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3D printing for Medical Product Development: The Advantages of Additive Manufacturing to Reduce Cost of Design and Development in the Medical Industry: Paxman Case Study

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Title:

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## **Paxman Scalp Cooling Exhibition**

Event:

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### **Medtec Europe 2016**

12-14 April 2016,

Messe Stuttgart, Germany

By:

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**Dr Ertu Unver:** *Principal Enterprise Fellow, Product Design course leader, University of Huddersfield*

**Prof Mike Kagioglou:** *Dean of Art, Design and Architecture, University of Huddersfield*

**Christian Sorbie:** *Design and Development Associate at Paxman Coolers / University of Huddersfield*

**Richard Paxman:** *Paxman Director, University of Huddersfield*

## Exhibition Narrative:

Paxman engaged the expertise of researchers at two of the University of Huddersfield's academic schools. Paxman initially started working with the School of Applied Sciences, using its cutting-edge cell biology techniques to help identify the mechanisms that govern patients' variable responses to scalp cooling. Following additional funding from (TSB) and (KTP), at the University of Huddersfield, the School of Art, Design and Architecture, a research team established and working with Paxman since 2012 to investigate the design and development of more efficient scalp cooling cap.

After the successfully design, test, prototype, and manufacturing, the team exhibited the CAP in a number of locations. [1], [2],[3],[4]. In this exhibition narrative the team discusses exhibition on stand in Hall 3, 3G50, (on Primasil stand (Paxman's cap manufacturer Germany) showcasing the work and research.

Paxman recently began their second KTP, funded by both the government and Paxman coolers, the KTP is investigating the design and development of Paxman's products and conducting research into additive manufacturing in the design and development process, more specifically within the medical industry.



MedTec Presentation



Paxmans Scalp Cooling Cap

## Healthcare Trade Shows/Exhibitions:

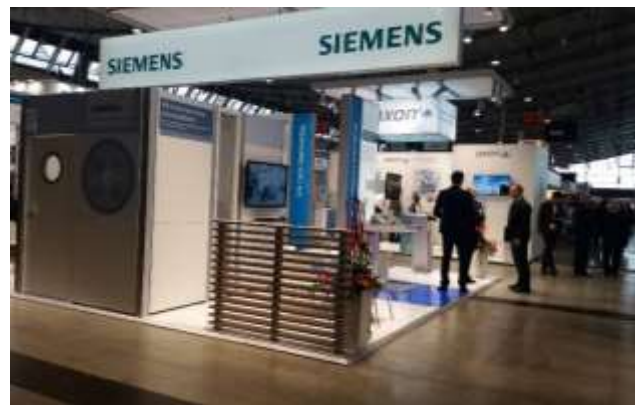
Healthcare trade shows provide tremendous opportunities to connect with professionals from different sectors of the industry, to learn about new technologies, tools, and methods being used by practitioners, and to market and exhibit new medical products and devices. The healthcare industry is one of the world's largest and fastest-growing industries encompassing a wide range of disciplines in a wide range of settings. Every year, hundreds of trade shows, conventions, exhibitions are held worldwide, gathering hundreds to even thousands of healthcare companies exhibiting and thousands of visitors.

The following list contains major medical exhibitions and fairs: Compamed/Medica from Germany, Dusseldorf; CMEF of China; MD & M West and East – USA; FIME – USA, Miami; MedTec (Europe, Ireland, France, China, Japan); Arab Health of UAE, Dubai.

## MedTec Europe:

MedTec Europe 2016 was held at the Messe halls in Stuttgart in Baden-Wurttemberg. The show see over 6200 attendees visiting over 650 exhibitors. The exhibitors are split into 3 halls, being placed in their relevant industries and areas of expertise.

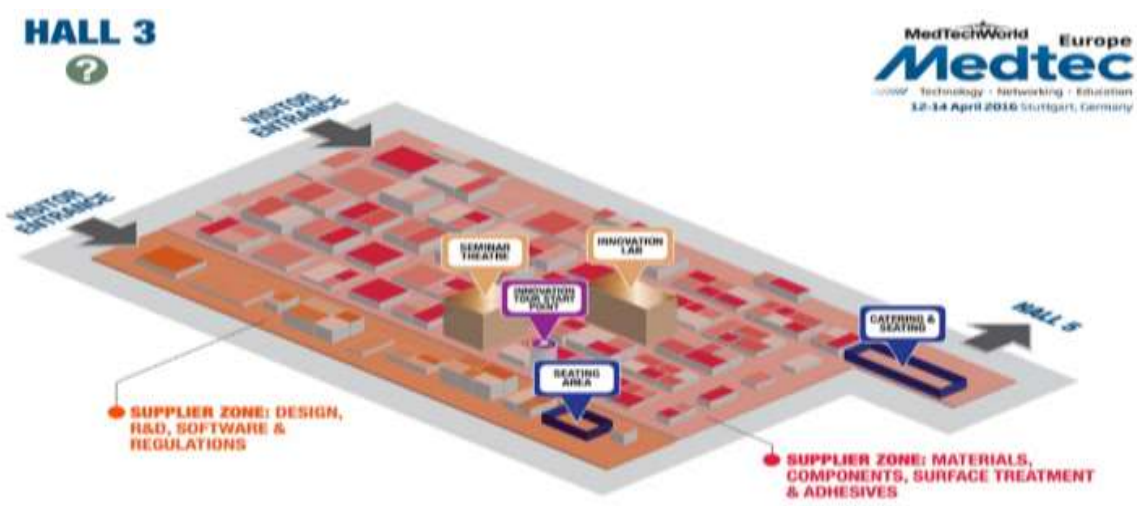
The MedTec visitors were given the opportunity to visit a selection of educational presentations as well as workshops and pre- planned meetings in a select meeting area. They were also offered a number of innovation tours and labs, focusing on computerisation and personalisation of medical care.



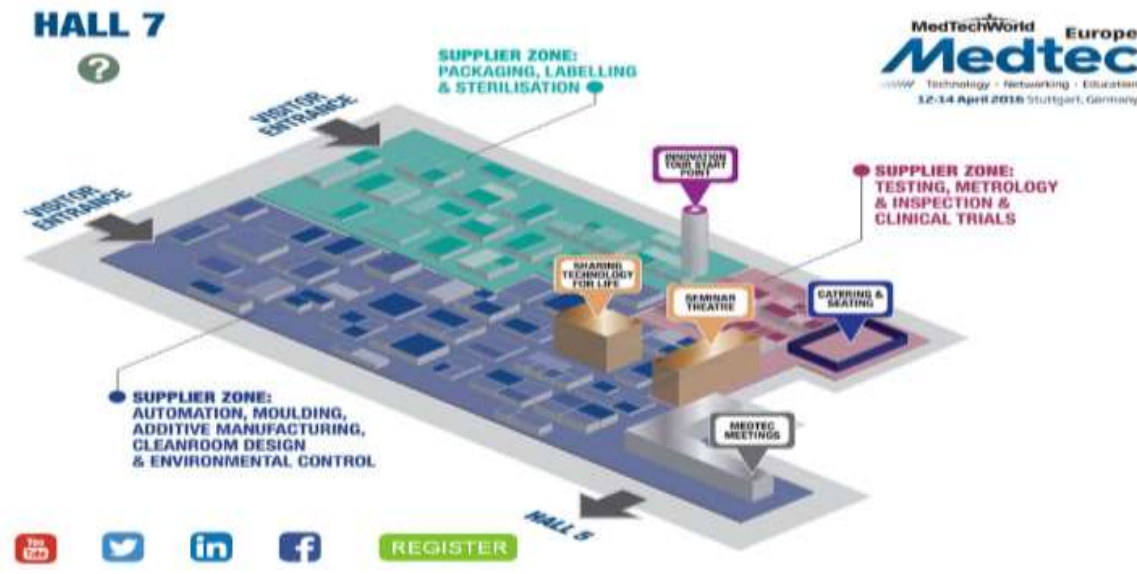
MedTec Exhibitions

During the conference, the innovation lab saw areas such as Additive manufacturing, Orthopaedics and innovations in cardiovascular being discussed, throughout the 3 days, 5 different stands had over 75 speakers discuss either their academic research or their companies or personal expertise, giving the attendees the chance to either learn more about the areas they do business in, or give networking opportunities to

businesses. The Images below show the floor plan of the 3 halls from the 2016 MedTec Europe show.



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## Presentation:

On Thursday 14<sup>th</sup> April the KTP associate presented and chaired in the area of 'Additive Manufacturing' with the presentation title 'Reducing the cost of design and development using additive manufacturing'. The presentation was 45 minutes long, including questions and answers/.



## Conclusion:

After successfully showcasing the cooling cap at numerous events and conferences, the cap and the parties involved winning several awards, it clearly shows the effectiveness and benefit for SME's to work with Universities and other academic institutions.

The benefit for the universities to use KTP's and other research fellows is that it can produce research outputs, journal papers and awards.

For the students and researchers involved, it is vital to work on projects such as this as it gives them real experience working and producing a product that will be going to market, giving them the experience needed to progress.

## **Acknowledgment and the Research team:**

### **University of Huddersfield team:**

Dr Ertu Unver: PhD, MSc, BSc, PgCert, Principal Enterprise Fellow  
Dr David Swann: PhD(RCA), Mdes(RCA), Reader in Design  
Chris Sorbie: BSc, KTP Design and Development Associate

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### **Paxman team:**

Richard Paxman: Managing Director  
Patrick Burke: Technical Manager

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Huddersfield, West Yorkshire, HD8 0LE <http://paxmanscalpcooling.com/>

### **Primasil team:**

Caroline Herdman: Medical Division Manager  
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Kingdom, Desk: +44 1544 312660 mobile: +44 7917 043475 fax: +44 1544 312669,  
<http://www.primasil.com>

## **References**

- [1] Unver, Ertu (2016) *Exhibition of Design, Development and Manufacturing of Scalp Cooling Cap*. ARAB HEALTH 2016 Dubai International Convention & Exhibition Centre 25-28 January 2016
- [2] Unver, Ertu, Paxman, Glenn Alan and Paxman, Neil Eric (2016) *Heat exchanger cap : Granted Patent GB2528512 ID No: 1416757.1. 1416757.1*
- [3] Unver, Ertu (2015) *Exhibition Narrative "Design, Development and Manufacturing of Scalp Cooling Cap" at 2015 Medica/Compamed Exhibition, Dusseldorf – Germany.*
- [4] Unver, Ertu, Swann, David and Paxman, Richard (2015) *Exhibition Narrative: Scalp Cooling Cap 2015 MedTech Exhibition, Ireland.*
- [5] Unver, Ertu, Taylor, Andrew and Ball, Andrew (2016) *Comparative Analysis of Mobile 3D Scanning Technologies for Design, Manufacture of Interior and Exterior Tensile Material Structures and Canvasman Ltd. Case Study*. Technical Report. CANVASMAN, Otley, West Yorkshire,

[6] Strategies for the transition to CAD based 3D design education, E Unver, Computer-Aided Design and Applications 3 (1-4), 323-330

**Relevant web sites:**

Paxman Coolers : [www.paxmanscalpcooling.com](http://www.paxmanscalpcooling.com)  
Primasil Silicones : <http://www.primasil.com>  
University of Huddersfield : <https://www.hud.ac.uk/schools/artdesignandarchitecture/>  
COMPAMED : <http://www.compamed-tradefair.com/>  
CMEF : <https://www.cmef.com.cn/g1225.aspx>  
MD & M West : <http://mdmwest.mddionline.com/>  
MD & M East : <http://mdmeast.mddionline.com/>  
FIME : <http://www.fimeshow.com/>  
MedTec : <http://www.medteceurope.com/>  
The Belgravia Project : <http://www.belgraviacentre.com/>