

2015 MedTech Exhibition, Ireland

Exhibition Narrative: Scalp Cooling Cap

Dr Ertu Unver, Dr David Swann and Richard Paxman

6-7 October 2015,
Radisson Blu Hotel, Galway, Ireland.

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, Design and Development Associate
Wasim Khan : BA Product Design Placement Student

University of Huddersfield,
School of Art, Design and Architecture,
Queensgate, Huddersfield, West Yorkshire HD1 3DH
www.hud.ac.uk

Primasil team:

Caroline Herdman : Medical Division Manager
Clive Denley : R & D Manager

Primasil Silicones Limited
Kington Road, Weobley, Herefordshire, HR4 8QU, United Kingdom
desk: +44 1544 312660 mobile: +44 7917 043475 fax: +44 1544 312669
<http://www.primasil.com>

Paxman team:

Richard Paxman : Managing Director
Patrick Burke : Technical Manager

Paxman Coolers Ltd
International House
Penistone Road, Fenay Bridge
Huddersfield, West Yorkshire, HD8 0LE
<http://paxmanscalpcooling.com/>

Exhibition Narrative:

University of Huddersfield, Paxman Coolers Limited and Primasil Limited showcased the output of a collaborative project that resulted in an innovative scalp-cooling cap at the 2015 MedTec Exhibition, 6 October 2015, Ireland.

The project's research, inventive cap development and design, together with the innovative manufacturing processes used was acknowledged by many medical industry leaders and consequently awarded **“the top accolade in the Exhibitor Innovations Competition”**. See [1], [2] [3], [4] [5], [6] [7], [8] [9]

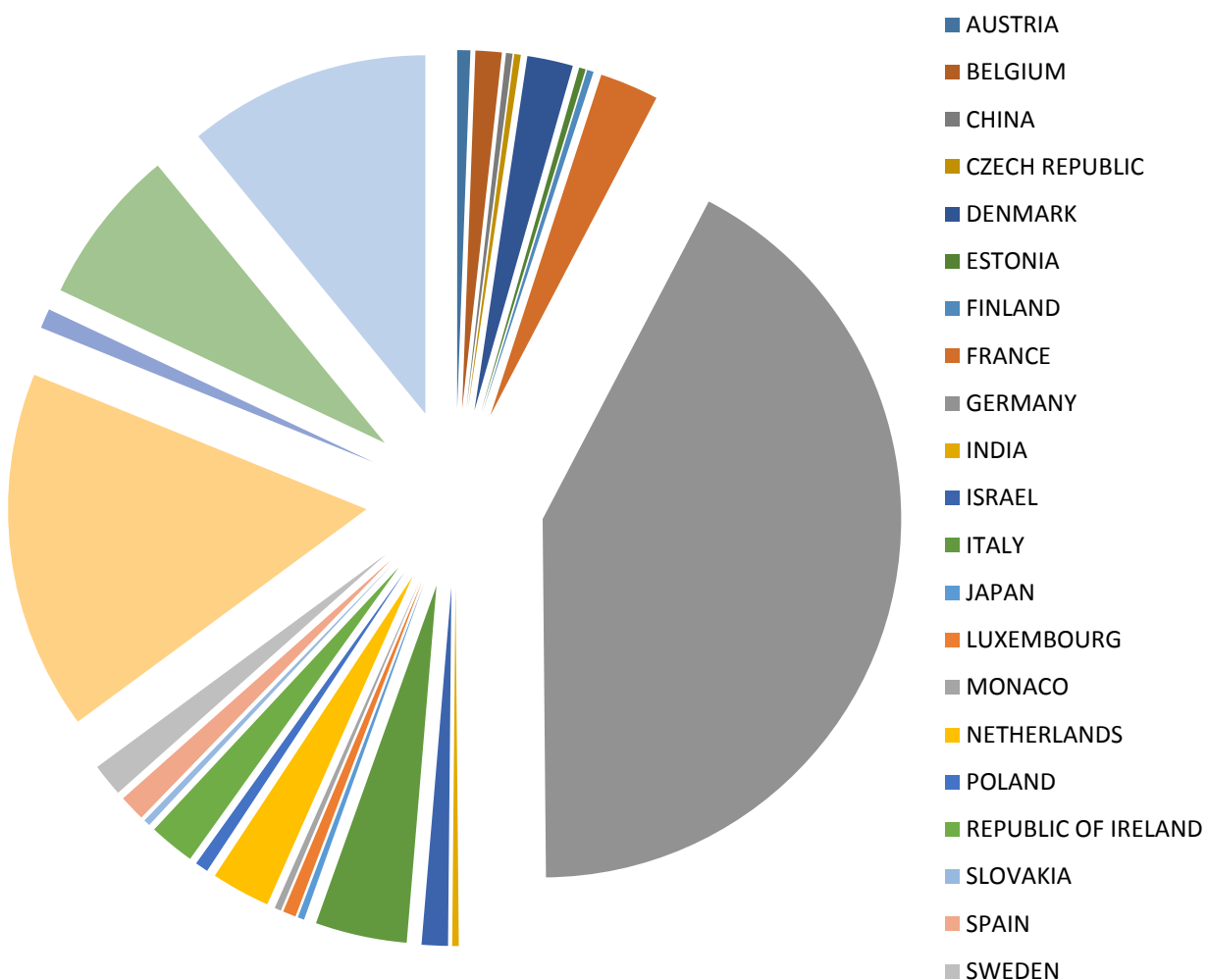


MedTech Ireland Exhibition:

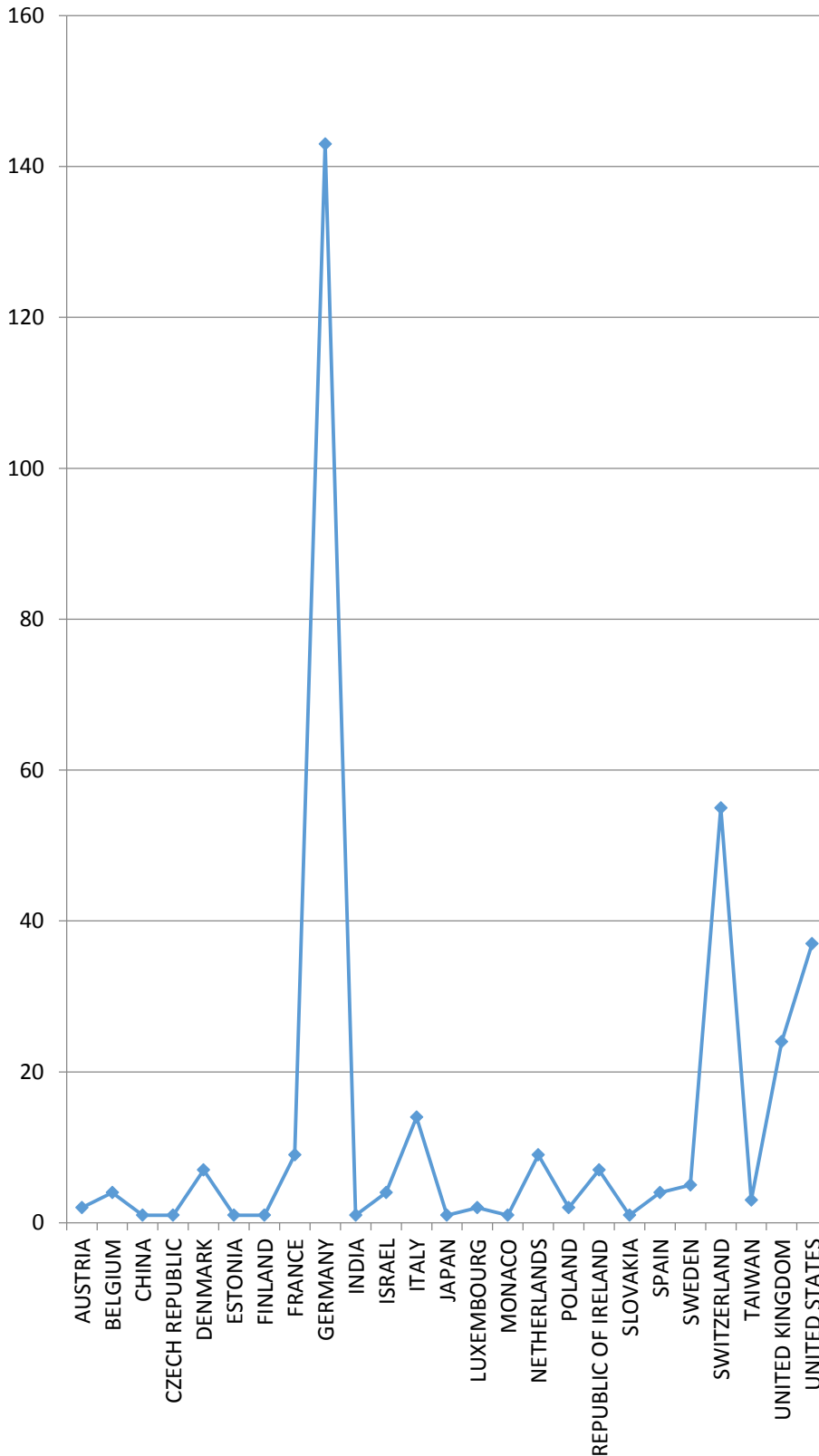
Medtec Europe was first established in 2001 and continues to be an important event for those within the medical device manufacturing industry. The event provides suppliers with the opportunity to meet with over 6,000 industry specific professionals, it hosts conference and educational events with interactive features. Medtec offers the European Medical Device market access to the latest technology, solutions, networking and education through various events such as Medtec Europe in Stuttgart and Medtec Ireland.

[Medtec Ireland](#) provide access to the latest technology, solutions, networking and education at the live event and enables accessing insight and technology from across Europe through the media partners, [EMDT](#) and [Qmed](#). The events covers media in Medical, Packaging, Plastics, Design & Manufacturing and Process & Ingredients connect the industry across the globe. The event was on 6-7 October 2015, from 10am - 4pm at the Radisson Blu Hotel, Galway, Ireland. [1] and [2].

339 companies exhibited from 25 different countries. The graph below shows distribution of the ratio of each countries exhibited.



Germany had the largest exhibitor contingent with 153 companies from the total 339. The graph below shows distribution of the ratio of each country exhibited.



Country Name	: Number of Companies
AUSTRIA	2
BELGIUM	4
CHINA	1
CZECH REPUBLIC	1
DENMARK	7
ESTONIA	1
FINLAND	1
FRANCE	9
GERMANY	143
INDIA	1
ISRAEL	4
ITALY	14
JAPAN	1
LUXEMBOURG	2
MONACO	1
NETHERLANDS	9
POLAND	2
REPUBLIC OF IRELAND	7
SLOVAKIA	1
SPAIN	4
SWEDEN	5
SWITZERLAND	55
TAIWAN	3
UNITED KINGDOM	24
UNITED STATES	37

About Paxman Coolers:

Based in Huddersfield, UK, the leading global manufacturer and supplier of scalp cooling equipment for cancer chemotherapy patients

The company's history dates back to the 1950s when the beer cooler was invented by Eric Paxman, the father of Paxman's current Chairman.

Glenn and his brother Neil built the first prototype of the cooling cap which was installed at the Huddersfield Royal Infirmary in 1997. [10]

Paxman engaged the expertise of researchers at *two of the University of Huddersfield's academic schools*. Initially funded by an **Innovation Voucher** from Kirklees Council, Paxman 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.* [11], [12] [13] [14]



What is Scalp Cooling?

- Scalp cooling is a simple treatment that can prevent hair loss caused by certain chemotherapy drugs.
- The use of scalp cooling or 'cold caps' is proven to be an effective way of combatting chemotherapy-induced hair loss and can result in a high level of retention or completely preserve the hair. For patients, this means the opportunity to regain some control, maintain their privacy and encourage a positive attitude towards treatment.

Who is Scalp Cooling For?

- Scalp cooling can be used with all solid tumour cancers that are treated with chemotherapy drugs such as taxanes (e.g. docetaxel), alkylating agents (e.g. cyclophosphamide) and anthracyclines/DNA intercalating agents (e.g. doxorubicin). These drugs target rapidly dividing cells and the matrix keratinocytes, which results in hair loss (Paus et al., 2013).
- Scalp cooling cannot be used with the following conditions:
 - Haematological malignancies (leukaemia, non Hodgkins and other generalised lymphomas)
 - Cold allergy
 - Cold agglutinins
 - Manifest scalp metastases
 - Imminent bone marrow ablation chemotherapy
 - Imminent skull irradiation



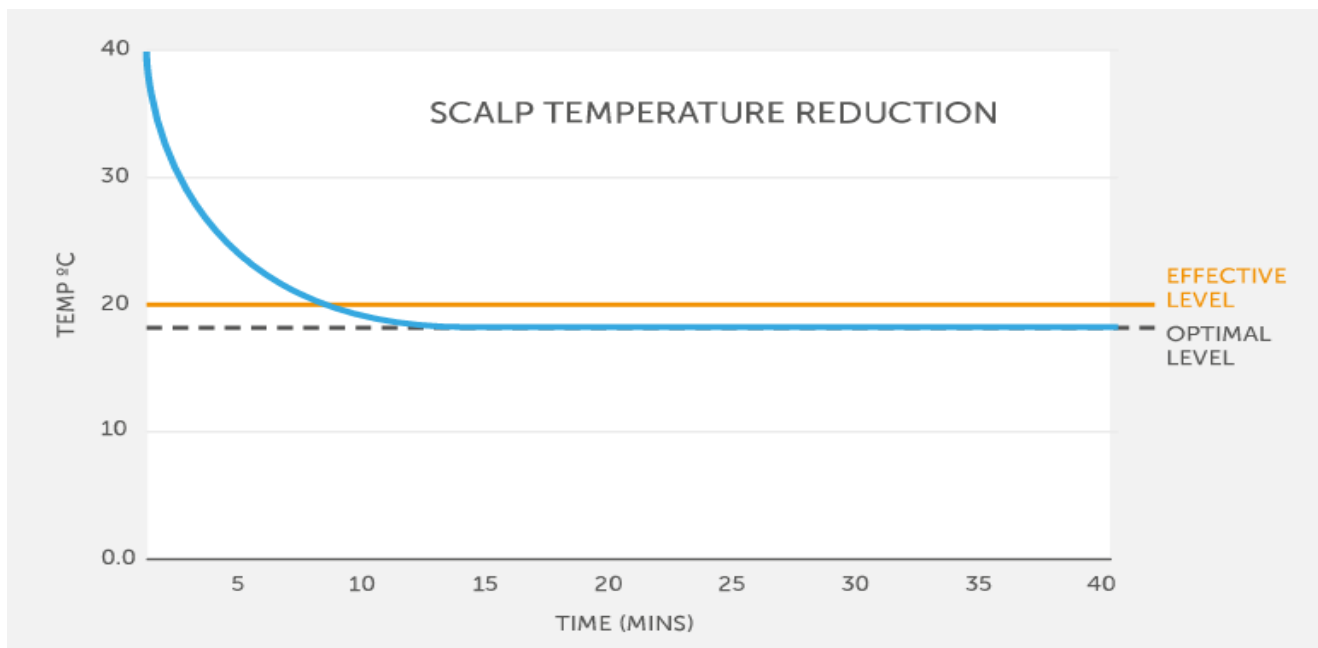
Further information see: [15], [16], [17]

How Does Scalp Cooling Work?

Chemotherapy works by targeting all rapidly dividing cells in the body. Hair is the second fastest dividing cell and this is the reason why many chemotherapy drugs cause alopecia. The hair follicles in the growth phase are attacked, resulting in hair loss approximately 2 weeks after the commencement of the chemotherapy treatment.

The damage that chemotherapy causes to the hair follicle can be alleviated by using scalp cooling. It works by reducing the temperature of the scalp by a few degrees immediately before, during and after the administration of chemotherapy. This in turn reduces the blood flow to hair follicles which may prevent or minimise the hair loss.

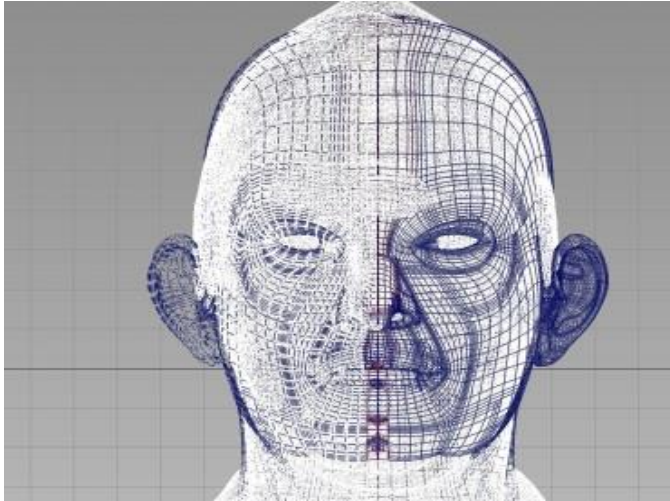
Although successful scalp cooling depends on many factors, research and studies have shown that scalp cooling can be effective across a wide range of chemotherapy regimen. Further Technical Detail see [18]



Design and Development of Scalp Cooling Device : Initial Work

Current caps are designed to be lightweight with 5 years of life expectancy. The caps are soft, flexible and manufactured from high grade silicone material. Five different sizes, colour coded for ease of identification for different head sizes.

First stage of the project was to research into head sizes and create a standard 3D human head. A Paxman staff volunteered for this work as seen below.

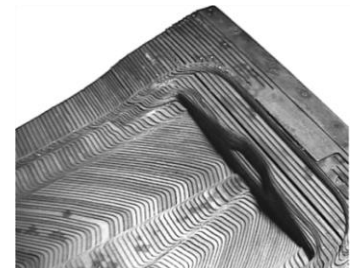
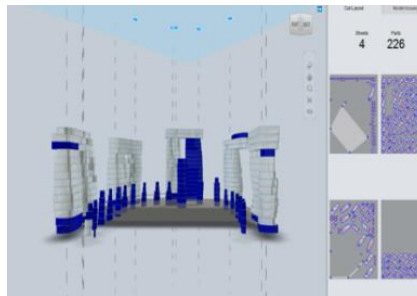
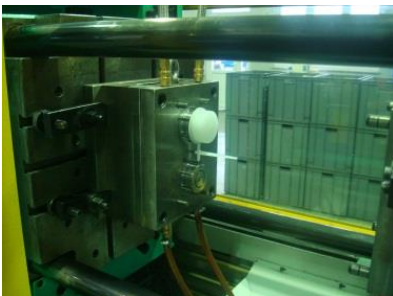
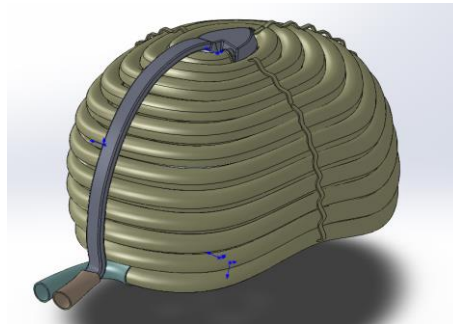


Current product is wound length of silicone tubes, Individually hand made, slow & expensive to manufacture, 5 different sizes, See[14]

Aims and Objectives of the Research

Consideration / Preliminary Testing:

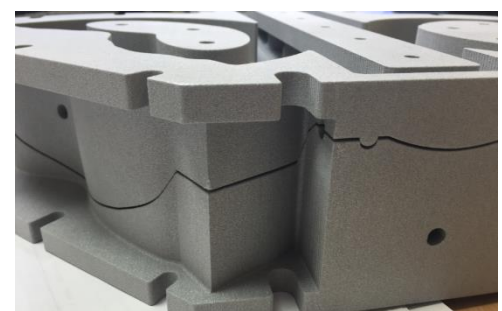
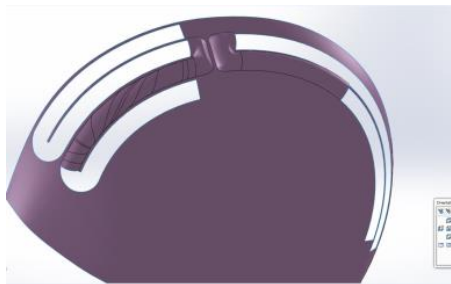
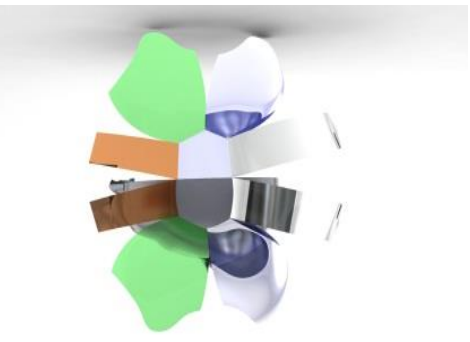
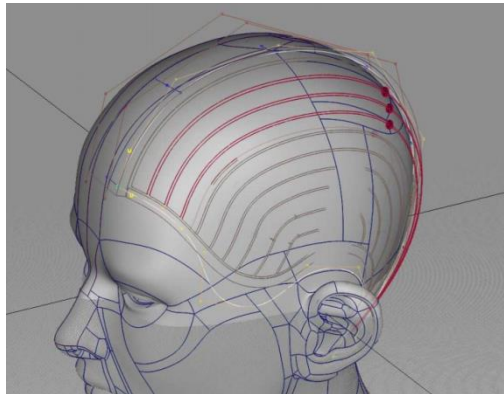
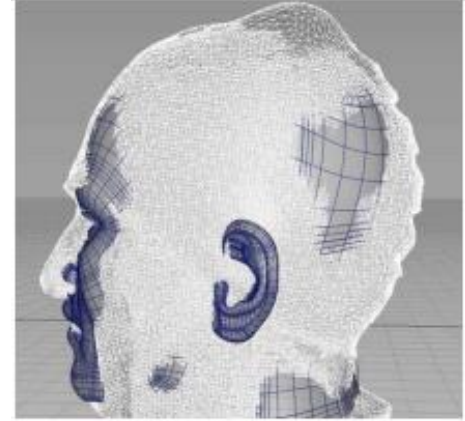
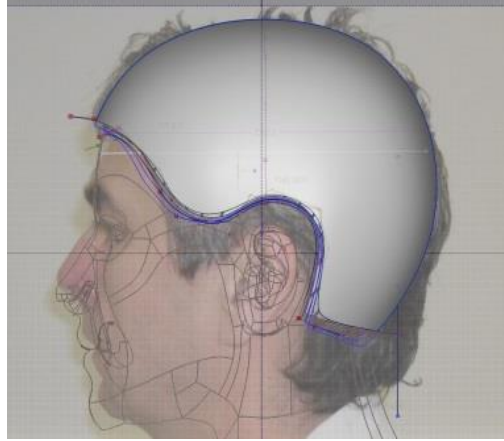
- Preliminary Research into European/Far-East human head size/shape data and availability.
- 3D Scanning of the volunteer's head creation of 3D CAD model.
- Produce suitable method of cap design & tool design to suit supplier's production method.
- In collaboration with Paxman and the supplier the following objectives were agreed:
 - Improve Conductivity
 - Improve Cap Fit
 - Improve Patient Comfort and Ergonomics
 - Improve the Ability to Mass-Produce
 - Minimise the number of size options
 - Reduce Manufacturing Cost
 - Identify optimal flow pattern within the Cap Design
- Tooling Design for Silicone Moulding
- Investigate 3D printing for tool manufacturing
 - Non-metallic 3D printing
 - Metallic 3D printing
 - Coating
- Investigate Metal Layer Slicing method, laser Cutting, Rhino Grasshopper software programming
- Investigate Low Melting Alloys for tooling, mainly Bismuth



Images show various preliminary experiments, test were carried out to identify a sustainable, cost effective manufacturing method. See: [19], [20], [21], [22], [23], [24]

Design and Development:

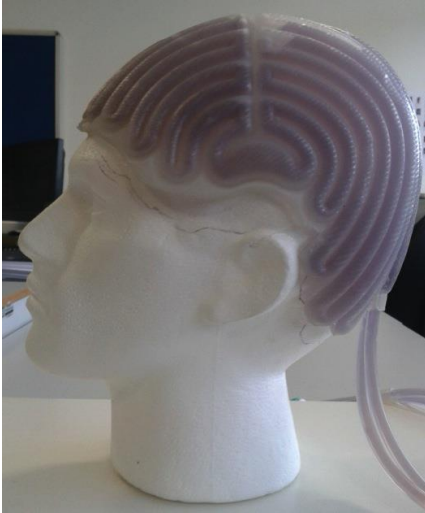
After a number of design iterations and testing of various 3D printing materials the team decided the best form, fit and manufacturing methods through experimenting with physical prototypes.



For Prototype 3D Laser Sintering 3D printed method was chosen. Thermal properties of the selection of Nylon material is one of the main factor for choosing the material as well as surface quality, print size, minimal thickness & details, material specification, pressure / stress were the reasons for choosing this method. [13],[14]

Design and Development:

After a number of design iterations and testing of various moulding methods, 3D printing materials, a number of moulding tools created to produce prototyped at Primasil ltd which is the current research partner and manufacturer. <http://www.primasil.com/>



3D Printing:

Queen Street Studio labs
School of Art, Design & Architecture
University of Huddersfield

The rapid prototyping machines that can quickly and accurately produce three dimensional parts which have been designed on computer. Students are advised which machine is best suited by the technical staff for their work, and also the cost of printing.

Members of technical staff operate the printers, and oversee any post processing work that each printer may require. Students are responsible for undertaking any fine surface finishing, or painting that is required to finish the printed part with technician support [21], [25], [26]

The following machines are located in the Queen Street Studios building:

Professional 3D Printers:

Projet 5500X Multi Material Printer
Zbuilder
Zcorp 650
Stratasys FDM

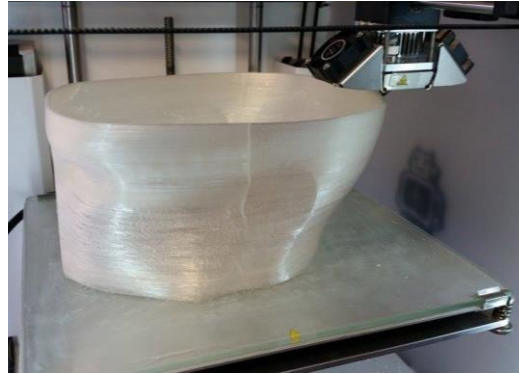
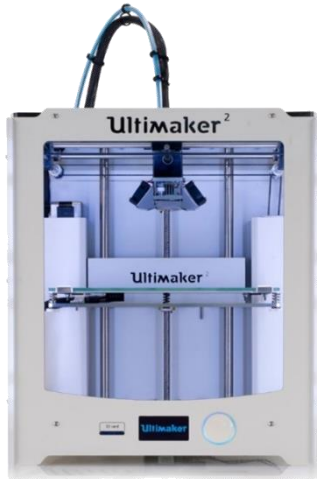
Desk top printers:

The Big builder, and Ultimaker



Printing of Exhibition Stand:

From the available 3D printing systems such as the Big Builder and other Professional 3D printing machines Ultimaker 2 desktop 3D printers chosen due to availability of material . The printer is completely open source and all models can be printed off from an SD card.



3D Printing of Head:

Settings of slicing the head to print at a layer height of 0.3mm, infill of 20% and one solid layer at the bottom and three solid layers at the top were used for the desired print quality. With all these options the slicer showed that it would print over 604 layers, do 65 thousand lines, would use 32 metres of filament and would take approximately 12 hours and 50 minutes to complete.

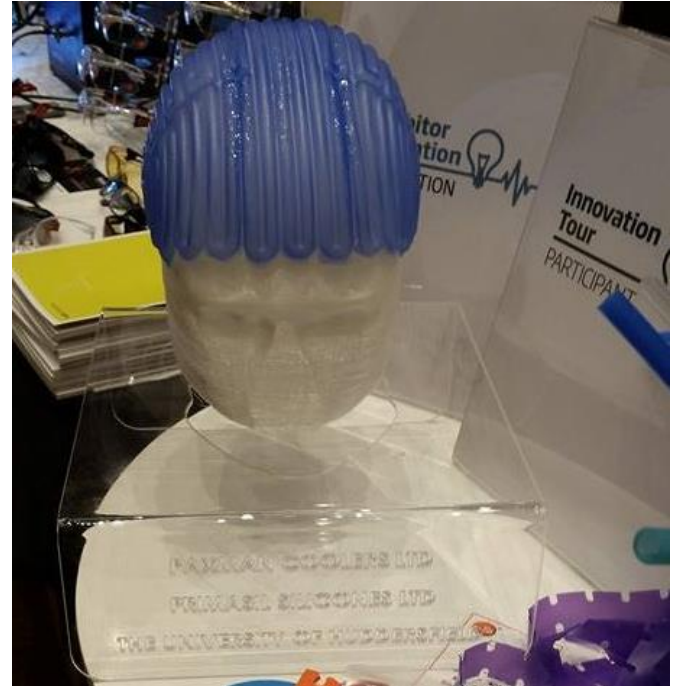
As the temperature of the printer head is capped at 260 degrees this limits the material capabilities to plastic and though a lot of research is being done to test materials on a desktop printer, the Ultimaker 2 can only use CPE, PLA and ABS. PLA being the most common and most sustainable as it is a plastic made of corn starch.

As the model is so large, and to prevent warping of the bottom edges, the base plate had to be glued and heated to 70 degrees for 70% of the build and then turned down slowly to 50 degrees for the rest of the build. To also reduce printing time on this build we made the model a shell with a wall thickness of 5mm which took off 15 hours of print time. Due to health and safety, the printing process started early in the morning and was regularly observed until the printing process was completed. The desktop 3D printers are advised not to be used unattended.

Exhibiting at: MedTec Ireland

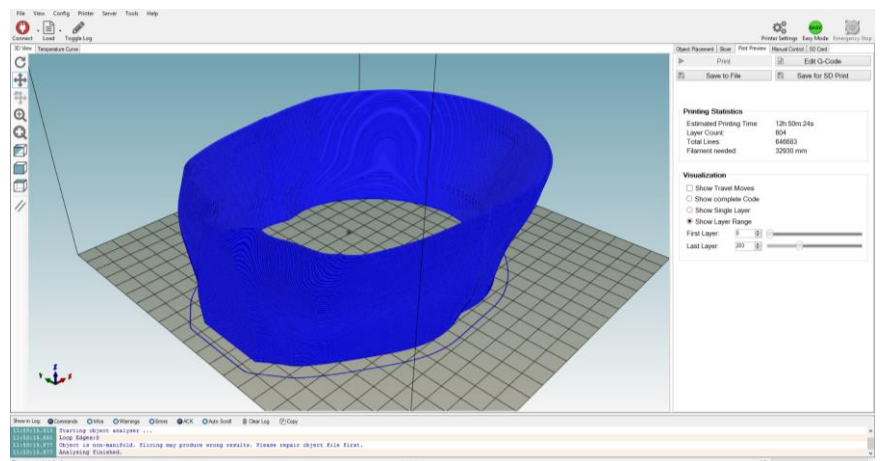
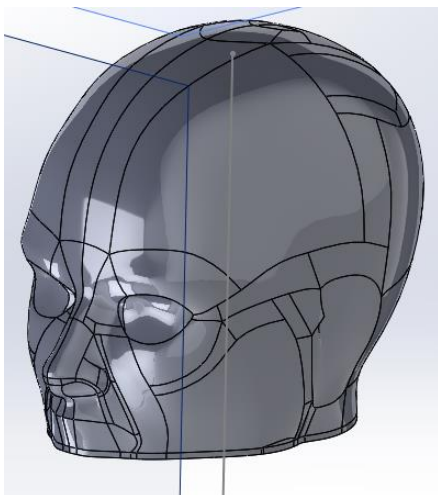
The Researcher attended the conference in Galway Ireland on 6th October 2015 representing both Paxman Coolers and the University of Huddersfield with Primasil Ltd.

A Laser cut acrylic base was designed which had the names of all collaborating partners; Primasil Silicones Ltd, Paxman Coolers Ltd and The University of Huddersfield. A specifically designed 3D printed head which allowed for the scalp cooler to sit on whilst a pump was circulating the liquid in the cap.



Building Exhibition Stand: Creating the Solidworks Model And 3D Printing

Using a 3D scanned model of a persons head, a 3D Solid Model with thickness also a surface only model were created. The model is scaled down to mid size and to reduce the print time the nose is cut and face is simplified from nose to lips to ears. Testing the slicer gave us a time of 28 hours which is to long so the shell of the model were further reduced to have wall thickness of 5mm.



Innovation Accolade Award: Background

The design skills and technical innovations of researchers at the University of Huddersfield have led to significant improvements in a silicon cooling cap that aims to reduce hair loss in cancer patients. Now their contribution to the project has helped earn an international award.

The cooling cap has been developed, manufactured and globally marketed by Huddersfield firm [Paxman](#), which has formed close ties – including highly successful UK Government-funded Knowledge Transfer Partnerships (KTPs) - with experts at the University, where scientists have [established the scientific basis for scalp cooling](#) in preventing hair loss during chemotherapy. And in the School of Art, Design and Architecture, lecturers Dr Ertu Unver and Dr David Swann have [worked on major improvements to the design of the cap](#).

The academic team worked closely with the firm [Primasil Silicones](#) in the creation of a silicone rubber formulation that gave the cooling cap greater flexibility and enabled the coolant running through the cap to be in close contact with the scalp. Now, at the 2015 *Medtech World Awards*,

Scalp Cooling Cap Design was declared the [winner of the Exhibitor Innovations Competition](#).

Dr Unver's brief was to redesign the cooling cap so that it is a better fit – vital if the device is to be effective – and can be mass-manufactured, making it more economical, aiding Paxman's global marketing drive. The cap that he and Dr Swann developed fits the head more efficiently, despite a reduction in the range of sizes from five to three. There has also been an improvement in the flow pattern of the coolant.

During the project, Dr Unver carried out extensive research into head sizes and used 3-D technology to develop a new design. Then, 3-D printing was used to create a template for the production of cooling caps in silicon. He worked closely with Primasil and, in conjunction with the firm, two patents have been applied for.

The cooling cap was also [one of 46 finalists](#) in the highly-prestigious INDEX: Design to Improve Life Awards, which received 1,123 entries from 72 countries.

Now the highly fruitful collaboration with Paxman will carry on, as the firm seeks to make continual improvements to its cooling caps. The latest development is a new KTP – part-funded by Government organisation [Innovate UK](#) – for which Dr Unver and Dr Swann are the academic and enterprise supervisors. The KTP associate who will carry out research at Paxman's Huddersfield HQ and at the University, is Chris Sorbie, a Product Design graduate and former student of Dr Unver. He will work towards a Master's degree during the KTP.

Conclusion:

This project is initially supported by, a Community Venture Fund (CVF), Paxman company then TSB - Smart Innovation Grants for SMEs and recently , KTP (Innovate UK).

The scalp cooling cap project shows how collaborations between SME companies, Universities can work together to produce successful award winning products. The research also helped Silicone manufacturer Primasil ltd to become one of the leading Silicone manufacturer to use state of art 3D printing for their manufacturing process. Paxman coolers also have a product which was impossible to produce using traditional manufacturing methods in the timescale and budget .

Ability to use Rapid Prototyping in tool making in the last few years has enabled the boundaries of current manufacturing methods to expand, while reducing costs. This process has enabled the creation of innovative designs, which were impossible to manufacture in few years ago. Designers now can create new innovative products using additive manufacturing with not following core engineering design and manufacturing methods.

Knowledge/skills capable of supporting community regeneration and which test University ideas/research. The final prototypes are currently being tested in a number of medical institutions in various countries including, UK, Japan, Russia. The Paxman coolers and University academics filed joint patent applications and further collaboration through Innovate UK KTP (Knowledge Transfer Partnership) research already started.



Primasil Visit: Team from Paxman Coolers, University of Huddersfield and Primasil Limited



Japanese visitors
University of Huddersfield:



Paxman Coolers: ECCO European Cancer Congress, Austria



Paxman Coolers Team:

References :

- [1] Award News: <http://www.medteceurope.com/ireland/visit/exhibitor-innovations-competition>
- [2] Award News: <http://www.medilinkuk.com/news/product-innovation-wins-accolade-primasil>
- [3] Award News: <http://www.medteceurope.com/ireland/visit/exhibitor-innovations-competition/primasil-silicones-limited-uk>
- [4] Award News: <http://www.medicalplasticsnews.com/news/cooling-cap-cancer-wins-at-medtech/>
- [5] Award News: <http://www.news-medical.net/news/20151007/Primasil-innovation-helps-improve-Paxmane284a2-cooling-cap.aspx>
- [6] Award News: <http://www.britishplastics.co.uk/materials/new-silicone-rubber-cap-to-help-reduce-hair-loss-in-cancer-t/>
- [7] Award News: <http://www.plasticstoday.com/articles/innovations-silicone-rubber-and-mold-clamping-tools-among-finalists-medtec-ireland-150901>
- [8] Award News: http://www.kugoymkugo.com/index.php?option=com_content&view=article&id=1027%3A2015-10-08-10-09-40&catid=38%3AAlas-ultimas
- [9] Award News: <http://www.emdt.co.uk/daily-buzz/see-finalists-chosen-exhibitor-innovations-competition-medtec-ireland>
- [10] Paxman Coolers Ltd - <http://paxmanscalpcooling.com/>
- [11] <https://www.hud.ac.uk/news/2015/may/unidesigners3dtechnologytoimprovepaxmanscalpcoolingcap.php>
- [12] <https://www.hud.ac.uk/news/2015/march/design4andpaxmancoolersbeginthree-yearinnovationproject.php>
- [13] Unver, Ertu, Howard, Chris and Swann, David (2013) *Design & Development of Scalp Cooling Cap*. In: Smart Scalp Cooling Symposium, 16 May 2013, 3M Buckley Innovation Centre , Huddersfield, UK
<http://eprints.hud.ac.uk/17743/>
- [14] Unver, Ertu (2013) *Design and Development of a new Scalp Cooling Cap - Stage 1 : Confidential Design and Development*, Project Report. Confidential Report Submitted to Paxman Coolers Ltd <http://eprints.hud.ac.uk/17750/>
- [15] www.macmillan.org.uk
- [16] www.nhs.uk
- [17] Factors Influencing the Effectiveness of Scalp Cooling in the Prevention of Chemotherapy-Induced Alopecia
Manon M.C. Komen,^a Carolien H. Smorenburg,^a Corina J.G. van den Hurk,^b and Johan W.R. Nortier
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3720643/>
- [18] <http://paxmanscalpcooling.com/scalp-cooling>
- [19] Kus, Abdil, Unver, Ertu, Jagger, Brian and Durgun, Ismail (2013) *A Study of Injection Moulding with Bismuth Alloy*. In: Green Design, Materials and Manufacturing Processes. Taylor & Francis, pp. 225-232. ISBN 9781138000469 <http://eprints.hud.ac.uk/17274/> ,
- [20] Taylor, Andrew, Benincasa-Sharman, Caterina and Unver, Ertu (2014) *3D digital modelling, fabrication and installation for understanding space and place*. In: 7th International Conference of Education, Research and Innovation, 17th-19th November 2014, <http://eprints.hud.ac.uk/22768/>
- [21]. Taylor, Andrew and Unver, Ertu (2015) *3D Printing our future: Now*. In: 3M: IMI Workshop In collaboration With EOS, Renishaw & HK 3D Printing, 17th March 2015, 3M Buckley Innovation Centre
http://eprints.hud.ac.uk/24969/1/IMI_3M_3DPRINTINGOURFUTURE_NOW.pdf
- [22]. [Automake/FutureFactories](http://www.automake.com/futurefactories) (2008) E Unver, J Marshall, LT Dean, P Atkinson, Hub: National Centre for Craft & Design
- [23] Taylor, Andrew and Unver, Ertu (2005) *An experimental study to test a 3D laser Scanner for body measurement and 3D virtual garment design in Fashion education*. In: Wearable Futures – Hybrid Culture in the Design and Development of Soft Technology. University of Wales, pp. 1-14. ISBN 978-1-899274-34-5
- [24] Taylor, Andrew, Unver, Ertu and Worth, Graham(2003) *Innovative potential of 3D software applications in fashion and textile design*. Digital Creativity, 14 (4). pp. 211-218. ISSN 1462-6268
- [25] Unver, Ertu (2013) Can 3D Printing change your business? In: CKMA Calderdale and Kirklees Manufacturing Alliance Meeting , 11th April 2013, 3M Buckley Centre, Huddersfield <http://core.ac.uk/download/pdf/9841613.pdf>
- [26] Kus, Abdil, Unver, Ertu and Taylor, Andrew (2009) *A comparative study of 3D scanning in engineering, product and transport design and fashion design education*. Computer Applications in Engineering Education, 17 (3). pp. 263-271. ISSN 1061-3773 <http://eprints.hud.ac.uk/5625/>
- [27] Exhibitor List http://www.medteceurope.com/sites/default/files/medtec_europe_exhibitors_16102015_0.pdf
- [28] Primasil Silicones - <http://www.primasil.com/>
- [29] The University of Huddersfield - <https://www.hud.ac.uk>

Exhibitors list (Courtesy of MedTec):

<u>Exhibitor</u>	<u>Country</u>	<u>Website</u>	<u>Show Zone</u>
A.M.I. Services	AUSTRIA	www.ami.at	Full Service Contract Manufacturing
Mediscan GmbH & Co. KG	AUSTRIA	www.mediscan.at	Packaging, Labelling & Sterillisation
LUXILON Industries	BELGIUM	www.luxilon.be	Medical Materials, Components & Processes
Printing International N.V.	BELGIUM	www.printinginternational.com	Automation, Moulding & Manufacturing Processes
Sterisys PGMBH	BELGIUM	www.sterisys.eu	Packaging, Labelling & Sterillisation
Toxikon Europe N.V.	BELGIUM	www.toxikon.be	Testing, Metrology & Inspection, Clinical Trials & Validation
Peter's Technology (Suzhou) Co., Ltd.	CHINA	www.peters.com.cn	Full Service Contract Manufacturing
GAMA GROUP a.s.	CZECH REPUBLIC	www.gama.cz	Full Service Contract Manufacturing
Brüsch Precision A/S	DENMARK	www.brusch.dk	Full Service Contract Manufacturing
Melitek A/S	DENMARK	www.melitek.com	Medical Materials, Components & Processes
PRENT Denmark ApS	DENMARK	www.prent.com	Packaging, Labelling & Sterillisation
SAXE GROUP	DENMARK	www.saxe-group.com	Automation, Moulding & Manufacturing Processes
SP Medical A/S	DENMARK	www.sp-medical.dk	Medical Materials, Components & Processes
Stansomatic A/S	DENMARK	www.stansomatic.dk	Medical Materials, Components & Processes
Tommy Nielsen ApS	DENMARK	www.tommy-nielsen.dk	Full Service Contract Manufacturing
A&G Ltd	ESTONIA	www.ag.ee	Full Service Contract Manufacturing
Optinova	FINLAND	www.optinova.fi	Extrusion & Tubing
AIP Medical	FRANCE	www.aip-medical.com	Packaging, Labelling & Sterillisation
FIMADO GROUP	FRANCE	www.manudo-medical.com	Full Service Contract Manufacturing
FISA	FRANCE	www.fisa.com	Medical Materials, Components & Processes
Formulance	FRANCE	www.formulance.com	Medical Materials, Components & Processes
MS Techniques	FRANCE	www.ms-techniques.com	Medical Materials, Components & Processes
Selenium Medical	FRANCE	www.selenium-medical.com	Packaging, Labelling & Sterillisation
Stainless	FRANCE	www.stainless.eu	Medical Materials, Components & Processes
STATICE	FRANCE	www.statice.com	Full Service Contract Manufacturing
Top Clean Packaging Group	FRANCE	www.topcleanpackaging.com	Packaging, Labelling & Sterillisation
Albatroz Consulting	GERMANY	www.albatroz.eu	Electronic Components, Motors and Motion Control
Alpha Ionstatex GmbH	GERMANY	www.ionstatex.de	Cleanroom Design & Environmental Control
ALPO Technik Medical Products	GERMANY	www.alpo-med.de	Medical Materials, Components & Processes
apra-plast Kunststoffgehäuse-Systeme GmbH	GERMANY	www.apra-plast.de	Medical Materials, Components & Processes
Arburg GmbH + Co KG	GERMANY	www.arburg.com	Automation, Moulding & Manufacturing Processes
Askion GmbH	GERMANY	www.askion.com	Full Service Contract Manufacturing
Axon' Kabel GmbH	GERMANY	www.axon-cable.de	Electronic Components, Motors and Motion Control
AxynTeC Dünnschichttechnik GmbH	GERMANY	www.axyntec.de	Medical Materials, Components & Processes
B. Braun Melsungen AG	GERMANY	www.bbraunoem.com	Full Service Contract Manufacturing
BBF Sterilisationservice GmbH	GERMANY	www.sterixpert.de	Packaging, Labelling & Sterillisation
BIW Isolierstoffe GmbH	GERMANY	www.biw.de	Extrusion & Tubing
BYTEC Medizintechnik GmbH	GERMANY	www.bytecmed.com	Full Service Contract Manufacturing
Cable & Tubing Solutions GmbH	GERMANY	www.cabletubingsolutions.com	Extrusion & Tubing

CAQ AG Factory Systems	GERMANY	www.caq.de	Testing, Metrology & Inspection, Clinical Trials & Validation
Carl Haas GmbH	GERMANY	www.carl-haas.de	Medical Materials, Components & Processes
Cleanroom Competence CRC GmbH	GERMANY	www.cleanroom-competence.de	Cleanroom Design & Environmental Control
Colder Products Company GmbH	GERMANY	www.colder.com	Medical Materials, Components & Processes
Diener electronic	GERMANY	www.plasma.com	Surface Treatment
DMB-Apparatebau GmbH	GERMANY	www.dmb-apparatebau.com	Packaging, Labelling & Sterilisation
Elastomer Technik GmbH	GERMANY	www.elastomer-technik.com	Medical Materials, Components & Processes
Elingklinger Kunststofftechnik GmbH	GERMANY	www.elingklinger.com	Medical Materials, Components & Processes
Endox Feinwerktechnik GmbH	GERMANY	www.endox.de	Medical Materials, Components & Processes
EPflex Feinwerktechnik GmbH	GERMANY	www.epflex.com	Medical Materials, Components & Processes
escotec Lasertechnik GmbH	GERMANY	www.escotec.com	Full Service Contract Manufacturing
Eugen Geyer GmbH	GERMANY	www.eugengeyer.de	Medical Materials, Components & Processes
Eurofins Medical Device Testing	GERMANY	www.eurofins.com/medical-devices	Testing, Metrology & Inspection, Clinical Trials & Validation
EUROFLEX GmbH	GERMANY	www.euroflex-gmbh.de	Medical Materials, Components & Processes
Evonik Industries AG	GERMANY	www.evonik.com	Medical Materials, Components & Processes
EXCO GmbH	GERMANY	www.exco-services.com	Testing, Metrology & Inspection, Clinical Trials & Validation
Extrudex Kunststoffmaschinen GmbH	GERMANY	www.extrudex.de	Extrusion & Tubing
EZM Edelstahlzieherei Mark	GERMANY	www.ezm-mark.de	Medical Materials, Components & Processes
femtos GmbH	GERMANY	www.femtos.eu	Automation, Moulding & Manufacturing Processes
Fischbein Deutschland GmbH	GERMANY	www.fischbein.com	Packaging, Labelling & Sterilisation
Fischer Connectors GmbH	GERMANY	www.fischerconnectors.de	Electronic Components, Motors and Motion Control
FLG Automation AG	GERMANY	www.flg.de	Automation, Moulding & Manufacturing Processes
FOBA Laser Marking + Engraving	GERMANY	www.foba.de	Packaging, Labelling & Sterilisation
FORÉCREU SAS	GERMANY	www.forecreu.com	Medical Materials, Components & Processes
FRANK plastic AG	GERMANY	www.frankplastic.de	Medical Materials, Components & Processes
Fraunhofer Gesellschaft	GERMANY	www.fraunhofer.de	Design, R&D & Regulatory Consultants
Freudenberg Medical Europe GmbH	GERMANY	www.freudenbergmedical.com	Extrusion & Tubing
Freund Electronic	GERMANY	www.freund-electronic.de	Extrusion & Tubing
Fried Kunststofftechnik GmbH	GERMANY	www.fried.de	Medical Materials, Components & Processes
GEMÜ GmbH	GERMANY	www.gemue.de	Medical Materials, Components & Processes
General Implants GmbH Germany	GERMANY	www.general-implants.com	Full Service Contract Manufacturing
HA2 Medizintechnik GmbH	GERMANY	www.ha2-medizintechnik.de	Packaging, Labelling & Sterilisation
Haager GmbH & Co. KG	GERMANY	www.haager.de	Full Service Contract Manufacturing
Hawo GmbH	GERMANY	www.hawo.com	Packaging, Labelling & Sterilisation
Heinz Schade GmbH	GERMANY	www.heinz-schade.de	Extrusion & Tubing
Hemoteq AG	GERMANY	www.hemoteq.com	Full Service Contract Manufacturing
Heraeus Medical Components	GERMANY	www.heraeusmedicalcomponents.com	Medical Materials, Components & Processes
Herotron E-Beam Service GmbH	GERMANY	www.herotron.de	Medical Materials, Components & Processes
HIWIN GmbH	GERMANY	www.hiwin.de	Automation, Moulding & Manufacturing Processes
Hofmann GmbH	GERMANY	www.hofmann-cnc.com	Full Service Contract Manufacturing

Horst Scholz GmbH & Co. KG	GERMANY	www.scholz-htik.de	Full Service Contract Manufacturing
Icop Technology GmbH	GERMANY	www.icoptech.com	Electronic Components, Motors and Motion Control
IMSTec GmbH	GERMANY	www.imstec.de	Automation, Moulding & Manufacturing Processes
Injecta GmbH	GERMANY	www.injecta.de	Medical Materials, Components & Processes
Inpac Medizintechnik GmbH	GERMANY	www.inpac-medizintechnik.de	Full Service Contract Manufacturing
j. söllner AG	GERMANY	www.soellner.ag	Design, R&D & Regulatory Consultants
Jonas & Redmann Group GmbH	GERMANY	www.jonas-redmann.com	Automation, Moulding & Manufacturing Processes
Jüke Systemtechnik GmbH	GERMANY	www.jueke.de	Full Service Contract Manufacturing
JVS Sales & Technical Consultants GmbH	GERMANY	www.jvs.de	Full Service Contract Manufacturing
Karl Kufner GmbH & Co. KG	GERMANY	www.kuefner.com	Medical Materials, Components & Processes
Kettenbach GmbH & Co. KG	GERMANY	www.kettenbach.de	Medical Materials, Components & Processes
KLINGEL medical metal GmbH	GERMANY	www.klingel-med.de	Full Service Contract Manufacturing
KNF Neuberger GmbH	GERMANY	www.knf.de	Pumps & Valves
Koerting Nachf. W. Steeger GmbH	GERMANY	www.steeger-online.de	Automation, Moulding & Manufacturing Processes
Lake Region Medical GmbH	GERMANY	www.accelent.com	Design, R&D & Regulatory Consultants
LEE Hydraulische Miniaturkomponenten	GERMANY	www.lee.de	Pumps & Valves
LEONI Elocab GmbH	GERMANY	www.leoni-industrial-solutions.com	Electronic Components, Motors and Motion Control
LK Mechanik GmbH	GERMANY	www.lk-mechanik.de	Packaging, Labelling & Sterillisation
LOEW Präzisionsteile GmbH	GERMANY	www.loew-praezision.de	Medical Materials, Components & Processes
LPKF WeldingEquipment GmbH	GERMANY	www.lpkf-laserwelding.com	Automation, Moulding & Manufacturing Processes
Maccon GmbH	GERMANY	www.maccon.de	Electronic Components, Motors and Motion Control
Mebus MIM-Technik GmbH	GERMANY	www.mebus-mimtechnik.de	Medical Materials, Components & Processes
MedNet GmbH	GERMANY	www.medneteuropa.com	Medical Materials, Components & Processes
MeKo Laser Material Processing	GERMANY	www.meko.de	Medical Materials, Components & Processes
Memry GmbH	GERMANY	www.memry.com	Medical Materials, Components & Processes
Mitutoyo Deutschland GmbH	GERMANY	www.mitutoyo.eu	Testing, Metrology & Inspection, Clinical Trials & Validation
Moll Engineering GmbH	GERMANY	www.moll-engineering.de	Medical Materials, Components & Processes
Motan-Colortronic GmbH	GERMANY	www.moton-colortronic.de	Automation, Moulding & Manufacturing Processes
Nabertherm GmbH	GERMANY	www.nabertherm.de	Additive Manufacturing
NeZuMed und CarboMedTech	GERMANY	www.senetics.de	Full Service Contract Manufacturing
NMI Reutlingen	GERMANY	www.nmi.de	Full Service Contract Manufacturing
Novoplast Schlauchtechnik GmbH	GERMANY	www.schlauchtechnik.de	Extrusion & Tubing
Oberschicht GmbH	GERMANY	www.oberschicht.com	Medical Materials, Components & Processes
Oechsler AG	GERMANY	www.oechsler.com	Full Service Contract Manufacturing
Ontec Automation GmbH	GERMANY	www.ontec.de	Automation, Moulding & Manufacturing Processes
OSCOMED GmbH	GERMANY	www.oscomed.de	Full Service Contract Manufacturing
phg Peter Hengstler GmbH + Co. KG	GERMANY	www.phg.de	Electronic Components, Motors and Motion Control
Pink GmbH Thermosysteme	GERMANY	www.pink.de	Medical Materials, Components & Processes
Plasma Parylene Systems GmbH	GERMANY	www.plasmaparylene.de	Surface Treatment
PMT Partikel-Messtechnik GmbH	GERMANY	www.pmt.eu	Cleanroom Design & Environmental Control

Horst Scholz GmbH & Co. KG	GERMANY	www.scholz-htik.de	Full Service Contract Manufacturing
Icop Technology GmbH	GERMANY	www.icoptech.com	Electronic Components, Motors and Motion Control
IMSTec GmbH	GERMANY	www.imstec.de	Automation, Moulding & Manufacturing Processes
Injecta GmbH	GERMANY	www.injecta.de	Medical Materials, Components & Processes
Inpac Medizintechnik GmbH	GERMANY	www.inpac-medizintechnik.de	Full Service Contract Manufacturing
j. söllner AG	GERMANY	www.soellner.ag	Design, R&D & Regulatory Consultants
Jonas & Redmann Group GmbH	GERMANY	www.jonas-redmann.com	Automation, Moulding & Manufacturing Processes
Jüke Systemtechnik GmbH	GERMANY	www.jueke.de	Full Service Contract Manufacturing
JVS Sales & Technical Consultants GmbH	GERMANY	www.jvs.de	Full Service Contract Manufacturing
Karl Kufner GmbH & Co. KG	GERMANY	www.kuefner.com	Medical Materials, Components & Processes
Kettenbach GmbH & Co. KG	GERMANY	www.kettenbach.de	Medical Materials, Components & Processes
KLINGEL medical metal GmbH	GERMANY	www.klingel-med.de	Full Service Contract Manufacturing
KNF Neuberger GmbH	GERMANY	www.knf.de	Pumps & Valves
Koerting Nachf. W. Steeger GmbH	GERMANY	www.steeger-online.de	Automation, Moulding & Manufacturing Processes
Lake Region Medical GmbH	GERMANY	www.accelent.com	Design, R&D & Regulatory Consultants
LEE Hydraulische Miniaturkomponenten	GERMANY	www.lee.de	Pumps & Valves
LEONI Elocab GmbH	GERMANY	www.leoni-industrial-solutions.com	Electronic Components, Motors and Motion Control
LK Mechanik GmbH	GERMANY	www.lk-mechanik.de	Packaging, Labelling & Sterillisation
LOEW Präzisionsteile GmbH	GERMANY	www.loew-praezision.de	Medical Materials, Components & Processes
LPKF WeldingEquipment GmbH	GERMANY	www.lpkf-laserwelding.com	Automation, Moulding & Manufacturing Processes
Maccon GmbH	GERMANY	www.maccon.de	Electronic Components, Motors and Motion Control
Mebus MIM-Technik GmbH	GERMANY	www.mebus-mimtechnik.de	Medical Materials, Components & Processes
MedNet GmbH	GERMANY	www.medneteuropa.com	Medical Materials, Components & Processes
MeKo Laser Material Processing	GERMANY	www.meko.de	Medical Materials, Components & Processes
Memry GmbH	GERMANY	www.memry.com	Medical Materials, Components & Processes
Mitutoyo Deutschland GmbH	GERMANY	www.mitutoyo.eu	Testing, Metrology & Inspection, Clinical Trials & Validation
Moll Engineering GmbH	GERMANY	www.moll-engineering.de	Medical Materials, Components & Processes
Motan-Colortronic GmbH	GERMANY	www.moton-colortronic.de	Automation, Moulding & Manufacturing Processes
Nabertherm GmbH	GERMANY	www.nabertherm.de	Additive Manufacturing
NeZuMed und CarboMedTech	GERMANY	www.senetics.de	Full Service Contract Manufacturing
NMI Reutlingen	GERMANY	www.nmi.de	Full Service Contract Manufacturing
Novoplast Schlauchtechnik GmbH	GERMANY	www.schlauchtechnik.de	Extrusion & Tubing
Oberschicht GmbH	GERMANY	www.oberschicht.com	Medical Materials, Components & Processes
Oechsler AG	GERMANY	www.oechsler.com	Full Service Contract Manufacturing
Ontec Automation GmbH	GERMANY	www.ontec.de	Automation, Moulding & Manufacturing Processes
OSCOMED GmbH	GERMANY	www.oscomed.de	Full Service Contract Manufacturing
phg Peter Hengstler GmbH + Co. KG	GERMANY	www.phg.de	Electronic Components, Motors and Motion Control
Pink GmbH Thermosysteme	GERMANY	www.pink.de	Medical Materials, Components & Processes
Plasma Parylene Systems GmbH	GERMANY	www.plasmaparylene.de	Surface Treatment
PMT Partikel-Messtechnik GmbH	GERMANY	www.pmt.eu	Cleanroom Design & Environmental Control

Precitec Optronik GmbH	GERMANY	www.precitec-optronik.de	Testing, Metrology & Inspection, Clinical Trials & Validation
Project Solutions GmbH	GERMANY	www.projectsolutions.de/	Design, R&D & Regulatory Consultants
ProMediPac OWB Group	GERMANY	www.promedipac.com	Packaging, Labelling & Sterilisation
promod Prototypenzentrum GmbH	GERMANY	www.promod-technologie.de	Additive Manufacturing
Proto Labs Ltd.	GERMANY	www.protolabs.de	Additive Manufacturing
QUAD GmbH	GERMANY	www.quad.de	Electronic Components, Motors and Motion Control
Raumedic AG	GERMANY	www.raumedic.com	Full Service Contract Manufacturing
Rauschert GmbH	GERMANY	www.rauschert.de	Medical Materials, Components & Processes
RKT Rödinger Kunststoff-Technik GmbH	GERMANY	www.rkt.de	Medical Materials, Components & Processes
Röchling Sustaplast SE & Co. KG	GERMANY	www.roechling.com	Medical Materials, Components & Processes
ROFIN-BAASEL Lasertech GmbH & Co.KG	GERMANY	www.rofin.com	Automation, Moulding & Manufacturing Processes
Rohde AG	GERMANY	www.rohde-technics.de	Medical Materials, Components & Processes
Rose Plastic Medical Packaging GmbH	GERMANY	www.rose-plastic.de	Packaging, Labelling & Sterilisation
RUFF GmbH	GERMANY	www.ruff-worldwide.de	Automation, Moulding & Manufacturing Processes
S+D Spezialstahl Handelsgesellschaft mbH	GERMANY	www.s-dspezialstahl.de	Medical Materials, Components & Processes
Scherdel GmbH	GERMANY	www.scherdel.com	Medical Materials, Components & Processes
SCHILLING ENGINEERING GmbH	GERMANY	www.schillingengineering.de	Cleanroom Design & Environmental Control
Schunk GmbH & Co. KG	GERMANY	www.schunk.com	Automation, Moulding & Manufacturing Processes
sfm medical devices GmbH	GERMANY	www.sfm.de	Full Service Contract Manufacturing
SGM Schut Geometrische Messtechnik GmbH	GERMANY	www.Schut.com	Testing, Metrology & Inspection, Clinical Trials & Validation
Siemens Healthcare GmbH	GERMANY	www.healthcare.siemens.com	Full Service Contract Manufacturing
SIM Automation GmbH	GERMANY	www.sim-automation.de	Automation, Moulding & Manufacturing Processes
Solidtec GmbH	GERMANY	www.solidtec.de	Automation, Moulding & Manufacturing Processes
Solnovis GmbH	GERMANY	www.solnovis.com	Design, R&D & Regulatory Consultants
Sommer GmbH	GERMANY	www.is-sommer.com	Extrusion & Tubing
Spang & Brands GmbH	GERMANY	www.spang-brands.de	Medical Materials, Components & Processes
Spetec GmbH	GERMANY	www.spetec.de	Cleanroom Design & Environmental Control
Stadt Pforzheim - Wirtschaft und Stadtmarketing Pforzheim	GERMANY	www.ws-pforzheim.de	Full Service Contract Manufacturing
steripac GmbH	GERMANY	www.steripac.com	Packaging, Labelling & Sterilisation
Synergy Health	GERMANY	www.leoni-infrastructure-datacom.com	Packaging, Labelling & Sterilisation
Tampoprint AG	GERMANY	www.tampoprint.de	Packaging, Labelling & Sterilisation
teamtechnik Maschinen und Anlagen GmbH	GERMANY	www.teamtechnik.com	Automation, Moulding & Manufacturing Processes
Technology Mountains e. V.	GERMANY	www.medicalmountains.de	Full Service Contract Manufacturing
Thieme GmbH & Co. KG	GERMANY	www.thieme.eu	Medical Materials, Components & Processes
Treffert GmbH & Co. KG	GERMANY	www.treffert.org	Medical Materials, Components & Processes
Trinon Titanium GmbH	GERMANY	www.trinon.com	Full Service Contract Manufacturing
Trotec Laser Automation GmbH	GERMANY	www.trotec.com	Automation, Moulding & Manufacturing Processes
Unipa Kunststofftechnik GmbH	GERMANY	www.unipa.de	Packaging, Labelling & Sterilisation
Vascotube GmbH	GERMANY	www.vascotube.com	Medical Materials, Components & Processes
VDE Prüf- und Zertifizierungsinstitut	GERMANY	www.vde.com	Testing, Metrology & Inspection, Clinical Trials & Validation

VDMA Electronics, Micro and Nano Technologies (EMINT)	GERMANY	emint.vdma.org	Automation, Moulding & Manufacturing Processes
velixX GmbH	GERMANY	www.velixx.com	Medical Materials, Components & Processes
Velox GmbH	GERMANY	www.velox.com	Medical Materials, Components & Processes
Vieweg GmbH	GERMANY	www.dosieren.de	Automation, Moulding & Manufacturing Processes
Viktor Hegedues GmbH	GERMANY	www.hegedeus.de	Surface Treatment
Vision Engineering Ltd. - Central Europe	GERMANY	www.visioneng.de	Testing, Metrology & Inspection, Clinical Trials & Validation
Weiss Klimatechnik GmbH	GERMANY	www.wkt.com	Cleanroom Design & Environmental Control
Werth Messtechnik GmbH	GERMANY	www.werth-messtechnik.de	Testing, Metrology & Inspection, Clinical Trials & Validation
whr Hossinger Kunststofftechnik GmbH	GERMANY	www.whr-hossinger.de	Medical Materials, Components & Processes
Zapp Precision Metals GmbH	GERMANY	www.zapp.com	Medical Materials, Components & Processes
Adroit Manufacturing Co.	INDIA	www.adroit-solutions.co.in	Medical Materials, Components & Processes
ANV Laser Industry Ltd	ISRAEL	www.anv-laser.com	Full Service Contract Manufacturing
LITHTECH MEDICAL	ISRAEL	www.lithotechmedical.com	Full Service Contract Manufacturing
Pronat Medical	ISRAEL	www.pronatmedical.com	Medical Materials, Components & Processes
Quasar Engineering Ltd	ISRAEL	www.quasar-eng.com	Full Service Contract Manufacturing
ALFASERVICE SRL	ITALY	www.alfaservice.eu	Packaging, Labelling & Sterilisation
Carniaflex s.r.l.	ITALY	www.carniaflex.it	Medical Materials, Components & Processes
CB Automation	ITALY	www.cbautomation.eu	Automation, Moulding & Manufacturing Processes
Chemical Machining Srl	ITALY	www.cm-italia.it	Medical Materials, Components & Processes
Dass Italian Medical Cluster	ITALY	www.dass.me	Full Service Contract Manufacturing
Encaplast s.r.l	ITALY	www.encaplast.it	Packaging, Labelling & Sterilisation
Fluid-o-Tech Srl	ITALY	www.fluidotech.it	Pumps & Valves
Gimac	ITALY	www.macgi.com	Automation, Moulding & Manufacturing Processes
OEM Medical	ITALY	www.carroluigi.it	Medical Materials, Components & Processes
Premek Hi Tech Srl	ITALY	www.premek.it	Medical Materials, Components & Processes
ROIS Dosing Systems	ITALY	www.roisds.com	Automation, Moulding & Manufacturing Processes
S4Technology Srl Unipersonale	ITALY	www.s4tech.it	Medical Materials, Components & Processes
Sisma S.P.A	ITALY	www.sisma.com	Additive Manufacturing
TECNOIDEAL	ITALY	www.tecnoidealsrl.com	Automation, Moulding & Manufacturing Processes
Kaneko Manufacturing Co.,Ltd	JAPAN	www.t-kaneko.co.jp	Medical Materials, Components & Processes
Heylo-Tubes S.A.	LUXEMBOURG	www.heylo-tubes.com	Extrusion & Tubing
LCMA SA	LUXEMBOURG	www.lcma.lu	Medical Materials, Components & Processes
Promepla	MONACO	www.promepla.com	Full Service Contract Manufacturing
2 Spring	NETHERLANDS	www.2spring.com	Medical Materials, Components & Processes
Asahi Intecc Co Ltd	NETHERLANDS	www.asahi-intecc.com	Medical Materials, Components & Processes
Etchform BV	NETHERLANDS	www.etchform.com	Medical Materials, Components & Processes
HELVOET	NETHERLANDS	www.hevloet.com	Full Service Contract Manufacturing
Minivalve International	NETHERLANDS	www.minivalve.com	Pumps & Valves
Murata Electronics Europe B.V	NETHERLANDS	www.murata.com	Electronic Components, Motors and Motion Control
Nelipak Healthcare Packaging	NETHERLANDS	www.nelipak.com	Packaging, Labelling & Sterilisation

Oliver-Tolas Healthcare Packaging	NETHERLANDS	www.oliver-tolas.com	Packaging, Labelling & Sterillisation
Phillips Medisize	NETHERLANDS	www.phillipsmedisize.com	Medical Materials, Components & Processes
Plastica Sp. z o.o.	POLAND	www.plastica.com.pl	Packaging, Labelling & Sterillisation
PRIMO PROFILE Poland sp.z.o.o.	POLAND	www.primo.com	Medical Materials, Components & Processes
Advant Medical Limited	REPUBLIC OF IRELAND	www.advantmedical.com	Full Service Contract Manufacturing
Arrotek Medical Ltd	REPUBLIC OF IRELAND	www.arrotek.com	Full Service Contract Manufacturing
Clada Medical Devices	REPUBLIC OF IRELAND	www.cladamedical.com	Extrusion & Tubing
Kelpac Medical Limited	REPUBLIC OF IRELAND	www.kelpacmedical.com	Extrusion & Tubing
Shannon MicroCoil	REPUBLIC OF IRELAND	www.shannonmicrocoil.com	Medical Materials, Components & Processes
SteriPack	REPUBLIC OF IRELAND	www.steripack.ie	Packaging, Labelling & Sterillisation
Vention Medical	REPUBLIC OF IRELAND	www.ansamed.com	Extrusion & Tubing
CHIRANA T.Injecta	SLOVAKIA	www.t-injecta.sk	Extrusion & Tubing
Cikautxo Silicone & Catheters	SPAIN	www.cikautxo.es	Full Service Contract Manufacturing
LVD BIOTECH	SPAIN	www.lvdbiotech.com	Full Service Contract Manufacturing
Sensofar Medical S.L.	SPAIN	www.sensofar.com	Design, R&D & Regulatory Consultants
Ultrason SL	SPAIN	www.ultrason.com	Automation, Moulding & Manufacturing Processes
Automationspartner AB	SWEDEN	www.automationspartner.se	Automation, Moulding & Manufacturing Processes
Backer BHV / DIV Calesco	SWEDEN	www.calescofoil.se	Electronic Components, Motors and Motion Control
Billerudkorsnas AB	SWEDEN	www.billerudkorsnas.com	Packaging, Labelling & Sterillisation
Höganäs Digital Metal	SWEDEN	www.hoganas.com	Additive Manufacturing
Optima	SWEDEN	www.optima.se	Medical Materials, Components & Processes
Amsler + Frey AG	SWITZERLAND	www.amsler-frey.ch	Medical Materials, Components & Processes
AO Research Institute Davos	SWITZERLAND	www.aofoundation.org/crd	Testing, Metrology & Inspection, Clinical Trials & Validation
Bangerter Microtechnik AG	SWITZERLAND	www.ba-micro.com	Medical Materials, Components & Processes
Boillat Technologies	SWITZERLAND	www.boillat.ch	Medical Materials, Components & Processes
BW-TEC AG	SWITZERLAND	www.bwtec.com	Automation, Moulding & Manufacturing Processes
Cicor Technologies Ltd.	SWITZERLAND	www.swisstronics.ch	Full Service Contract Manufacturing
Ciposa S.A.	SWITZERLAND	www.ciposa.com	Automation, Moulding & Manufacturing Processes
Comelec SA	SWITZERLAND	www.comelec.ch	Full Service Contract Manufacturing
Emaform AG	SWITZERLAND	www.emaform.ch	Medical Materials, Components & Processes
Emil Völlmin & Söhne AG	SWITZERLAND	www.evos.ch	Medical Materials, Components & Processes
EOSWISS Engineering Sàrl	SWITZERLAND	www.eoswiss-engineering.ch	Full Service Contract Manufacturing
EuropTec Polymer AG	SWITZERLAND	www.europtec.com	Medical Materials, Components & Processes
FRÜH Verpackungstechnik AG	SWITZERLAND	www.fruh.ch	Packaging, Labelling & Sterillisation
Gebrüder Renggli AG	SWITZERLAND	www.renggli-ag.com	Full Service Contract Manufacturing
Gsell Medical Plastics AG	SWITZERLAND	www.gsell.ch	Medical Materials, Components & Processes
Hagmann Tec AG	SWITZERLAND	www.hagmann-tec.com	Packaging, Labelling & Sterillisation
Hempel Special Metals AG	SWITZERLAND	www.hempel-metals.com	Medical Materials, Components & Processes
Hightec MC AG	SWITZERLAND	www.hightec.ch	Electronic Components, Motors and Motion Control
IMT Information Management Technology AG	SWITZERLAND	www.imt.ch	Electronic Components, Motors and Motion Control

Interalloy AG	SWITZERLAND	www.interalloy.ch	Extrusion & Tubing
Komax Systems LCF SA	SWITZERLAND	www.komaxgroup.com	Automation, Moulding & Manufacturing Processes
Kubo Form AG	SWITZERLAND	www.kuboform.ch	Automation, Moulding & Manufacturing Processes
Leister Technologies AG	SWITZERLAND	www.leister.com	Automation, Moulding & Manufacturing Processes
LN Industries SA - Swiss Tube	SWITZERLAND	www.lnindustries.com	Extrusion & Tubing
Medical Cluster	SWITZERLAND	www.medical-cluster.ch	Electronic Components, Motors and Motion Control
Medical Cluster	SWITZERLAND	www.medical-cluster.ch	Electronic Components, Motors and Motion Control
Medical Cluster	SWITZERLAND	www.medical-cluster.ch	Full Service Contract Manufacturing
Medical Cluster	SWITZERLAND	www.medical-cluster.ch	Full Service Contract Manufacturing
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Metoxit AG	SWITZERLAND	www.metoxit.com	Full Service Contract Manufacturing
Meylan Frères SA	SWITZERLAND	www.meylanfreres.ch	Full Service Contract Manufacturing
Microdul AG	SWITZERLAND	www.microdul.com	Electronic Components, Motors and Motion Control
Micronarc	SWITZERLAND	www.micronarc.ch	Electronic Components, Motors and Motion Control
Mikron Automation	SWITZERLAND	www.mikron.com/automation	Automation, Moulding & Manufacturing Processes
NGL Cleaning Technology SA	SWITZERLAND	www.ngl-group.com	Surface Treatment
Parmaco Metal Injection Molding AG	SWITZERLAND	www.parmaco.com	Full Service Contract Manufacturing
Polyfil AG	SWITZERLAND	www.polyfil.ch	Medical Materials, Components & Processes
Precipart SA	SWITZERLAND	www.precipart.com	Full Service Contract Manufacturing
Qmedics AG	SWITZERLAND	www.qmedics.ch	Full Service Contract Manufacturing
REWaG Feinmechanik AG	SWITZERLAND	www.rewag.ch/cms/	Medical Materials, Components & Processes
RIWISA AG	SWITZERLAND	www.riwisa.ch	Medical Materials, Components & Processes
Robert Laminage SA	SWITZERLAND	www.robertlaminage.ch	Full Service Contract Manufacturing
Sarna Plastec AG	SWITZERLAND	www.sarna-plastec.com	Medical Materials, Components & Processes
Signer Titanium AG	SWITZERLAND	www.signer-titanium.com	Medical Materials, Components & Processes
Sored S.A.	SWITZERLAND	www.sored-sa.com	Full Service Contract Manufacturing
SPT Roth Ltd	SWITZERLAND	www.spt.net	Medical Materials, Components & Processes
Steiger Galvanotechnique SA	SWITZERLAND	www.steiger.ch	Full Service Contract Manufacturing
Swisstec Micromachining	SWITZERLAND	www.swisstecag.com	Automation, Moulding & Manufacturing Processes
Varin-Étampage	SWITZERLAND	www.varin-etampage.ch	Extrusion & Tubing
Wild & Kuepfer AG	SWITZERLAND	www.wildkuepfer.ch	Medical Materials, Components & Processes
Ypsotec AG	SWITZERLAND	www.ypsotec.com	Full Service Contract Manufacturing
Zanol Präzisionswerkstätte GmbH	SWITZERLAND	www.zanol.ch	Full Service Contract Manufacturing
Kuang Tai Metal Industrial Co. Ltd	TAIWAN	www.kuangtai.com	Medical Materials, Components & Processes
Lily Medical Corporation	TAIWAN	www.lily-medical.com	Full Service Contract Manufacturing
Pyramids Technology Corporation	TAIWAN	www.pyramids.com.tw	Full Service Contract Manufacturing
42 Technology Ltd.	UNITED KINGDOM	www.42technology.com	Design, R&D & Regulatory Consultants

Amcor Flexibles	UNITED KINGDOM	www.amcor.com	Packaging, Labelling & Sterillisation
Batten & Allen Ltd	UNITED KINGDOM	www.batten-allen.co.uk	Electronic Components, Motors and Motion Control
Bemis Healthcare Packaging	UNITED KINGDOM	www.bemis.com	Packaging, Labelling & Sterillisation
BioInteractions Ltd	UNITED KINGDOM	www.biointeractions.com	Full Service Contract Manufacturing
Boddingtons Plastics Limited	UNITED KINGDOM	www.boddingtons.co.uk	Full Service Contract Manufacturing
Carclo Technical Plastics UK	UNITED KINGDOM	www.carclo-ctp.co.uk	Full Service Contract Manufacturing
Clamason Industries Ltd	UNITED KINGDOM	www.clamason.co.uk	Medical Materials, Components & Processes
Curtiss - Wright Surface Technologies	UNITED KINGDOM	www.metalimprovement.com	Surface Treatment
DirectMed	UNITED KINGDOM	www.directmed.com	Medical Materials, Components & Processes
eg technology Ltd.	UNITED KINGDOM	www.egtechnology.co.uk	Design, R&D & Regulatory Consultants
Fujikura Europe Ltd	UNITED KINGDOM	www.fujikura.co.uk	Electronic Components, Motors and Motion Control
Getinge UK Ltd	UNITED KINGDOM	www.getinge-lacalhe.com	Packaging, Labelling & Sterillisation
Johnson Matthey	UNITED KINGDOM	www.jmmedical.com	Medical Materials, Components & Processes
Master Control Inc.	UNITED KINGDOM	www.mastercontrol.com	Design, R&D & Regulatory Consultants
Medical Engineering Technologies	UNITED KINGDOM	www.met.uk.com	Testing, Metrology & Inspection, Clinical Trials & Validation
NSF Health Sciences Medical Devices	UNITED KINGDOM	www.nsf.org	Testing, Metrology & Inspection, Clinical Trials & Validation
Precision Micro Ltd.	UNITED KINGDOM	info@precisionmicro.com	Medical Materials, Components & Processes
primasil silicones Limited	UNITED KINGDOM	www.primasil.com	Medical Materials, Components & Processes
Sheffield Precision Medical Ltd.	UNITED KINGDOM	www.sheffieldpm.co.uk	Full Service Contract Manufacturing
Speciality Coating Systems	UNITED KINGDOM	www.scscoatings.com	Medical Materials, Components & Processes
Westfield Medical Ltd	UNITED KINGDOM	www.westmed.co.uk	Packaging, Labelling & Sterillisation
WITTENSTEIN high integrity systems	UNITED KINGDOM	www.highintegritysystems.com	Software Designers & Consultants
XL Precision Technologies Ltd	UNITED KINGDOM	www.xlprecisiontechnologies.com	Medical Materials, Components & Processes
AMETEK Engineered Medical Components	UNITED STATES	www.ametek.com	Full Service Contract Manufacturing
BDC Laboratories	UNITED STATES	www.bdclabs.com	Testing, Metrology & Inspection, Clinical Trials & Validation
Catheter & Medical Design Inc.	UNITED STATES	www.cmd-inc.biz	Extrusion & Tubing
Ci Medical Technologies	UNITED STATES	www.classicind.com	Full Service Contract Manufacturing
Connecticut Spring & Stamping	UNITED STATES	www.ctspring.com	Automation, Moulding & Manufacturing Processes
Disposable Instrument Company Inc.	UNITED STATES	www.disposableinstrument.com	Medical Materials, Components & Processes
DSM Biomedical	UNITED STATES	www.polymertech.com	Medical Materials, Components & Processes
Dynamet Inc.	UNITED STATES	www.carttech.com	Medical Materials, Components & Processes
Esma Inc	UNITED STATES	www.esmainc.com	Medical Materials, Components & Processes
EtQ Inc.	UNITED STATES	www.etq.com	Software Designers & Consultants
Flexible Circuit Technologies Inc	UNITED STATES	www.flexiblecircuit.com	Electronic Components, Motors and Motion Control
Fluortek Inc.	UNITED STATES	www.fluortek.com	Extrusion & Tubing
Formlabs Inc	UNITED STATES	www.formlabs.com	Additive Manufacturing
Fort Wayne Metals	UNITED STATES	www.fwmetals.com	Medical Materials, Components & Processes
GlobTek Deutschland GmbH	UNITED STATES	www.globtek.com	Electronic Components, Motors and Motion Control
Harland Medical Systems Inc	UNITED STATES	www.harlandmedical.com	Surface Treatment
Hydromer Inc	UNITED STATES	www.hydromer.com	Surface Treatment

Luminous Device Technologies	UNITED STATES	www.luminous.com	Full Service Contract Manufacturing
Machine Solutions	UNITED STATES	www.machinesolutions.org	Automation, Moulding & Manufacturing Processes
Martech Point	UNITED STATES	www.martechmedical.com	Medical Materials, Components & Processes
MicroLumen Inc.	UNITED STATES	www.microlumen.com	Extrusion & Tubing
Microspec Corp.	UNITED STATES	www.microspeccorporation.com	Extrusion & Tubing
National Power Corporation	UNITED STATES	www.nationalpower.com	Electronic Components, Motors and Motion Control
Nordson Medical	UNITED STATES	www.avalonlabs.com	Medical Materials, Components & Processes
Orchid Orthopedics Solutions	UNITED STATES	www.orchid-orthopedics.com	Full Service Contract Manufacturing
Putnam Plastics	UNITED STATES	www.putnamplastics.com	Extrusion & Tubing
Qosina	UNITED STATES	www.qosina.com	Medical Materials, Components & Processes
Saint-Gobain Performance Plastics	UNITED STATES	www.medical.saint-gobain.com	Extrusion & Tubing
Sono-Tek Corporation	UNITED STATES	www.sono-tek.com	Automation, Moulding & Manufacturing Processes
Super Brush LLC	UNITED STATES	www.superbrush.com	Medical Materials, Components & Processes
SYNEO	UNITED STATES	www.syneoco.com	Automation, Moulding & Manufacturing Processes
Tecomet	UNITED STATES	www.tecomet.com	Full Service Contract Manufacturing
Tekscan Inc	UNITED STATES	www.tekscan.com	Electronic Components, Motors and Motion Control
Teleflex Medical OEM	UNITED STATES	www.teleflexmedicaloem.com	Extrusion & Tubing
Vesta Inc.	UNITED STATES	www.vestainc.com	Full Service Contract Manufacturing
Zeus Inc.	UNITED STATES	www.zeusinc.com	Extrusion & Tubing