understanding of the potential of materials and manufacturing processes have helped to improve the quality of the man-made world for millions in the last century and a half.

In the 21st century, however, the association of design with material production has become more problematic; with a perceived over-abundance of goods, rampant growth of consumerism in the developed world, and the depletion of our natural resources through construction and manufacturing. There is an increasing awareness that our consumerism comes at a huge cost to the environment and that ‘less and better’ is a more sustainable approach. Moreover, that the purchasing power of the citizens in the world’s wealthiest countries is not matched by their greater happiness.

Students should take up the challenge of innovative, package processing design.
Brief
To enable PepsiCo to deliver the product in its best possible condition, students are invited to design an innovative system for detecting packs which ineffective seals or leaks before they reach the consumer.

Existing process description
Potato chips are commonly delivered to store in flexible pillow style packaging.

The packaging material is a laminate of a number of components. Standard polymount film is a combination of oriented polypropylene, polyethylene and a metallised layer.

The packaging offers the following benefits:
- containment;
- an oxygen barrier;
- UV light protection;
- the ability to apply print; and
- surfaces that will melt and seal under the application of heat.

The film is supplied on large reels and is fed into a Vertical form fill and seal system (VFFS) where the bag is produced. The VFFS machine first forms a tube of film with a heated back seal. The machine then creates a bottom crimp seal before filling product from the weigher. Following this a top seal is created before finally cutting the bag away from the film tube. All seals are made through the application of heated bars / jaws.
On the final cut the bag will fall by gravity to a takeaway belt which will then transfer the bag to a check weigher before feeding onwards to an automated case packer.

The schematic below gives an indication of the layout and the space available to install a solution to the leak detection challenge.

A leak would be defined as a poorly formed top, bottom or back seal greater than 1mm (note if a system is potentially more capable this would not be ruled out). The solution will need to be capable of detecting a leak from a bag being released at 90 to 180bpm with typical bag sizing shown below.

<table>
<thead>
<tr>
<th>Speed and Grammage</th>
<th>Bag Width</th>
<th>Bag height</th>
<th>Inflation</th>
</tr>
</thead>
<tbody>
<tr>
<td>180bpm, 25g</td>
<td>133mm</td>
<td>185mm</td>
<td>27-34mm</td>
</tr>
<tr>
<td>90bpm, 200g</td>
<td>160mm</td>
<td>225mm</td>
<td>35-50mm</td>
</tr>
</tbody>
</table>

For information the outfeed conveyor will move at 900mm/s and whilst contact is allowed to the pack if must not damage or affect pack spacing as this must be maintained as a requirement of the ‘check weigher’.

**Scope**
For the purpose of illustration, the following would be viable responses:
- Contact of non-contact system?
- Ergonomic design, simple easy to work, low cost, safe etc.

**Judging criteria**
Ingenuity – does it make a conceptual or lateral leap we haven’t seen before?
Insight – what need, gap or opportunity have you discovered and how?
How applicable is this to a manufacturing environment?
What considerations have been used in the solution?
Process and presentation
Entries can be made by individual students or student groups. A student group should have a maximum of 4 students and any prize money will have to be divided between the group.

You will submit 2 A3 presentation boards and a written summary not exceeding 500 words in which to describe your solution. In addition to presenting the finished solution, describe your process:
– what were your observations? Show how your analysis of these observations gave you insight into the design opportunity
– your insights might be research-based or intuitive, or a combination of both: relate the concept clearly to these insights
– make sure the judges know what specific issue or issues you have had to resolve in the process of designing your solution
– tell the story so that we understand the context for your solution and the benefits it delivers.

Key dates:

Final submission date for design work: Friday 1 March 2013

Short listing : Tuesday 5 March 2013

Final judging and award of prizes: Friday, 15 March 2013, Nottingham Conference Centre.

It is anticipated that a maximum of 10 finalists will be chosen to present their work to the judging panel at the Nottingham Conference Centre on the 15 of March 2013. An agenda will be circulated to successful finalists nearer to the event.

All work should be submitted to Tracey Jackson, room M245, Maudslay Building. Any work submitted after the published deadline will not be considered.

Two cash prizes will be awarded for first and second prize from a total cash prize fund of £800.00.

PepsiCo Europe will be once again sponsoring one student for entry to the MA or MSc Smart Design programmes for 2013 entry. This competition will also potentially identify suitable candidates to be considered for the bursary.

The judging panel will consist of:

Nottingham Trent University: Dr Philip Breedon & Jim Dale
PepsiCo Europe: Avtar Singh, Director of Productivity; Steve Brooks, Packaging Director; and James Fletcher, Productivity Manager, Europe technical services.

Please feel free to contact Dr Philip Breedon if you need further information.

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Please Note
Deadline for Submission of entries 1 March 2013

Sponsored by PepsiCo Europe, Beaumont Park, Leicester, UK