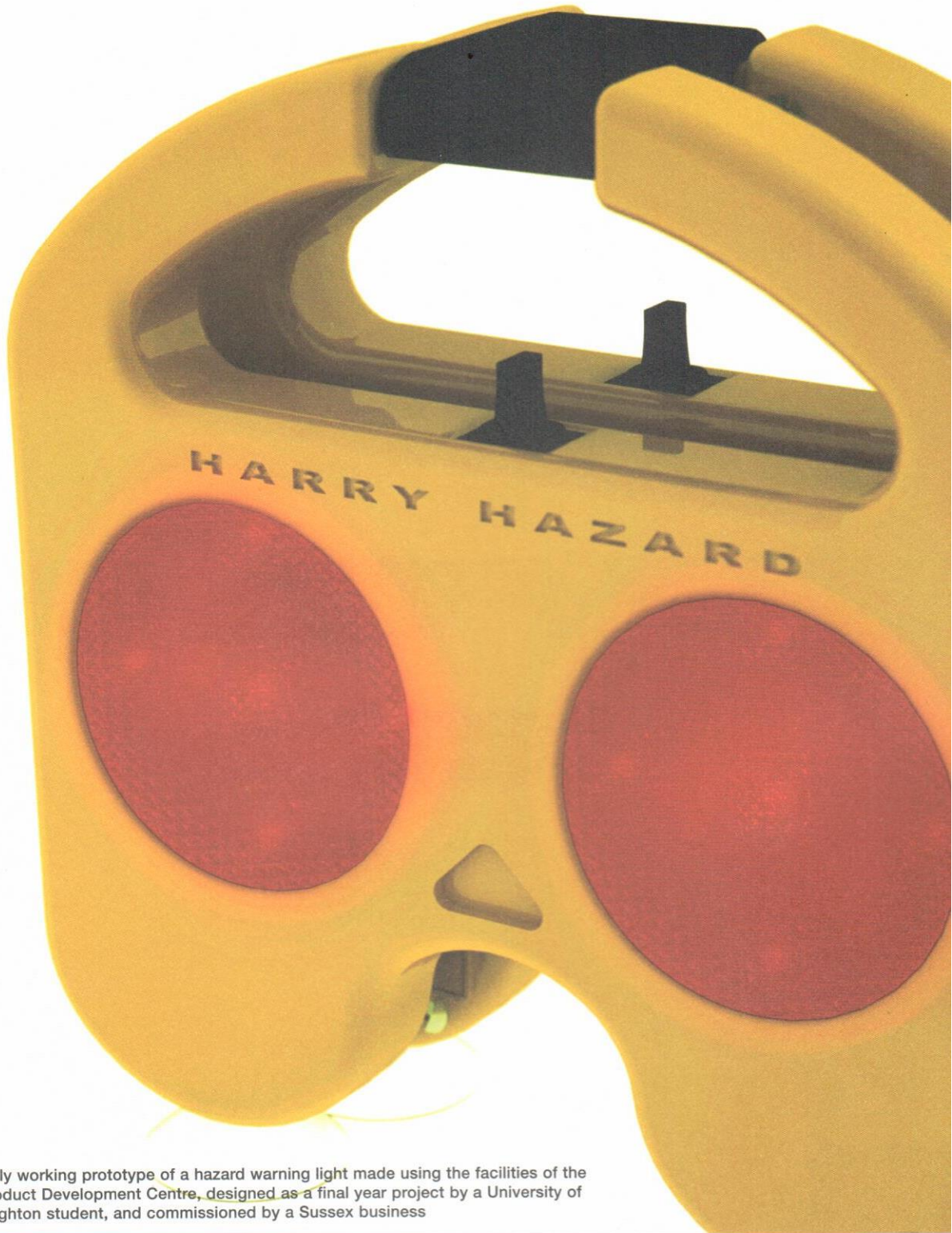


# Product Development Centre, Hastings



Fully working prototype of a hazard warning light made using the facilities of the Product Development Centre, designed as a final year project by a University of Brighton student, and commissioned by a Sussex business



## Sustaining economic prosperity in the south-east

As large amounts of high volume, low added value manufacturing are relocated from the UK to low cost economies around the world, it is important that we can create new, high value-added markets in order to sustain our economic prosperity into the future.

In the south-east we cannot hope to compete on the same terms as countries whose cost base is less than a hundredth of ours. However one of the ways we can gain global competitive advantage is by nurturing our thriving design and innovation industries. Typically these are characterised by successful companies manufacturing in relatively low volumes and with high rates of new product development.

The Product Development Centre (PDC) provides information and resources to entrepreneurs and organisations working in such industries, enabling them to exploit their ideas more effectively and bring them to market more rapidly.

As well as promoting the application of new concepts and technologies in the workplace, the PDC also targets schools and further education establishments, encouraging young people to seek careers in engineering and manufacturing sectors.

## Product Development Centre, Hastings

The Product Development Centre is a specialist facility which provides expertise and practical help in product design and development. Based at the Innovation Centre in St Leonards, the Product Development Centre is unique to the Hastings area, and enables local businesses to tap into the wealth of engineering and technology expertise from the University of Brighton and its partner universities.

Our services include creativity and innovation techniques for new product development, computer-generated 3D modelling, circuit design and prototyping, analysis of 3D solid models, rapid prototyping, scanning and reverse engineering. We also offer a wide range of training in these areas.

### Contact us

For an informal discussion about how we may be able to help, please contact us.

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Local manufacturer Drallim Industries had designed a new fast hook for a helicopter and brought the design to the Product Development Centre as a CAD file. Staff were able to rapid prototype the whole casing and hook assembly, within two days, enabling Drallim to produce a working prototype.



**Gary Wilson, Drallim Industries Ltd**

We have used the prototyping facilities at the Product Development Centre which provided invaluable help to test our designs. This ultimately led to reducing the project's lead time, risks and costs.



## Our services in detail

### Creativity and innovation

The Product Development Centre offers expertise in generating creative and innovative solutions for business. We are able to draw upon resources from the University of Brighton, which has recognised Centres of Excellence in creativity, design and management, and also the Centre for Research in Innovation Management.

We assist companies and individuals with new product development by combining academic research and experience, with fresh ideas from our graduates and students – all underpinned by a foundation of sound engineering principles.

We work with you to explore your requirements and then use various idea generation techniques to produce potential solutions, which can be evaluated and developed in further detail.

This process is well-structured and recorded without inhibiting the thought process, and removes the possibility of time wasted by looking at areas that lie outside the specified remit.

These sessions can be carried out at the Product Development Centre or at the company premises; there is also a full Creativity Suite at Brighton which has been designed specifically for this purpose.

### Computer modelling

#### 3D modelling

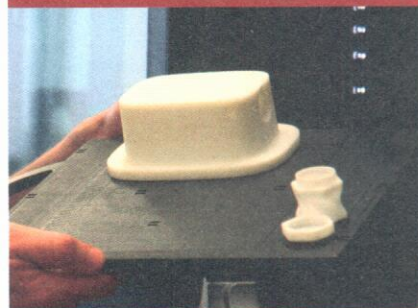
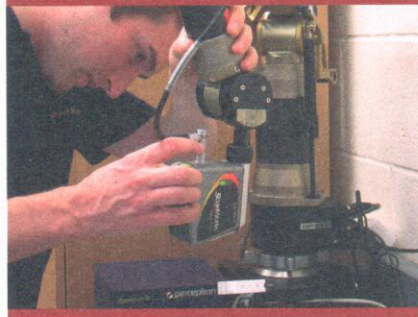
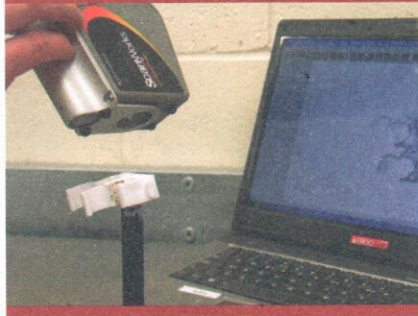
3D computer models can be developed on screen from scratch, imported from other sources eg drawing or CAD software packages, or reverse engineered from an existing product or physical model, using the 3D laser scanner.

The computer model can be sent over the network to the rapid prototype machine, a Dimension SST1200, which can produce the item in ABS plastic. The finished item can then be used to assess aesthetics, fit and function. This process can greatly reduce the time taken to develop products.

The Product Development Centre has various software packages available as educational licences for teaching, and a full commercial licence for SolidWorks. We also have a state-of-the-art 3D laser scanner on a 2.4m arm which enables reverse engineering to be carried out on products of all shapes and sizes.

#### Circuit design and prototyping

The Product Development Centre has circuit simulation software which is used to design and test circuit and component performance prior to manufacture. Facilities are available to manufacture prototype printed circuit boards in order to electrically test circuit design and performance.





## Analysis

Computer-generated 3D solid models can be used to analyse a design prior to prototyping; methods include:

- Animation/kinematics – the model can be subjected to movement; for example rotating shafts and gears can be simulated.
- Finite Element Analysis (FEA) – the computer model can be subjected to FEA to establish its performance under mechanical/thermal loadings etc.
- Computational Fluid Dynamics (CFD) – simulates fluid flow through and/or around the model. This can be the air flow over a shape to determine the resistance to the flow and the drag coefficient; alternatively it can be the flow into a vessel and the mixing that takes place; such as fuel injection into the cylinder of an internal combustion engine.

The Product Development Centre's facilities and equipment are enhanced by the vast engineering experience of the university staff.

## Education and continuing professional development (CPD)

The Product Development Centre facilities include a 15-seat computer suite which provides quality training facilities for all levels of education and continuing professional development (CPD). The University of Brighton and Hastings College can deliver both higher education and further education across a full range of subject areas including engineering, design, creativity and innovation and management. A full range of CPD courses are offered at the centre and are supplemented by those offered across the region including University Centre Hastings.

### Working with schools

The Product Development Centre staff work with STEM Sussex to provide science, technology and engineering activities within schools. This can take the form of 3D modelling training (3D CADventure), Robot Wars (Antweight Challenge), or the Bradford Business Game for example. A programme of events is offered across the region at all age and ability levels, and the activities can be carried out in the school or at the Product Development Centre.



### Stewart Plastics Ltd

Stewart Plastics has been a leading manufacturer of domestic and commercial catering food storage and preparation products since 1946.

The brief for the University of Brighton design group was to develop concepts for new products, which would not need extensive retooling.

The team came up with 11 new designs for Stewart Plastics to work with.



### Lee Mowle, Managing Director

We were looking to work with a young dynamic team with fresh ideas and open minds to develop a totally new range of food storage products – to literally think outside the box. We were so impressed with the work done by the designers on our original brief, that we are now working closely with the university's design team on a whole range of ideas across, not only our food storage and preparation offering, but our gardening and packaging ranges as well.





## Facilities and resources

We have the following resources at the centre, all of which are available to companies and individuals.


### Design

Product design and engineering staff based at the centre to assist and advise.

### Computer modelling


Sophisticated range of 3D modelling software including Pro-Engineer, Rhinoceros and SolidWorks.

### Prototyping



Dimension SST1200 fuse deposition modelling machine which is used for rapid prototyping. It manufactures parts from ABS plastic, with a layer thickness of 0.25mm. Parts are limited to a base size of 250 by 250 by 300mm high.

### 3D laser scanning (reverse engineering)



3D laser scanner on a 2.4m infinite arm. This enables 3D objects to be scanned to create a 3D computer model.

### Vacuum casting

Plastic mimicking resins are used to manufacture small batches of products from a silicon mould using a pattern.

### Training

Fifteen-seat computer suite used for a range of seminars and also available to companies wishing to run sessions for their own staff.

## Bringing the pieces together

The Product Development Centre brings together a range of services and facilities that are available across the Hastings Region. These lie in two distinct areas.

### Product development

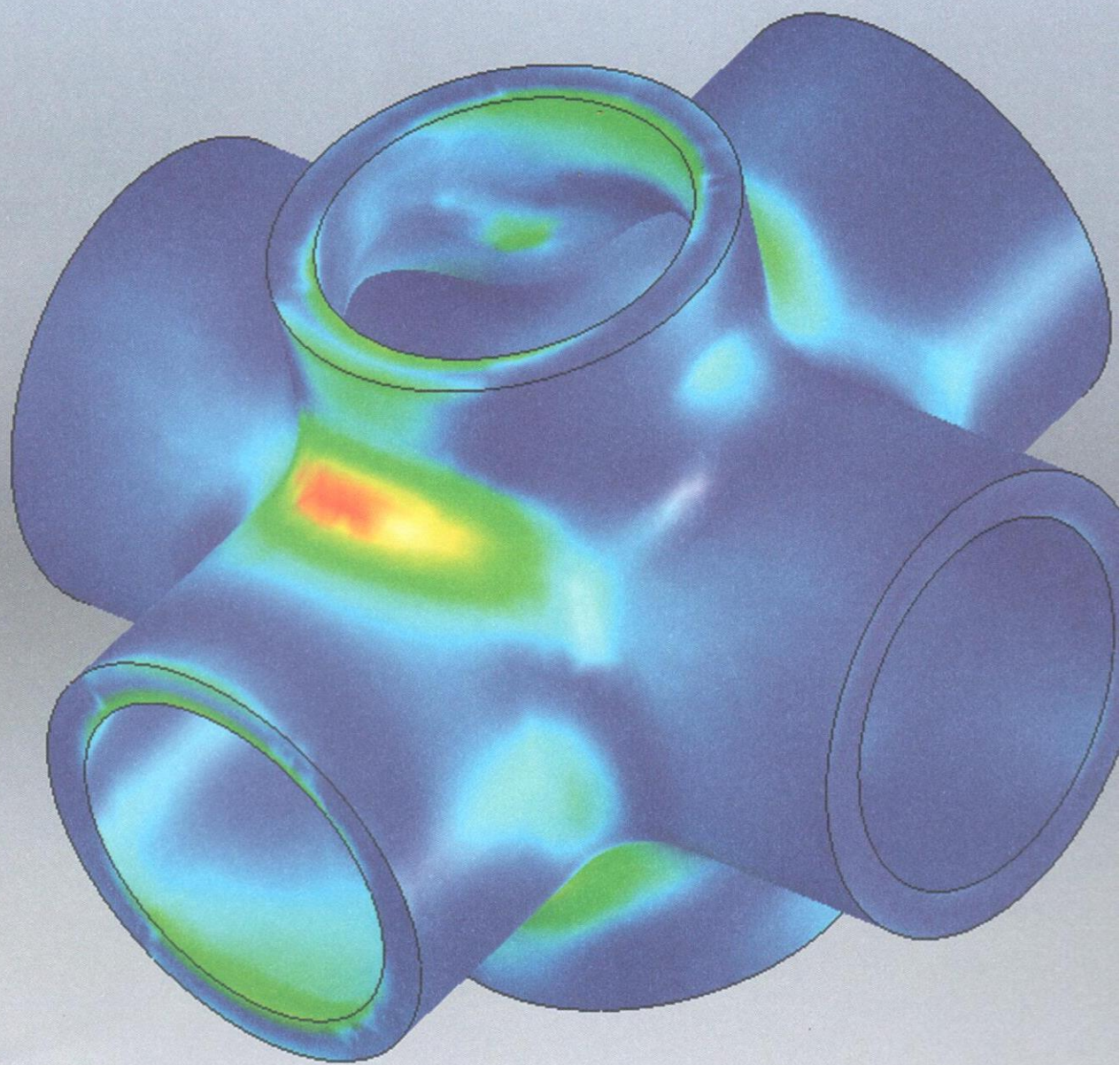
The Product Development Centre brings the combined experience and facilities of the University of Brighton and the South East Knowledge Exchange for Product Development (University of Brighton, Buckinghamshire New University, University of Portsmouth), as well as our partners at Hastings College, MAS, East Sussex Enterprise HUB, SEEDA and Sea Space.

The result is a focus for industry and individuals, a 'one-stop shop' that can advise, assist or direct you to other appropriate organisations.

### Business support

The Product Development Centre also provides business support to companies and individuals by working with our partners and focusing on the local business needs to try to find the best solution for the business requirements.





A visualisation of the stress distribution results from Finite Element Analysis using 3D modelling techniques

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