

PDD's Quantex pump wins packaging award

John Hockey is impressed by a cheap but reliable pump which may find a wide range of packaged liquid outlets

Say the phrase 'industrial design' to most people and they will conjure up images of an eye-catching consumer or industrial product. Usually the item is attractive to look at, with good ergonomics.

The more experienced may see beyond what is usually a pleasantly designed outer and understand that thought has also gone into the inner workings. The whole often has a 'designed' look, and results in the sort of product you hear hailed as 'a text book design and development exercise resulting in a good looking product' when the judges' citation is read out at the relevant awards ceremony.

What then, I wonder, would the average punter make of the Quantex pump, recently rewarded with a

'best innovation in packaging' prize at EasyFairs Packaging Innovations 2009 fair which took place in Birmingham?

The Quantex disposable pump was launched by PDD's subsidiary Quantex in December 2008. This environmentally-friendly, low-cost airtight pump can be used for dispensing packaged liquids such as foods and beverages, detergents and medicines.

How it works

The Quantex pump is a two-part plastic moulding with a central rotor and an outer housing.

The rotor has indents that pick up fluid from the input side and transport it round the housing to the output port. A flexible diaphragm on the housing pushes the fluid into the output, empty-

ing the indents.

Because the indents running against the housing form a fixed volume, and the emptying is very efficient, high accuracy is achieved.

This simple mechanism can run at a wide range of speeds to match the particular requirement. At very low speeds there is no



leakage of fluid, so accuracy is maintained down to very low flow rates.

The basic unit is a PP/PE assembly with an integral, 2K moulded SEBS elastomer providing the diaphragm.

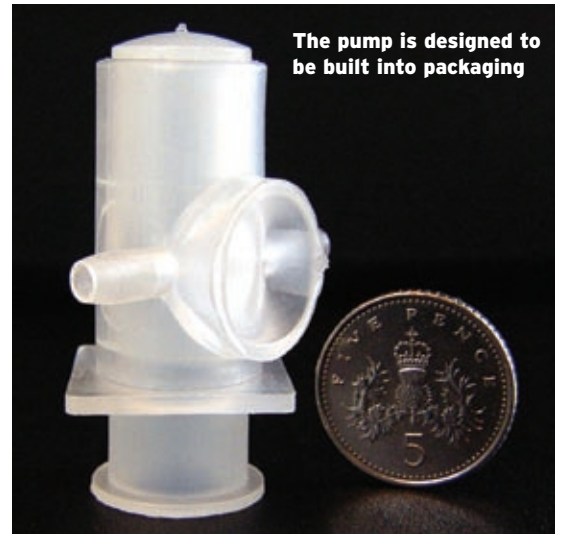
Built into packaging, the

Quantex pump is extremely accurate and reliable, even with very thick fluids. It works particularly well for airless and oxygen free dispensing.

The pump works at a wide range of delivery rates and pressures. When stopped, it blocks any fluid flow, preventing siphoning, spills and drips. The design is patented by Quantex, which offers manufacture under licence.

Paul Pankhurst, chairman and founder of London-based design consultants PDD, was able to outline the key reasons for the high level of interest the pump has generated. "The trend, particularly in soaps and detergents, is towards using concentrates. This means that the fluids being pumped are thick and sticky and therefore accurate dosing is essential."

He continued: "It may seem strange to have the pumping mechanism as a throwaway item, but in reality we are only talking about



The pump is designed to be built into packaging

discarding the equivalent of a screw cap."

The challenge, one which people were sceptical about being able to be met, was to produce a leak free unit that was cost effective and accurate.

"Few thought it could be done – after all, you are talking about a near interference fit between the rotor and housing which has to operate at speed," said Pankhurst.

The clever part of the design was to realize that as a disposable item, the pump would only have to pump, say, one litre during its life and, consequently, potentially project-breaking issues of longevity could be downgraded from 'must' to 'want'.

One might expect such a device to be manufactured abroad but this is not intended to be the case. The

projects presently underway with major global brands all have development tooling made in the UK.

Even pump manufacture is not seen as certain to go overseas as the simple design lends itself to fully automatic production. Volumes from 5 to 40 million parts per annum are expected, neutralising the global difference in labour costs.

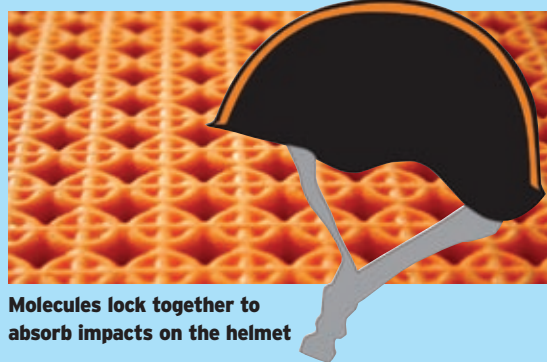
This development is an example of true industrial design, producing value for money solutions that address the key requirements without superfluous aesthetics. What we have here is a simple, incredibly effective pump produced at a fraction of the cost of competing technologies. Real thought has been utilised in the design, let us hope that real rewards accrue to the inventors.

Shock absorbing d3o is a soldier's best friend

As a soldier, it is very tough on the front line. Who would have thought that material science and technology could help to alleviate the worst possible scenario – a bullet hitting your army helmet?

As part of the MoD's new Defence Technology Plan launched last month by Quentin Davis, minister for defence equipment and support, Brighton-based d3o Lab have been awarded a funding contract of £96,000 to develop the use of their shock absorbing material in military helmet liners.

D3o is a shock absorbing material with unique qualities as a result of the 'intelligent molecules' it is composed of. At slow speeds the molecules flow freely past each other allowing the material to be soft and flexible, however when forced to move quickly – like in an impact – the molecules lock together to



Molecules lock together to absorb impacts on the helmet

spread and absorb the force of the impact.

The utilisation of d3o in helmet liners intends to reduce the damage caused by ballistic impacts, Improvised Explosive Devices, and other impacts by significantly diminishing the amount of energy transferred through the helmet to the head of the wearer. Whilst not stopping the penetration of a bullet alone, the deployment of d3o in a composite solution will significantly reduce injuries in this area.

Lt Col RM Paul Kearney, present at the launch event

in Whitehall last month, had high hopes for the material's use in the military field: "Your body gets a real hammering on operations in Afghanistan, this could be a real benefit to our soldiers in the future."

While initially focusing on helmet liners, the unique properties of d3o make it relevant for numerous military applications for potential future developments, and d3o Lab is also hoping to secure a further development contract to look at integrated protection into clothing.

Helter-skelter gives workers big thrill

The credit crunch has made us all think that the economy is in a downward spiral.

But Toby Hyam, designer of the new Electric Works office development in Sheffield, begs to differ and has offered office employees something different to lift their spirits.

The modern building design includes a polycarbonate and stainless steel helter-skelter to enable staff to slide from the third floor to the ground in under ten seconds. The tube is some 87 ft long and has a vertical drop of 40 ft.

The company making the slide, which has also supplied the Tate Gallery, is German fabricator Wiegand, which has been thinking up more and more

weird and wonderful ways to get from A to B inside a tube for over 25 years.

Office complex designer Hyam said: "We know that it will be a novelty at first, and we don't know whether it will wear off, but if you are having a meeting with a client and people are whizzing past, it will be memorable."

Blackpool Pleasure Beach eat your heart out!

Medical design showcased at PDM 09

The Design in Detail conference sessions at PDM 09 offer visitors case studies of great plastic products, presenting projects from concept to manufacture, taking in all the design and development challenges that were met along the way. The three Design in Detail conference sessions are on medical devices, plastics packaging and consumer products.



Allen Green, managing director of AK Industries, will discuss his company's vital role in medical products including the Rapid-3D allergen tester for Tepnel BioSystems. The brief for AKI was to take a fresh look at Tepnel's hand-held "dip and test"

testing kits for food allergens such as almond, casein, gluten, hazelnut, peanut and shellfish.

The simple but effective design makes great use of a "living hinge" and clips that moulding in polypropylene can provide.

The presentation at PDM 09 takes place on 20 May. For more information visit www.pdmevent.com.