

## 行政院及所屬各機關出國報告提要

出國報告名稱：醫用數位 X 光系統開發計畫－國際醫療器材設備展及相關技術研討會出國報告

頁數 54 含附件：■是□否

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出國類別：1 考察2 進修3 研究4 實習5 其他（開會）

出國期間：101.11.12 至 101.11.18 出國地區：德國

報告日期：101.12.18

分類號/目

關鍵詞：醫院資訊系統、PACS、DICOM、微系統、MEMS、Medical device、  
醫用儀器、手執行動裝置、智慧型手機、平板電腦、影像感應器、  
膠囊內視鏡、數位 X 光；

內容摘要：(二百至三百字)

執行經濟部科技專案之「醫用數位 X 光系統開發計畫」，赴德國參加 2012 年 ComPaMED 國際醫療器材展及技術研討會，充分瞭解各國最新的醫療器材與 DICOM/PACS 技術之發展應用，膠囊內視鏡、數位 X 光系統之功能技術發展現況，以及醫療產業全方位產品解決方案等。

文中將針對出國過程、技術研討會，及最新醫療器材技術、設備做一心得報告。內容分別為 1. 微系統技術；2. 醫院資訊系統—PACS 與 DICOM；3. 醫用儀器與手執行動裝置；4. 影像感應器與顯示器；5. 膠囊內視鏡與數位 X 光；6. 未來角色—電子醫療器材；7. 成果。最後，綜合所見所聞及計畫現況，提出建議事項。

# 目 次

壹、 目的.....	(9)
貳、 過程.....	(9)
參、 心得.....	(13)
1. 微系統技術(Micro systems technology).....	(13)
2. 醫院資訊系統—PACS 與 DICOM .....	(16)
3. 醫用儀器與手執行動裝置 .....	(17)
4. 影像感應器與顯示器 .....	(19)
5. 膠囊內視鏡與數位 X 光 .....	(20)
6. 未來角色—電子醫療器材 .....	(22)
7. 成果 .....	(23)
肆、 建議事項 .....	(24)
伍、 附件 .....	(25)
1. 攜回研討會簡報資料清單 .....	(25)
2. 攜回醫材展紙本資料清單 .....	(25)
3. COMPAMED 國際醫療器材展預覽說明冊 .....	(27)
4. 知識分享會議紀錄 .....	(53)



# 醫用數位 X 光系統開發計畫－國際醫療器材設備展及 相關技術研討會出國報告

## 壹、目的

為執行經濟部科技專案之「醫用數位 X 光系統開發計畫」，派員赴德國參加 2012 年

ComPaMED 國際醫療器材展及技術研討會，了解最新醫療器材產品之全方位解決方案與

發展應用，並參觀商業展示，蒐集相關商訊，以提昇研發能力，並建立未來發展目標。



圖 1-1 德國 2012 年 ComPaMED 國際醫療器材展及技術研討會

## 貳、過程

德國 2012 年 ComPaMED 國際醫療器材展及技術研討會是由德國 Messe Düsseldorf GmbH 所主辦，最近一次參加的人數約為 80,000 人(2011)，簡略說明概況如下：(圖 2-1，2-2，2-3)

1. 主辦：Messe Düsseldorf GmbH (德國杜塞道夫商展公司)
2. 日期：2012 年 11 月 14 日(週三)~16 日(週五)(三天)

3. 地點：德國杜塞爾多夫貿易中心
4. 時間：早上 10 點—下午 6 點半
5. 門票：八月起開放網路訂票 (歐元 20 元/一日票)
6. 館數：2 個 ComPaMed 展示館 + 16 個 Medica 展示館
7. 展示面積：116,000 平方公尺
8. 參展廠商：640 家公司分別來自 39 國家
9. 參觀人數：超過 16,000 來自全球各地的參觀者



圖 2-1 德國杜塞爾多夫貿易中心



圖 2-2 ComPaMED 國際醫療器材展

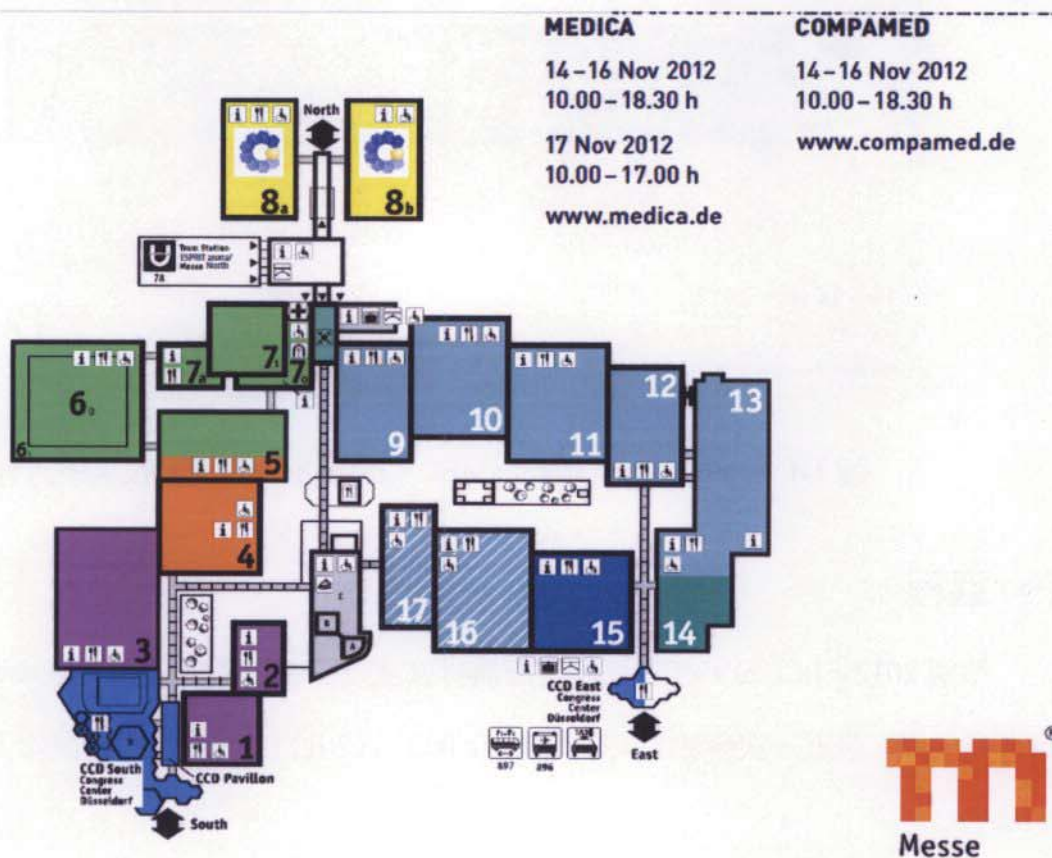


圖 2-3 ComPaMED 展示會場 - 8a 館、8b 館 (其它為 Medica 展示會場)



該展聚集了各國的醫療儀器研發人員、醫生、護理人員、醫療管理人員，以及業者等，大會除了會發表最新醫療器材高科技技術研究成果外，也提供教育訓練、醫療研修會、醫療設備用品和醫療機器展示會，是相當多元的現代化醫院與醫療器材展示會。而今年大會提供下列：

- **Conferences and Seminars**：會議與研討會 (圖 2-4)

1. 醫療器材高科技技術研討會 (HIGH-TECH FORUM for Medical Device) (圖 2-5, 2-6)
2. 醫材供應者講座 (SUPPLIER FORUM by Device Med) (圖 2-7)



圖 2-4 會議現場



圖 2-5 醫療器材高科技技術研討會一



圖 2-6 醫療器材高科技技術研討會二



圖 2-7 醫材供應者講座

- **Exhibition**：展示區 Hall 8A, 8B (圖 2-8)

1. "Production/Manufacturing", 醫療儀器產品與製造區----
2. "Materials/Substance", 醫療產品材料與代用品區----
3. "Micro-/Nano-technology", 微米級-/奈米級-醫療技術區----
4. "Testing/Certification", 醫療儀器產品測試/驗證區
5. "Components for medical technology", and 醫療技術關鍵零組件區

此外，同時舉辦的 Medica 展亦有頗看之處。(圖 2-9)



圖 2-8 ComPaMED 展示會現場(一)



圖 2-9 Medica 展示會現場(二)



配合計畫執行與未來發展重點，本次參訪過程如下：

11/14 Day1	
0940	至德國杜塞爾多夫貿易中心
1000-1200	參觀 ComPaMED 國際醫療器材展
1300-1730	參加醫療資訊科技與醫院資訊系統研討會
11/15 Day2	
1000-1200	參觀 ComPaMED 國際醫療器材設備展
1300-1730	參加醫療影像研討會。
11/16 Day3	
1000-1200	參觀 ComPaMED 國際醫療器材設備展
1300-1730	參加 DICOM/HL7/ PACS 系統相關技術研討會。

## 參、心得

德國 2012 年 ComPaMED 國際醫療器材展及技術研討會，以提供 High tech solutions for medical technology 為主，與 Medica 展提供完整醫材設備產品有明顯之差異。本報告就參加之研討會與參觀相關醫療器材之見聞心得，分別說明如下：

(以下圖片來源：為現場研討會資料、DM 摘錄等，或至其官網下載)

### 1. 微系統技術(Micro systems technology)

根據研討會 Harald Pötter 先生 (德國弗朗霍夫研究所, Fraunhofer IZM) 的報告, 2012 年醫療器材產品, 就以與電子類產品而言, 整體趨勢為: Smaller、Smarter、More Reliable。

(圖 3-1) [1]

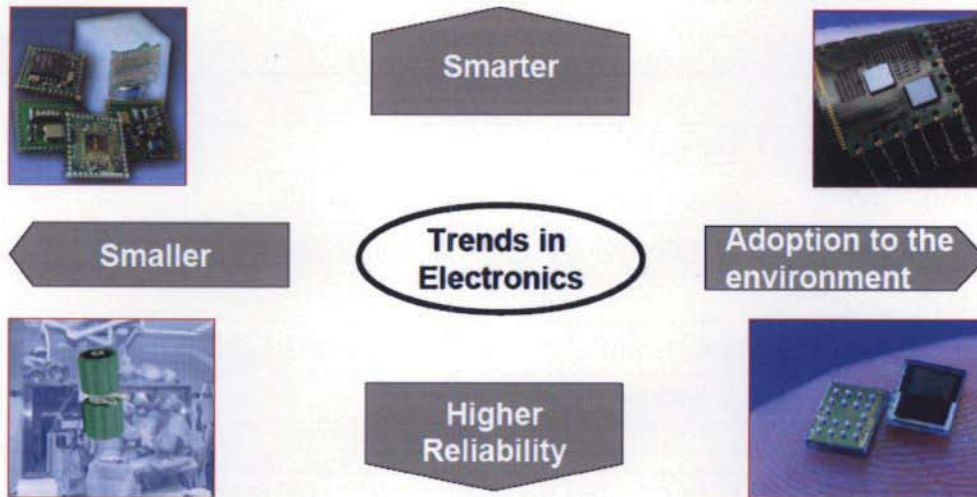
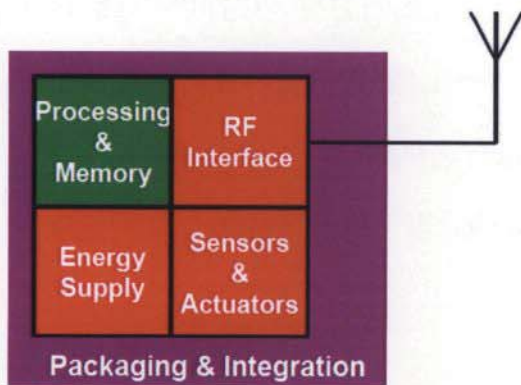


圖 3-1 電子類產品大趨勢 [1]

(1) 更微型化(Smaller) -

在更小的尺寸中展現更多的功能，如利用微機電系統(MEMS)將多種功能需求架構在一晶片上。



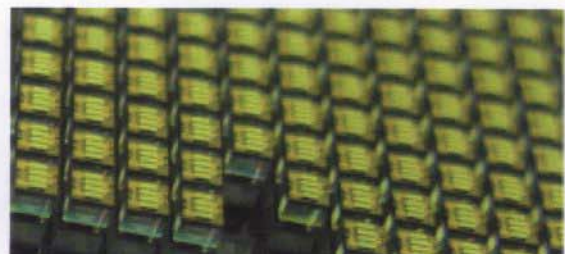
(a) 醫用微機電系統架構



(b) 神經介面 (Sensor/Actuator, Antenna, RFInterface, Signal Processing, Power)：可用於義肢 (prostheses)



(c) 可撓曲軟膜晶片(Signal processing, wireless interface)：可用於超微型助聽器 (ultraminiature hearing aids)



(d) 照相機 (including sensor, lenses and signal processing, 1\*1\*1 mm<sup>3</sup>)：可用於內視鏡 (endoscopes)

圖 3-2 常見的醫用微機電系統架構及其各種微型應用 [1]

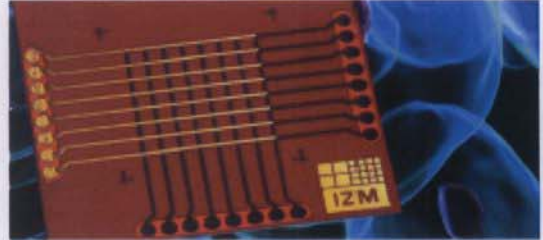


(2) 更智慧化(Smarter) --

將醫療電子產品做有效地最佳化的應用。



(a) 織品感應器 (Sensor/Actuator, IR/RF-Interface, Signal Processing) : 肌肉張力量測



(b) 實驗室替代品 (Sensor, Signal Processing, Fluidics) : 癌細胞分析

圖 3-3 智慧型醫療電子產品應用 [1]

(3) 與應用環境結合(Adoption to the application environment) -

由單一獨立系統走向與應用環境整合，或整個價值鍊完全整合。



(a) 助聽器  
(Hearing Aid)



Thin, flexible eye implant  
(Sensor/Actuator, IR/RFInterface, Signal Processing)



(b) 心律調整器  
(Pace Maker)



ECG T-Shirt  
(Sensor, Wiring, Signal Processing)

圖 3-4 與應用環境結合之範例 [1]

(4) 具更佳可靠度(Higher Reliability) -

整合多種檢測儀器數據，提供更具可靠度的檢測結果，如健康助理照護應用。

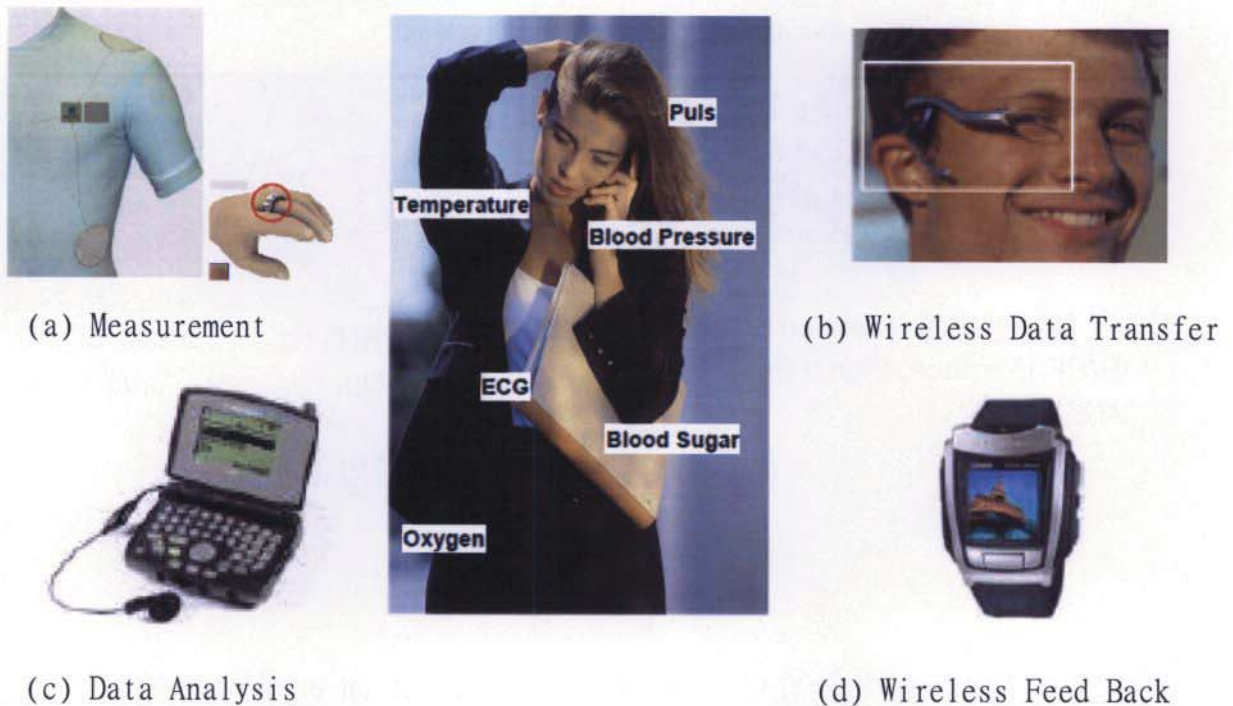


圖 3-5 整合多種檢測儀器之範例 [1]

## 2. 醫院資訊系統—PACS 與 DICOM

現代醫院所使用的各種數位醫療儀器設備，均需透過 PACS 系統( Picture Archiving and Communication Systems，醫療影像儲存與通訊系統 )，以及其配套的通訊協定 DICOM ( Digital Imaging and Communication in Medicine，醫療數位影像與通訊協定)與 HL7(Health Level Seven，診間醫令系統之語法標準協定)來整合與溝通，甚至於與較早建立的病患管理資訊系統(Hospital Information System，HIS)，以及放射科的管理資訊系統(Radiology Information System，RIS)亦須做進一步的整合。

PACS 之全名為醫療影像儲存與通訊系統，此乃將醫院各種造影儀器(modality)所產生的影像，如放射線科的 CT、MR、X-ray 影像，消化道科的內視鏡影像，或超音波影像等等，均將其透過 DICOM 協定，來進行儲存及交換醫療影像相關資訊。醫師或醫檢人員則以診間醫令系統之語法標準協定，寫下診斷說明。



在會場上，許多先進的醫療器材大廠所推出的各種大大小小儀器，莫不具備有此一基本功能---符合 DICOM 傳輸規格、可連上 PACS 系統；例如：德國 PROTEC 公司 X 光儀器 DR-Systems 包含 PACS/Viewer 系統 (圖 3-6)。

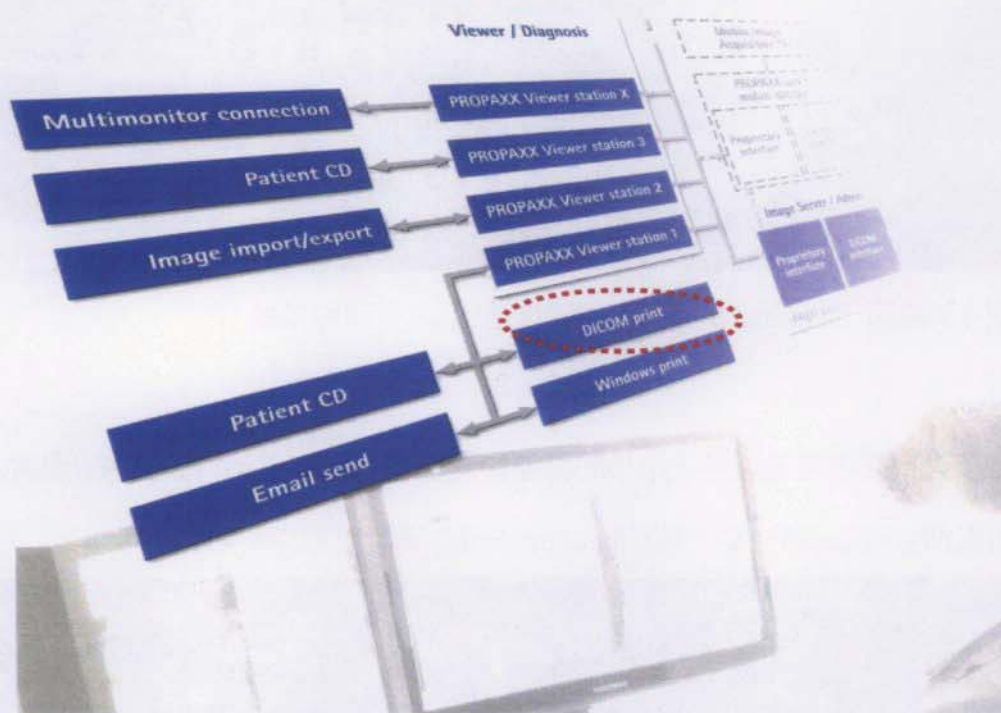


圖 3-6 德國 PROTEC 公司的 PACS/Viewer 系統 ( 含 DICOM Print 等功能)

### 3. 醫用儀器與手執行動裝置

會場上，韓國手機大廠 Samsung 以不到兩年的光景切進醫療器材領域，展示可觀的成果，將超音波儀與其智慧型手執行動裝置結合連線，吸引了許多人潮。當醫事人員對孕婦做胎兒狀況掃瞄時，該超音波系統可將影像顯示在系統平台，同時傳給已設定的 Samsung 平板裝置或智慧型手機，當然，這些手執行動裝置都已有安裝 Android App 軟體。(圖 3-7)



圖 3-7 韓國 Samsung 的超音波儀與智慧型裝置連線系統

除了大型醫療系統之外，小小的醫療檢測器也紛紛與手執行動裝置功能結合。瑞士 FORA公司血糖監視器(圖3-8)、德國beurer公司心律監視器(圖3-9)



圖3-8 瑞士 FORA公司血糖監視器

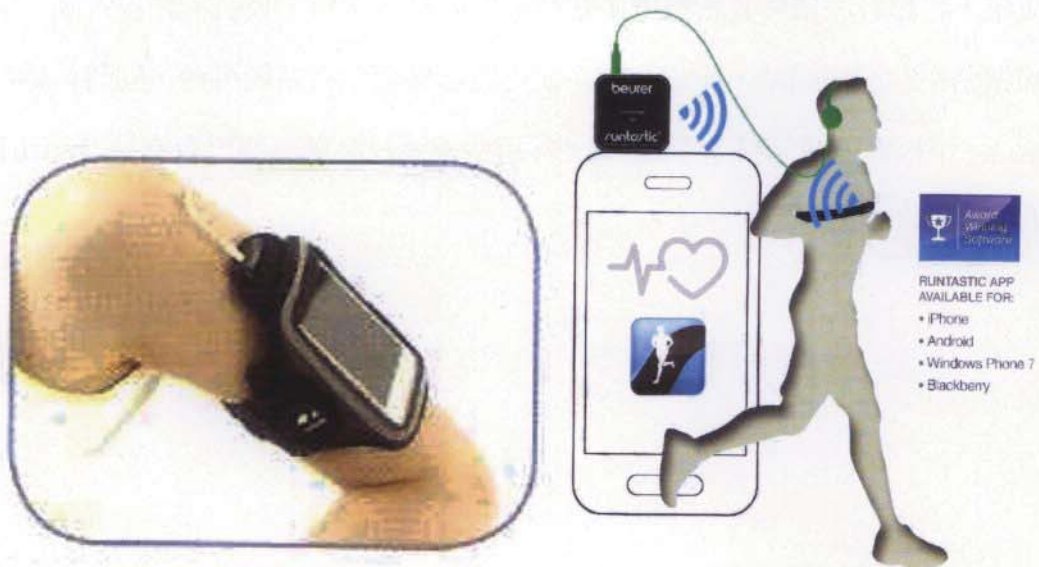


圖3-9 德國beurer公司心律監視器



#### 4. 影像感應器與顯示器

影像感應器產品趨向微小化、3D化。會場上看到的小型 3D camera，解說人員將相機移至假體模型，螢幕上立即顯示 3D 影像，幾乎是即時顯示。(圖 3-1)

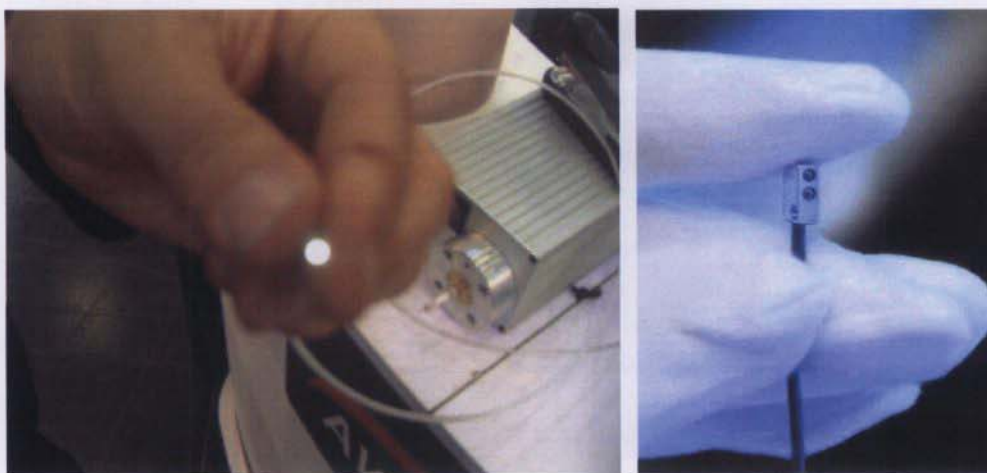


圖3-10 3D影像感應器與camera

影像顯示器產品趨向移動式、觸控式、虛擬化。除了一般醫療儀器本身的螢幕之外，通常會再增加大型螢幕 LCD 或小型移動式螢幕(圖 3-11)，幫助病患或其他人員同步瞭解診治情形。而更新的發展，來自於新技術—可追蹤手跡的裝置，使得醫事人員可徒手移動螢幕畫面，並虛擬顯示影像，如同科幻片般。(圖 3-12)



圖3-11 大型或小型移動式螢幕顯示器



圖3-12 可追蹤手跡的虛擬影像顯示器

### 5. 膠囊內視鏡與數位 X 光

日本 OLYMPUS 公司只展出影像工作平台，沒有見到膠囊內視鏡，解說人員未說明原因，但知道會場甚重視專利侵權的狀況。而 OLYMPUS 一款傳統內視鏡，採用雙焦點技術(Dual Focus)可切換焦點使得目標物能更清楚地被檢視。(圖 3-13)

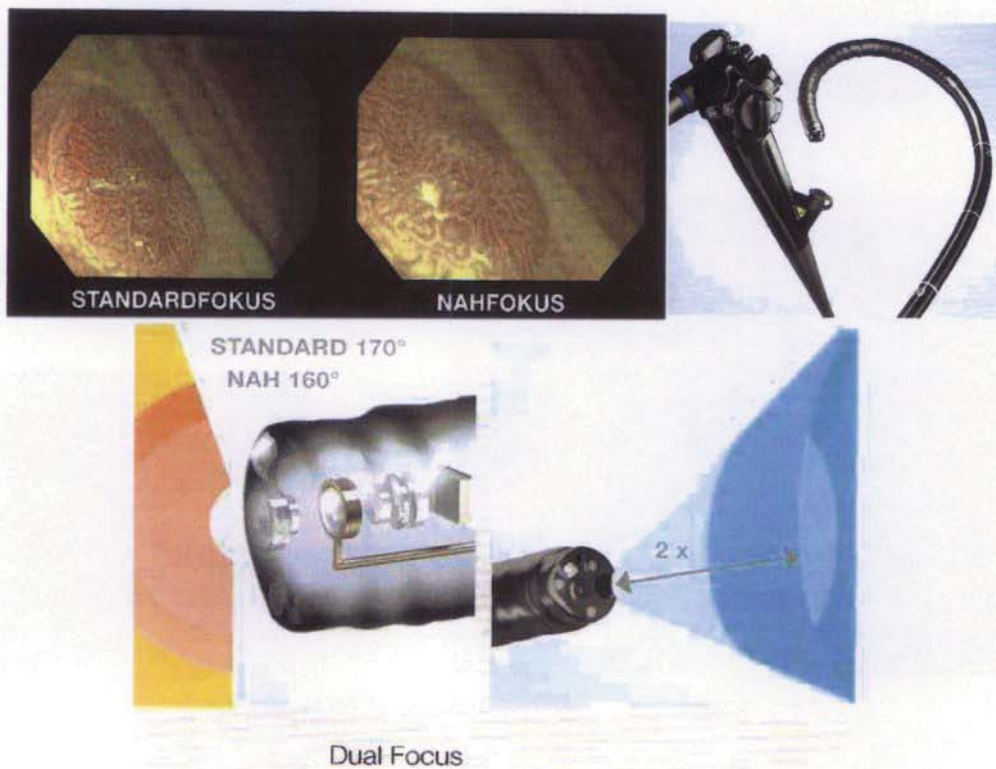


圖3-13 日本OLYMPUS 雙焦點傳統內視鏡



此外，一家美國 SINGER instruments 公司也宣稱其為 GIVEN 公司代工 Pillcam 膠囊內視鏡(圖 3-14)。



圖3-14 美國SINGER公司代工GIVEN Pillcam 膠囊內視鏡

而與 X 光有關之各項醫療診斷系統(X-ray、CT)，依舊是 Philips、Siemens、Toshiba、Konica Minolta、GE 等大廠產品的天下，產品較無明顯的新功能；或者，於顯示器上配合潮流，增加平板顯示功能(圖 3-15)。

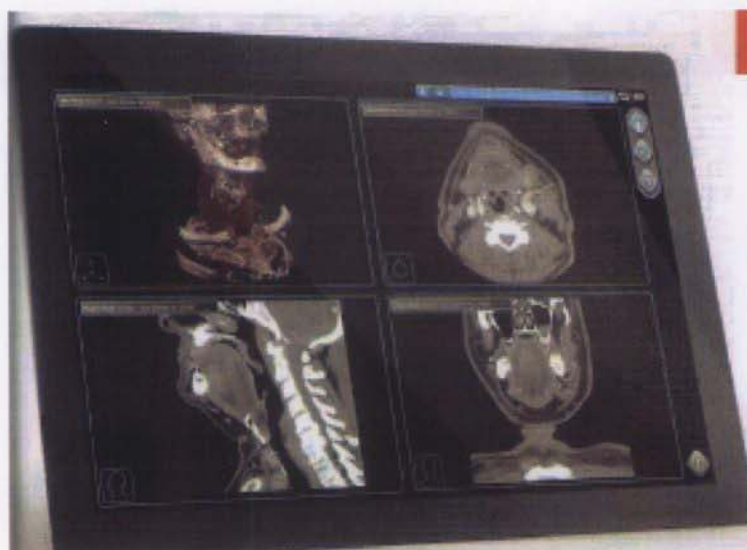


圖 3-15 CT 診斷系統之平板顯示功能

## 6. 未來角色—電子醫療器材

以往由醫療大廠主導市場的情形，已有新的場面加入。全球資通訊大廠包括微軟、英特爾、Samsung 等，為擺脫電子產業成長趨緩之趨勢，均善用其核心能量將營運焦點移到醫療器材市場；而各國的研究機構、電子產業廠商與中小型醫材廠商亦摩拳擦掌將應用領域再擴大、再結合，以產生新的藍海空間。

未來電子醫療器材所扮演的角色，無論侵入或非侵入、單獨或結合式(圖 3-16)，直接或間接使用於人體(圖 3-17)，勢必非常多元化。對電子產業來講，毫無疑問地，朝向微小化、低侵入式、可攜式、多功能整合的高附加價值智慧型醫療產品發展，並同時導入異業能量，開發關鍵組件與創新服務，以高品質較低價的醫材產品切入目標市場，或是以關鍵零組件供應者的角色，積極切入市場的產業供應鏈，才能創造獲利的新契機。



圖3-16 未來角色—電子神經義肢、體感織物



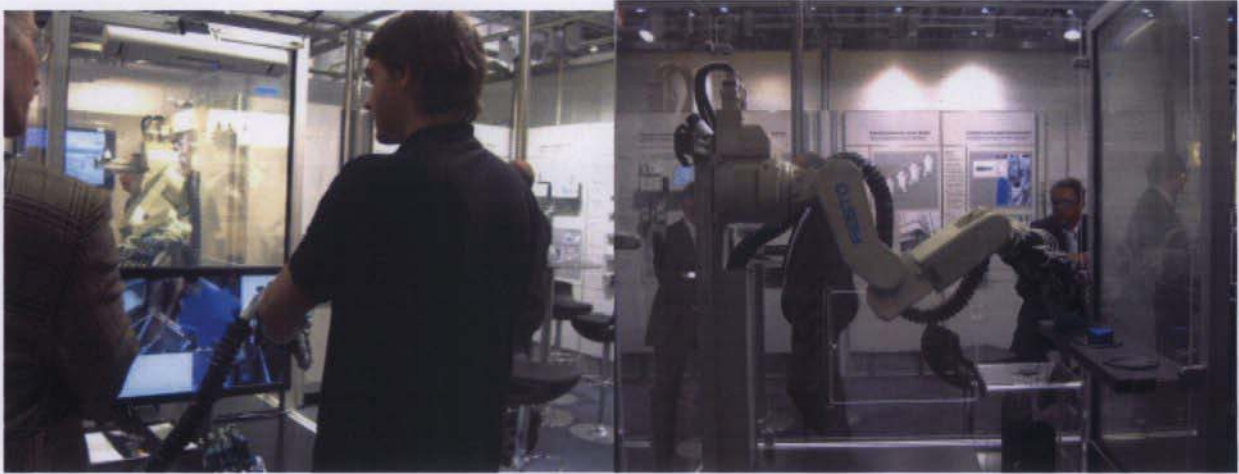


圖3-17 未來角色 — 醫用機械手臂

## 7. 成果

(1) 出國目的：瞭解世界各國醫療器材、關鍵零組件技術最新發展，以及 DICOM/PACS 系統應用趨勢，並觀察膠囊內視鏡、數位 X 光機等之技術發展現況與應用成果，希藉此引發新思維，提升光電醫療檢測計畫研發品質。

(2) 參加醫材展及研討會成果

- 研討會：充分瞭解醫療器材、關鍵零組件、DICOM/PACS 技術之最新發展及應用趨勢。攜回簡報資料至少 3 份，請參閱清單。[1]
- 醫材展：蒐集到各廠家的醫療資訊系統、影像設備、電子器材、關鍵零組件等相關新技術商訊、市場資料與產品發展趨勢，尤其觀察到膠囊內視鏡、數位 X 光機等之產品現況與應用技術。攜回紙本資料至少 18 份，請參閱清單。[2] [3]

(3) 所解決之問題暨獲得之成效：

透過會議報告，並分享知識，進行討論，如下說明。[4]

- 就 X 光計畫而言，在第一年雛型研發階段，雖然已有初步成果但仍有改善空間，由此次公差中，獲知 P 公司等相關產品資訊，適時提供 X 光影像處理系統架構整合設計的參考規範。
- 也由 Olympus 公司現場展示雙焦點內視鏡的技術發展現況，得知膠囊內視鏡於未來

再增加不同功能的可能性。

簡如上述這些成效說明，一者可提升計畫研發品質，再者可幫助計畫建立下一階段研發方向與認未來發展目標。

## 肆、建議事項

本次會場醫療零組件展示的廠商約有 600 家，從基礎的實驗室器材到可植入人體高科技微機電系統，無論是提出商品、解決方案的廠商，或者是尋求商品以獲得解決現代數位化需求的醫療器材設備，均可在此找到一些合理可行的方案。

1. 對數位醫用 X 光科專計畫而言，在第一年醫用數位 X 光雛型系統研發階段，雖然已有成像但影像仍有改進空間，參考 P 公司 DR & CR X-ray system 的 Image acquisition software 產品，可自動將影像做最佳化，並相容於 DICOM / PACS。故建議：可在影像處理系統中增加最佳化的功能，並一併考量與 DICOM / PACS 系統整合的設計。
2. 醫用關鍵零組件技術，不斷地趨向微小化、智慧化、更佳可靠化、與應用環境結合；未來本院申請科專計畫將必須面對這些議題，建議：提早準備因應措施，以與尖端技術保持同步。



## 伍、附件

### [1] 攜回研討會簡報資料清單

說明：包含電子關鍵零組件等與醫療器材應用未來性及應用範圍之簡報至少三份，名稱如下。

1. Harald Pötter, Fraunhofer Institute for Reliability and Microintegration IZM, Berlin, DE, “*Micro Systems Technology as a Key for State-of-the-Art Diagnostics and Therapy - Update 2012*”
2. N. Weidner, Heidelberg University, “*Innovative Neuroprostheses using implantable micro systems*”
3. Erik Jung, Fraunhofer IZM, “*The future role of electronics in medical products*”

### [2] 攜回醫材展紙本資料清單

說明：包含大會及各廠商所提供之商品目錄與商情至少 18 份，名稱如下。

1. COMPAMED Catalogue (COMPAMED 醫材展目錄)一冊
2. COMPAMED Exhibition Preview (COMPAMED 醫材展預覽)一冊 (詳如附件[3])
3. MEDICA Catalogue (MEDICA 醫材展目錄)一冊
4. medizin & technik (FAULHABER) 一冊
5. Radiologie Technik & IT-systeme 一冊
6. Medica Device 一冊
7. PROTEC, Human Medicine(DR &CR X-ray system) (X 光系統產品規格目錄)一冊
8. Measurement sensor (量測感應器目錄)一冊
9. NEC, Hospital Wide Display solutions 一冊
10. Olympus informiert 一冊
11. Olympus Endoscope Overview 一冊
12. Schiller, the art of Diagnostics 一冊

13. Medica, European Hospital 一份
14. AWAIBA, CMOS image sensors 二份
15. IVAM, High-Tech Form 一份
16. FORA, Diamond MINI, Blood Glucose Monitoring System 一份
17. HAMAMATSU, NanoZoomer-XR 一份
18. OPCOM, Digital Imaging & Lighting 一份

**[3] COMPAMED 國際醫療器材展預覽說明冊 (COMPAMED Exhibition Preview)**

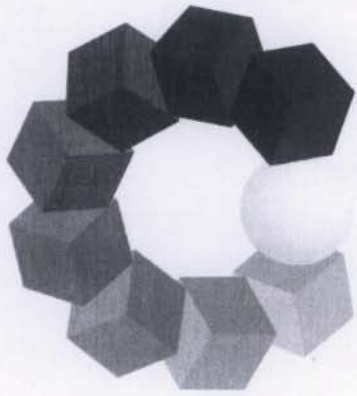
如後 p27 ~ p52 。

**[4] 知識分享會議紀錄**

如後 p53 ~ p54 。



# COMPAMED



[ 3 ] COMPAMED 國際醫療器材展預覽說明冊

## High tech solutions for medical technology



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The Official COMPAMED Exhibition preview published by  
DeviceMed in cooperation with Messe Düsseldorf, organizer  
of COMPAMED and MEDICA.

# EXHIBITION PREVIEW

  
Messe  
Düsseldorf



# Full halls again at COMPAMED 2012

**Dear readers,** this is my seventh COMPAMED, and I can assure you that the show gets better and better every year. Halls 8a and 8b are booked out in 2012—this makes the second year in a row—and, with **640 exhibitors**,



kathrin.schaefer@vogel.de

you can look forward to a range of out-fitters, suppliers and service providers that is bigger than ever. Get a precise look at what to expect at the fair here, in the **official COMPAMED Exhibition Preview**, which is also being published for the seventh time by DeviceMed and Messe Düsseldorf. The Preview features information on the exhibitors and includes the programmes for the **COMPAMED SUPPLIERS FORUM by DeviceMed** and **COMPAMED HIGH-TECH FORUM by IVAM**. A new feature this year is the **DeviceMed Award ceremony at COM-**

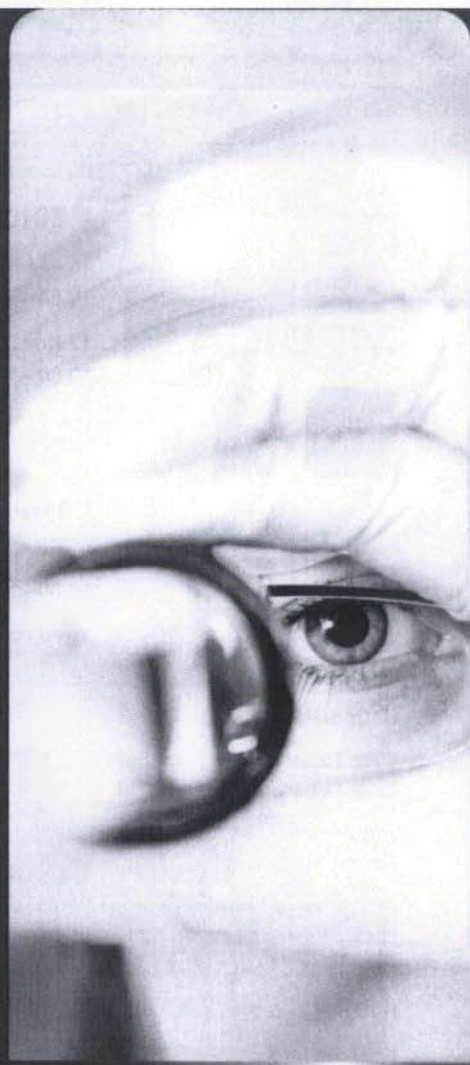
**PAMED**, which honours the most-innovative exhibits at the trade fair. Our exhibit space is **Stand F04 in Hall 8a**. Come visit us to have a coffee and a chat.

See you soon in Düsseldorf!

Kathrin Schäfer, Editor

## Contents

3 Editorial: Full Halls Again at COMPAMED 2012	22 COMPAMED HIGH-TECH FORUM by IVAM
4 Fairgrounds Overview	26 COMPAMED SUPPLIERS FORUM by DeviceMed
6 Impressum	40 Exhibitor Listing and Hall Plan for Hall 8a
6 Index of Featured Exhibitors	42 Exhibitor Listing and Hall Plan for Hall 8b
8 COMPAMED 2012: The Road to Personalised Medical Care	
12 Selected Exhibitor Profiles	



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 **Labortechnik, Diagnostica**  
Laboratory equipment, diagnostics


**Hallen/Halls 4, 5**

 **Physiotherapie/Orthopädietechnik**  
Physiotherapy/orthopaedic equipment

**Hallen/Halls 5, 6, 7.0, 7.1, 7a**

 **Bedarfs- und Verbrauchsartikel, Textilien**  
Disposables, commodities and consumer goods, textiles

**Hallen/Halls 8a, 8b**

 **COMPAMED**  
High tech solutions for medical technology

**Hallen/Halls 9 - 14**

 **Elektromedizin, Medizintechnik, OP-Technik und Einrichtung**  
Electromedicine, medical technology, operating technology and equipment

 **Krankenhauseinrichtung, Kommunikations-Systeme**  
Hospital equipment, communication systems

**Halle/Hall 15**

 **Informations- und Kommunikationstechnik**  
Information and communications technology

**Hallen/Halls 16, 17**

 **Nationale und internationale Gemeinschaftsstände, Elektromedizin, Medizintechnik**  
National and international joint participants, electromedicine, medical technology

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CCD Ost



Eingang  
Nord/Mall  
Entrance  
North/Mall



Halle/Hall 3



Halle/Hall 4



Halle/Hall 6



Halle/Hall 8a



Halle/Hall 8b



Halle/Hall 12



Halle/Hall 15



第3天 = 1, 2, 3

第3天 = 4, 5

X

第3天: 8a, 8b

第1天: 9, 10

第2天: 11, 12, 13, 14

第2天: 15

第3天: 16, 17



**MASTHEAD** COMPAMED Exhibition Preview, Nov. 2012

**EDITORIAL**

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**Address:** Vogel Business Media GmbH & Co. KG,  
Max-Planck-Straße 7/9, 97082 Würzburg, Tel. +49  
931 418-0, Fax +49 931 418-2022.  
www.vogel.de

Shareholdings in the Vogel Business Media GmbH & Co. KG are as follows:  
personally liable partner: Vogel Business Media Verwaltungs GmbH,  
Max-Planck-Straße 7/9 in 97082 Würzburg,  
limited partner: Vogel Medien GmbH & Co. KG, Max-Planck-Straße 7/9 in 97082 Würzburg.

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Tel. +49 931 418-2986, anja.steiner@vogel.de  
Advertisement price list No. 8 valid from 01.01.2012

The Official COMPAMED Exhibition Preview is published in cooperation with Messe Düsseldorf, organiser of the fairs COMPAMED and MEDICA and with DeviceMed, the German-language magazine devoted to the medical device manufacturing industry, Vogel Business Media.

**Manuscripts:** no responsibility is taken for unsolicited manuscripts sent in; return only if postage is enclosed.

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## Index of Featured Companies

2E Mechatronic GmbH & Co. KG.....	12	Lee Hydraulische Miniaturkomponenten GmbH.....	16, 30
Accutronics Ltd.....	12	<b>Männer Solutions for Plastics</b> .....	37
ADS-Tec GmbH.....	12	Mastercontrol Global Ltd.....	30
Albelissa S.r.l.....	12	Maxon Motor AG.....	31
Apple Rubber Products.....	13	Medipack AG.....	31
Asco Numatics .....	13, 39	Mednet GmbH .....	20, 30
Axxicon Moulds Eindhoven B.V.....	14	MER-Europa .....	31
<b>Awaiba Lda</b> .....	18	Messe Düsseldorf GmbH .....	8
Bartels Mikrotechnik GmbH .....	14	Minivalve International .....	12, 31
Bausch Advanced Technology .....	14	Multivac Sepp Haggenmüller GmbH & Co.....	32
Bayer Materials Science AG .....	14	Nass Magnet GmbH.....	32
Berliner Glas KGaA.....	3, 14	Novotema S.p.A. ....	32, 36
Biocare Enterprise Limited .....	14	Nusil Technology LLC.....	2, 33
Biotek Chetan Meditech Pvt.Ltd. ....	16	<b>Ohst Medizintechnik AG</b> .....	28
Buhler Motor GmbH.....	16, 30	<b>Omnetics Connector Corporation</b> .....	33
Bürkert Fluid Control Systems GmbH & Co. KG...16		Otec Präzisionsfinish GmbH .....	33
Colder Products Company GmbH.....	17, 31	Pewatron AG.....	34
<b>DCA Design International</b> .....	44	PMT GmbH .....	34
Degradable Solutions AG .....	17	Porex Technologies .....	34
DSM Biomedical .....	18	Protect-Laserschutz GmbH .....	35
Elliptec Resonant Actuator AG .....	18	Qosina .....	35
Epflex Feinwerktechnik GmbH .....	19	Ramac A/S .....	35
Euroflex GmbH .....	19	Raumedic AG .....	32, 35
F&W Frey&Winkler GmbH .....	20	<b>Rische + Herfurth GmbH</b> .....	32
Fort Wayne Metals Research Products Corp. ....	20	Rommelag-Kunststoff-Maschinen Vertriebsgesellschaft mbH.....	36
Foster Corp. ....	20	Rösler Oberflächentechnik GmbH .....	36
Gaudlitz GmbH .....	20	<b>Rose Plastic AG</b> .....	29
Gerhard Schützing Labor-Schütz GmbH.....	20	RRC Power Solutions GmbH.....	36
Global Med Inc. ....	20	<b>Schaeffler Technologies AG &amp; Co. KG</b> .....	7
<b>Haas Schleifmaschinen GmbH</b> .....	23	<b>SCS Speciality Coating Systems Inc.</b> .....	34
<b>Haseke GmbH &amp; Co. KG</b> .....	25	Sefar AG.....	37
Helix Medical Europe KG.....	24, 38	Sensirion AG .....	37
Hemoteq GmbH.....	25	Sonceboz SA.....	36
HSG-Imit.....	24	Starlim Spritzguss GmbH .....	24, 38
Hydrotechnik Electronics GmbH .....	24	Straschu Industrie-Elektronik GmbH .....	38
Idex Health & Science GmbH .....	25, 35	<b>Sulzer Mixpac AG</b> .....	21
Injecta GmbH.....	25	<b>System Industrie Electronic GmbH</b> .....	27
Inpac Medizintechnik GmbH .....	25	Teleflex Medical OEM .....	11, 38
Instron Deutschland GmbH .....	28	TQ-Systems GmbH .....	35
IVAM e.V.....	22, 28	<b>Trelleborg Sealing Solutions Germany GmbH</b> ...15	
<b>Iwaki Co. Ltd</b> .....	15	Vernay Laboratories Inc. ....	10, 35
<b>Jenoptik Polymer Systems GmbH</b> .....	26	<b>Vester Elektronik</b> .....	17
Kelpac Medical.....	29	<b>Vogel Business Media GmbH &amp; Co. KG</b> .....	18, 26, 26, 39, 35
Kinneir Dufort Design Ltd.....	28		
Kleiner GmbH Stanztchnik .....	29		
<b>KNF Neuberger GmbH Membranpumpen+Systeme</b> .....	13		
Kuhnke Automation GmbH & Co. KG.....	28		



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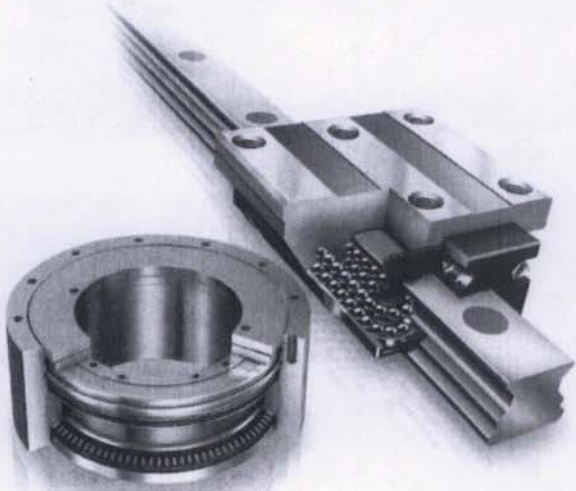
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# COMPAMED 2012: The road to personalised medical care

In no other area does the general population welcome the growth of technology more than in healthcare delivery. That the effort to provide "tailor-made" therapies (personalization) is not limited to drugs but is gathering speed also in medical technology will be evidenced impressively by more than 600 exhibitors at the international market platform for medtech industry suppliers, COMPAMED 2012.

**M**ore than 90 percent of the population regards developments in preventive medicine, diagnosis and treatment as something positive, according to results of a Forsa survey. At the same time, because these advances in technology represent an ever increasing share of the cost of healthcare delivery, people expect to receive from them a

high degree of therapeutic benefit and, increasingly, treatment personalised to suit the individual patient.

## Close cooperation between suppliers and OEMs

Through their unique combination of offerings, MEDICA and COMPAMED

represent the entire medical technology process chain, displaying the full range of medical products, devices and instruments and demonstrating how the close cooperation between suppliers (COMPAMED exhibitors) and medtech companies (MEDICA exhibitors) is furthering the development of new procedures, devices and products.



**Photo 1 | COMPAMED 2012:** In 2011, out of the almost 134,500 visitors at MEDICA and COMPAMED, approximately 16,000 attended COMPAMED, showing an interest in topics central to the purpose of that specialized fair.

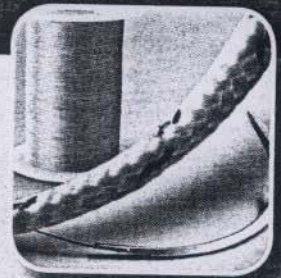
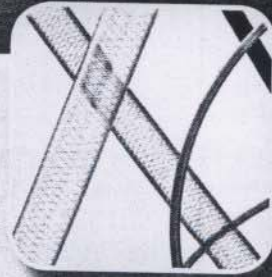
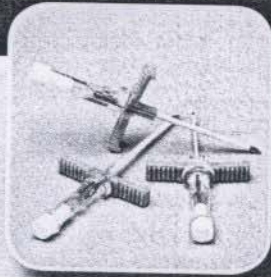




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Among the advances is personalised medicine, which has developed into a compelling leitmotif for recent medical research. Prerequisite to the creation of a personalised therapy are molecular genetic tests that show whether or to what extent a drug will be efficacious for any particular patient.

## Great advances in biochip technology

"The aim is to make drugs more effective and reduce systemic side effects," explains Prof. Dr. Thomas Schmitz-Rode, chair of the German Association for Biomedical Technology within the VDE (German Association for Electrical, Electronic and Information Technologies). Hence the great importance of biomarkers today and in the future, as their characteristic biological structures and molecules can inform physicians about biological and pathological processes at work in the patient's body.

Molecular biomarkers can be used in both laboratory diagnostics and diagnostic imaging. In recent years, the focus in molecular biomarker research has shifted from proteins to nucleic acids. This is mainly because of tremendous advances in nucleic acid analysis, such as microarray technologies (so-called biochips) and next-generation sequencing. The new methods can be performed simply, quickly and economically. Companies exhibiting at COMPAMED can provide these innovative technologies.

## Biotechnology and MEMS in combination

The company iX-factory GmbH is focusing on the high-potential new technology area of bio-MEMS: biological microelectromechanical systems developed especially for application in medical diagnostics and biotechnology. This innovator specialises in producing bio-MEMS that serve as components in lab-on-a-chip systems. In these, pre-determined channels for fluids support such functions as heating and cell and biomolecule recognition.



**Photo 2 | Hands on:** Where else can you find and talk about so many innovations as at the COMPAMED show?

"Even now, iX-factory, as a technical service provider, is participating in numerous product development projects in the area of bio-MEMS," says CEO Dominique Bouwes. "We are always amazed at the possibilities presented by the combination of biotechnology and MEMS. Our broad technology portfolio and well-founded know-how

allows our team to consistently meet the challenges presented to us, supporting both industry and research."

## Printed electronics on the rise

Printed electronics, in use already in RFID chips for example, is steadily

## COMPAMED forums on high-tech trends

In COMPAMED Halls 8a and 8b, two expert forums on trends in high tech will take place. For the first time under its new name "COMPAMED HIGH-TECH FORUM by IVAM", the trade fair's established accompanying event gives exhibitors an opportunity to present themselves to the international public. Focal topics are "Microprecision, Manufacture and Processing", "Testing, Measuring, Ensuring Quality", "Electronic Manufacturing Services" and "Laser and Photonics Applications".

After a successful premiere last year, the second "COMPAMED SUPPLIERS FORUM by DeviceMed", intended to complement the High-Tech Forum, will be held this year in Hall 8b. The lectures address current topics across the entire value-adding chain. These include design and usability, innovative materials, mechanical and electronic components, manufacturing processes and systems, the entire spectrum of customer-specific manufacturing, quality assurance, regulatory affairs and information on new markets.



**Well attended:** The first "COMPAMED Suppliers Forum by DeviceMed" was successful, so many visitors are expected also in 2012.





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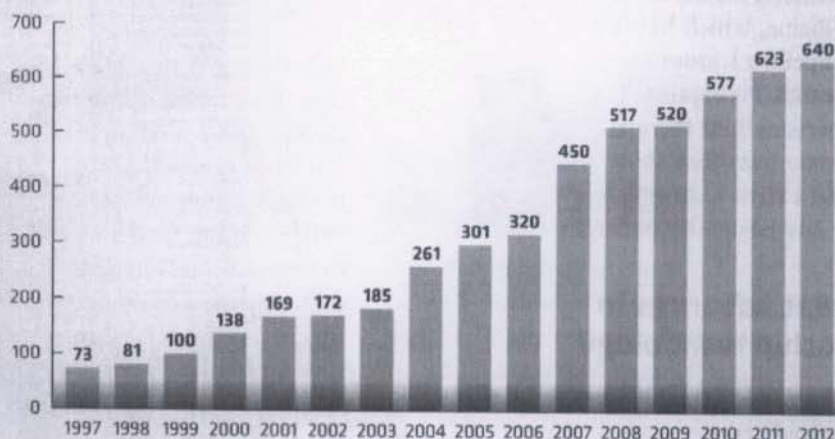
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10



**Graphic 1 | Permanent growth:** Since the beginning, the number of exhibitors at COMPAMED has grown steadily. In 2012 both halls are fully occupied for the second year in a row.

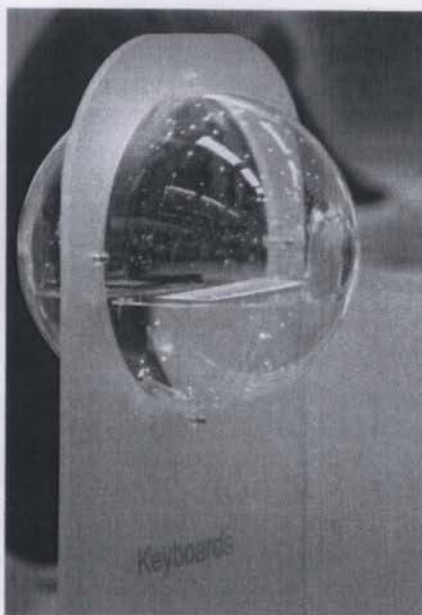
gaining importance in healthcare. RFID labels can, among other things, ensure that drugs are not tampered with and that they are being properly handled and administered. Printed electronics also allows the creation of sensors for biochemical applications and for bandages and packaging.

One of the greatest medtech challenges is to miniaturise electronic products and assemblies while increasing the integration of functions. The core

business of Elliptec Resonant Actuator AG is the development and production of customer-specific and standard drive systems based on piezo technology, which are available for medtech applications. Product highlights at COMPAMED include the HR2K hollow waveguide module based on piezo technology that Elliptec is introducing.

### Hands-off computer control in the operating theatre

Hygiene is a multifaceted topic of great importance in surgery. Until now, physicians and nurses had to leave the sterile environment of the operating theatre to view medical files and repeat the disinfection process afterward—a time-consuming procedure entailing risk for both staff and patients. But no more. Commissioned by the company Karl Storz, a MEDICA exhibitor, the Fraunhofer Heinrich Hertz Institute developed the iPoint technology for the medtech sector. This technology forms the basis of the MI-Report information system, which allows surgeons to download patients' medical files and individual X-rays or ultrasound images to a screen in the operating theatre via touchless hand-gesture control.



**Photo 3 | A look into the crystal ball:** Electronics is among the topics that will get the most attention at this year's show.

» Messe Düsseldorf GmbH

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[www.compamed.de](http://www.compamed.de)



## MID Flow Sensor

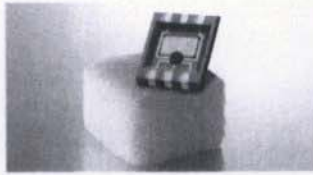


Photo: 2E Mechatronic

**2E mechatronic GmbH & Co. KG.** A 3D moulded-interconnect-device (MID) flow sensor developed by 2E mechatronic economically measures minor differential pressures. It minimises the necessary pressure loss via a monolithic integrated

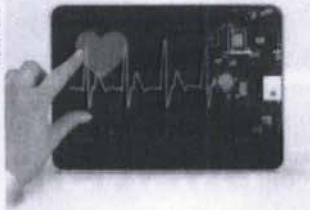
melt flow-way in a MEMS chip. Integration of fluidic, electrical and mechanical functions is achieved through a miniaturised MID housing. Usable as a differential-pressure sensor in both bypass and direct operation, the MID flow sensor offers high accuracy at low power; it consumes less than 10 mW.

» **Hall 8a, Stand H19**  
[www.2e-mechatronic.de](http://www.2e-mechatronic.de)

## Embedded PCs

**ads-tec GmbH.** The family-owned company displays systems for the operating theatre that offer capacitive multi-touch operation, current Windows technology, and Intel i5/i7 processors. The embedded solutions are developed and produced in-house at two German locations. The company offers conceptualisation, design, development and

Photo: ads-tec



production capabilities and provides long-term service.

» **Hall 8b, Stand E02**  
[www.ads-tec.de](http://www.ads-tec.de)

## Lithium-Ion Battery System



Photo: Accutronics

**Accutronics Ltd.** The Intelligent Power Vault (IPV) battery system for medical devices, available in configurations between 126 Wh and 1.42 kWh, draws power from multiple 63- or 89-

Wh VR420 lithium-ion smart batteries inserted into its racking system. Output power is available as raw direct current or in regulated form, as required. Since each installed battery is rated below 100 Wh, when they are removed for transport the IPV is exempt from the dangerous-goods-shipment regulation.

» **Hall 8b, Stand F30**  
[www.accutronics.co.uk](http://www.accutronics.co.uk)

## R&D, Technology Transfer

**Albelissa Srl.** Designing, developing and executing research, development and custom technology transfer projects, the consultancy helps small and medium-sized companies sustain R&D costs and risks, and supports and complements the internal innovation resources of large companies. Its staff assists in creating cutting-edge technologies

and solutions, ensuring standards compliance, and evaluating the environmental and economic sustainability of products and processes developed. Areas of expertise include nanotechnology, safety and risk assessment and nano-macro integration.

» **Hall 8b, Stand P03**  
[www.albelissa.com](http://www.albelissa.com)

**miniValve**  
[www.minivalve.com](http://www.minivalve.com)

[Duckbillvalves.com](http://Duckbillvalves.com)  
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[Trocarvalves.com](http://Trocarvalves.com)

Accumulated valve knowledge.

Minivalve International develops and manufactures standard, self-actuating valves and elastomeric valve component for liquids and gasses. Particularly one-way valves, pressure relief valves, dispensing valves and access valve



## Elastomeric Sealing Components

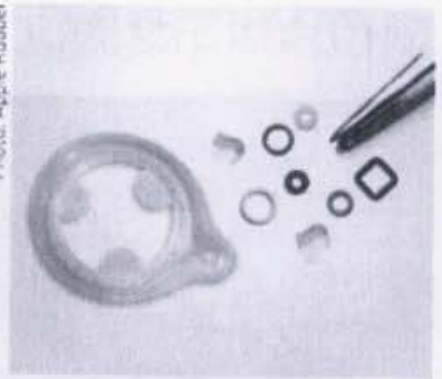
### Apple Rubber Products.

Medical-grade elastomers are used to manufacture high-quality items ranging from device parts and seals to microminiature and custom systems. To meet the rigorous requirements for medical equipment and de-

vices that today's advanced medical procedures and treatments impose, these construction materials offer a high level of chemical resistance, excellent heat resistance and low permeability to gas. In its US facility, the manufacturer em-

loys numerous sophisticated technologies and processes to produce a variety of customised sealing solutions. Capabilities include liquid-silicone-rubber moulding. The company operates a Class 10,000 (ISO class 7) cleanroom.

Photo: Apple Rubber



» Hall 8b, Stand F20-8  
www.applerubber.com


## Proportional Gas Valve


Photo: Asco Numatics




**Asco Numatics GmbH.** The Preciflow IPC direct-acting two-way proportional valve is designed to provide gas-flow control in analytical and medical technology applications. This reliable high-performance device offers a high flow capacity, a wide pressure range and, especially good for battery operation, a low level of power consumption. Specifically, it achieves a flow rate of 190 l/min at an inlet pressure of 2.7 bar and consumes a maximum of 2.5 W. The valve's wetted parts are constructed from stainless steel and FPM. Its proven flat-spring technology makes possible hysteresis of less than 5% of span in open-loop control. Typical areas of application are breathing apparatus and mass-flow controllers.

» Hall 8b, Stand G03  
www.asconumatics.de






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## Moulds for Microfluidics

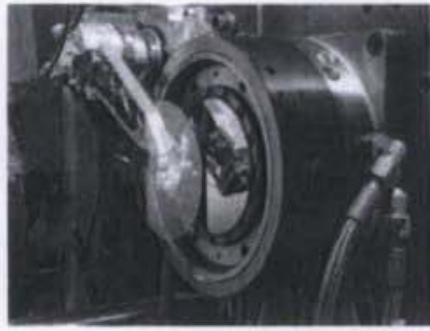


Photo: Axxicon

**Axxicon Moulds Eindhoven B.V.** Axxicon makes moulds for manufacturing microfluidic consumables for life science and diagnostic applications. Exploiting its own expertise and well-

equipped factory, plus partnerships with research institutes and other companies, the contractor can handle every aspect of microfluidics moulding, from design to test replication to mass production. Its strengths are the replication of microstructures and precise in-house laboratory measurement.

» **Hall 8a, Stand D34**  
[www.axxicon.com](http://www.axxicon.com)

## Piezo Micropumps

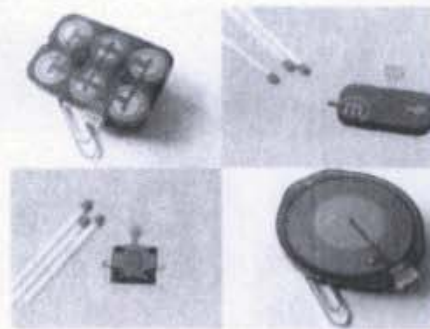


Photo: Bartels Mikrotechnik

**Bartels Mikrotechnik GmbH.** Development services relating to active microfluidics for miniaturised and portable medical devices are offered, with recent products based on the company's

flexible piezo micropump platform being on display. Starting from this platform, Bartels can make customer-specific adaptations in such fluidic properties as flow rate and back pressure. The scalability of the piezo actuator allows both fluidic-design revision and adaptation leading to enhanced or more-basic performance.

» **Hall 8a, Stand 19.4**  
[bartels-mikrotechnik.de](http://bartels-mikrotechnik.de)

## Complete Packaging Lines

**Bausch Advanced Technology Group.** Complete production lines for packaging pharmaceuticals in syringes, cartridges, vials, bottles, ampoules and IV bags comprise such elements as washing machines, sterilisation tunnels, filling and closing machines, tray loaders, nesters/denesters, laminar-flow units, safety-device assembly machines for prefilled syringes, IV-bag-making machines,

aseptic IV-bag-filling machines and labelling machines. The manufacturing group, consisting of companies in Switzerland, Germany, the USA and Brazil and benefiting from a large distribution network, has long experience in engineering and producing machinery specific to the pharmaceutical industry.

» **Hall 8b, Stand J36**  
[www.bausch-group.com](http://www.bausch-group.com)

## Wound-Care Materials



Platilon thin-film coverings tailor-made by a company subsidiary from thermoplastic polyurethane.

» **Hall 8b, Stand H30**  
[www.bayer.com](http://www.bayer.com)

### **Bayer MaterialScience AG.**

The specialist in medtech material systems is a one-stop shop for all types of polyurethane materials for wound treatment. It supplies everything from the protective coating to the foam to the adhesive. The stand showcases Baymedic FP technology based on aliphatic polyurethane foam that can be coated with a two-component adhesive. Also presented are

## Optical Systems



**Berliner Glas KGaA.** Part of the Berliner Glas Group, which develops optical systems for advanced diagnostic and therapeutic medical technology, the company integrates optics, mechanics and electronics in creating technically innovative system solutions. Certified to ISO 13485, it offers decades of experience and multidisciplinary expertise, which it applies in developing and producing precise

and powerful components, assemblies and systems. Light is revolutionising medical technology.

» **Hall 8a, Stand P20,**  
[www.berliner Glas.com](http://www.berliner Glas.com)

## Infrared Thermometers



**Biocare Enterprise Ltd.** The Hong Kong-based medical device company and contract manufacturer operates a facility in China that is certified to ISO 13485. It employs more than 1,800 engineers and other staff in manufacturing a variety of CE-marked and US FDA Class II medical electronic devices on an ODM or OEM basis. Baby-care and beauty-care products are specialities. (The No Touch

infrared thermometer for infants is pictured.) Private-label and OEM business is welcome.

» **Hall 8a, Stand R29**  
[www.biocare.com.hk](http://www.biocare.com.hk)





compact

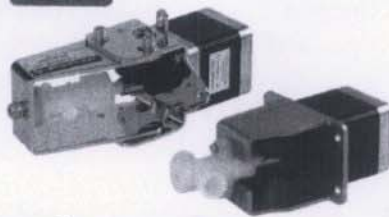


## pumps for OEM

### High precision and stable dosing

Valveless plunger pumps

**V**



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Max. discharge capacity : 84 l/h  
 Max. discharge pressure : 0.7 MPa

### High resolution

High-resolution pulse pumps

**HRP**



Max. discharge capacity : 2.28 l/h  
 Max. discharge pressure : 0.2 MPa

### Long life design

Canned motor pumps

**RD**



Max. discharge capacity : 4,200 l/h  
 Max. head : 15 m

### Oil-/carbon-free

Air pumps (diaphragm type)

**APN**



Max. discharge capacity : 108 l/h  
 Max. discharge pressure : 0.05 MPa

### High corrosion resistance

Gas-Liquid transfer pumps

**APN-W**



Max. discharge capacity : 72 l/h (Gas)  
 Max. discharge capacity : 36 l/h (Gas-liquid)  
 Max. discharge pressure : 0.08 MPa

## Solutions for chemical handling applications

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 Phone: (1)508-429-1440 www.iwakiamerica.com

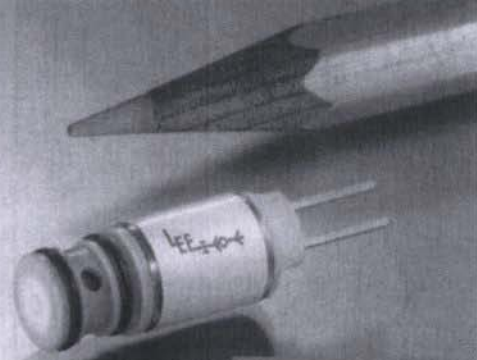
IWAKI CO., LTD.  
 Phone: (81)3-3254-2935 www.iwakipumps.jp



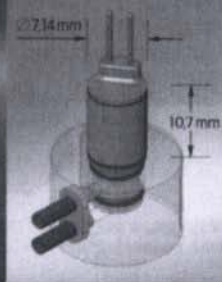
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## Orthopaedic Devices

**Biotek.** A division of Chetan Meditech Pvt. Ltd. manufactures and markets reconstructive orthopaedic devices. Adhering to international specifications and standards and acknowledging the quality requirements and tolerances specified by modern surgical directives, the company produces orthopaedic joint-replacement devices, internal and external orthopaedic fixation devices, spinal screws and implants, and arthroscopy devices. Made and used in India, the products are also exported to other countries.

Photo: Biotek

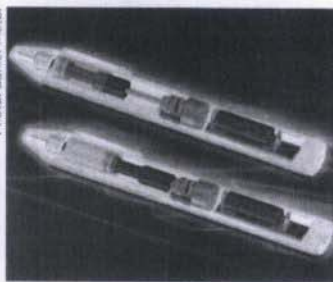


» Hall 8b, Stand C12  
[www.biotekortho.com](http://www.biotekortho.com)

## Drive System for Drug Delivery

**Bühler Motor GmbH.** The company emphasises mechanical drive systems for drug delivery, highlighting at its stand a modular drive system for self-medication applications. Electronically controlled, the battery-powered 15-mm stepper motor acts on a rotating spindle, thereby ensuring safe, exact dosing of active ingredients. The lightweight, compact drive features a robust design and

Photo: Bühler Motor



generates little noise. Being built from readily available base components, it can help shorten development time and optimise product cost.

The manufacturing partner specialises in reliable custom-made drive solution using DC and brushless-DC small motors and gearmotors.

» Hall 8a, Stand K15  
[www.buehlermotor.de](http://www.buehlermotor.de)

## Proportional Valves

**Bürkert GmbH & Co. KG Fluid Control Systems.** Third-generation proportional valve technology from Bürkert Fluid Control Systems enables precise pressure and flow regulation of gas mixtures and pure gases. The company's valves are designed to fulfil sophisticated requirements of medical ventilation and anaesthesia applications. They are integrated into customised systems for the purpose of measuring gas pressure, partial

Photo: Bürkert



and total flow quantities and concentrations in the determination of tidal volume, positive end-expiratory pressure and fraction of inspired oxygen. The manufacturer is a partner for system development. Its valve system is at the core of a lung ventilator for premature infants, for example.

» Hall 8b, Stand H07  
[www.burkert.com](http://www.burkert.com)



## Blood Pressure Connectors

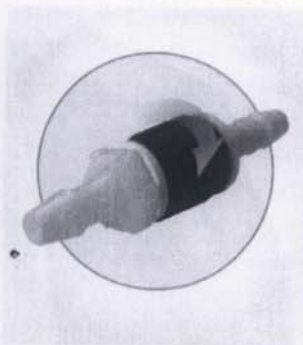


Photo: Colder Products

connector employs parting line-free hose barbs to ensure leak-free connections. It consists of a white nylon stem and a glass-filled-polypropylene sleeve overmoulded with thermoplastic vulcanisate that gives a pleasant feel and is easy on the user's fingers. The ergonomic design and the soft-touch sleeve of the Screw-Thread connector are both intended to maximise ease of use. The connector comes with multiple hose barb options for mating with tubing in a variety of sizes and styles.

**Colder Products Company GmbH.** A diverse range of connector products for blood pressure monitoring equipment and cuff connection systems is on display at the COMPAMED stand, including the Screw-Thread connector. Part of Colder Products' FitQuik product line, this new con-

» **Hall 8a, Stand E02**  
[www.colder.com](http://www.colder.com)

## Resorbable Implants

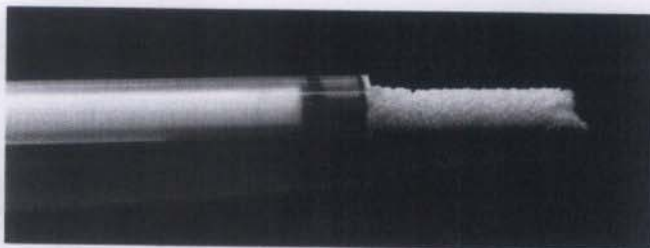


Photo: Degradable Solutions

**Degradable Solutions AG.** DS develops and manufactures resorbable implants and synthetic bone-graft substitutes. The Swiss specialist offers a full range of services, taking projects from initial idea through registration of the tailor-made product and employing mainly injection moulding, coating and ceramics-processing technologies. Production meets all regu-

latory and customer requirements. Experienced, staffed by a team of scientists and engineers that can find innovative solutions to customers' needs, and with more than 10 CE-marked product families to its credit, the company promises time- and cost-efficient product development.

» **Hall 8b, Stand C04**  
[www.degradable.ch](http://www.degradable.ch)

## 100% - control of serial parts used in medical technology

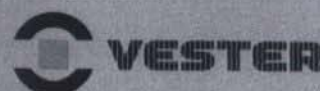


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Well-know manufacturers of automotive, telecommunication, electronic and medical industries trust in Vester VIDEOcheck systems.

■ **Südwestfälische Technologieausstellung**  
Lüdenscheid: 08. - 10. November 2012



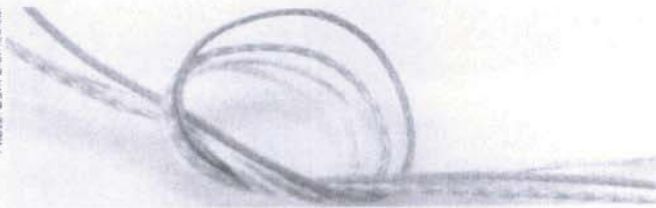
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Telefon: + 49 (0)7082/9493-0 | Telefax: + 49 (0)7082/9493-22 | e-Mail: [info@vester.de](mailto:info@vester.de)

[www.vester.de](http://www.vester.de)



## Biomaterial Systems

Photo: DSM Biomedica



**DSM Biomedical.** DSM develops novel materials-based solutions for medical device and pharmaceutical companies. Its product portfolio comprises coatings, drug-delivery platforms and a wide range of biomedical materials for use in short- and long-term-implantable medical devices. Specific technologies include biostable polyurethanes, hydrophilic and non-biofouling coatings,

polymer-stabilising technologies, UHMWPE fibres, resorbable materials and silicone hydrogels.

The company works with device makers in the cardiovascular, diabetes management, diagnostic, neurologic, ophthalmic, orthopaedic, pain management, urinary, vascular and women's health specialities.

» **Hall 8a, Stand K28**  
[www.dsm.com/medical](http://www.dsm.com/medical)

## Piezo Drive Systems

**Elliptec Resonant Actuator AG.** The company develops and produces standardised and customised piezo-based drive systems, offering intelligent solutions for medical technology applications ranging from home skin-treatment lasers to professional laser devices for dermal drug delivery. This core business has been built in answer to the key medical technology challenges of electronic product and assembly miniaturisation and increasing functional integration.

Product highlights presented by Elliptec at the stand include a new hollow-shaft module (pic-



Photo: Elliptec

tured), an extended range of high-precision positioning stages and a nanodosing unit, as well as diverse customised systems.

» **Hall 8a, Stand H23**  
[www.elliptec.com](http://www.elliptec.com)

# See you at the show!



## DeviceMed

---> [www.devicemed.de](http://www.devicemed.de)



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## MRI-Compatible Guidewire

**EPflex Feinwerktechnik GmbH.** A guidewire capable of being visualised during magnetic resonance imaging (MRI) procedures is a highlight. In addition, nitinol stone baskets in new variants are displayed, as are guidewires with hydro-

philic coatings. The MRI-usable guidewire lowers patient radiation exposure and provides better image quality than is possible with conventional imaging techniques. The manufacturer has successfully met the challenge of creating a

guidewire lacking metallic components yet having characteristics similar to those of conventional guidewires.

EPflex built new production space this year to meet the demands of the medical technology industry.

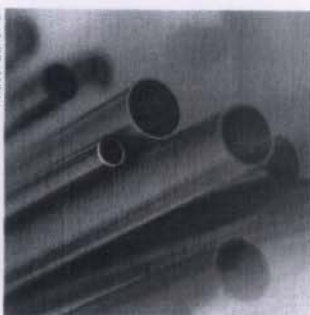


Photo: EPflex Feinwerktechnik

» **Hall 8a, Stand H07**  
[www.epflex.com](http://www.epflex.com)

## Alloy Stock

Photo: Euroflex



**Euroflex GmbH.** High-grade semifinished metal products, components and actuators are supplied to medical device manufacturers. Shaped to customer specification from numerous materials, including nitinol, nitinol-ELI, stainless steel, nickel-free alloys, cobalt-based alloys, titanium alloys, tantalum, platinum alloys, magnesium, and custom alloys, the products are available in a diversity of dimensions and specific properties. Typical applications for these components are stents, filters, baskets, guidewires and flexible surgical instruments. The extensively experienced manufacturer works with its customers as a strategic partner, handling rapid prototyping through series production.

» **Hall 8b, Stand F31**  
[www.euroflex-gmbh.de](http://www.euroflex-gmbh.de)

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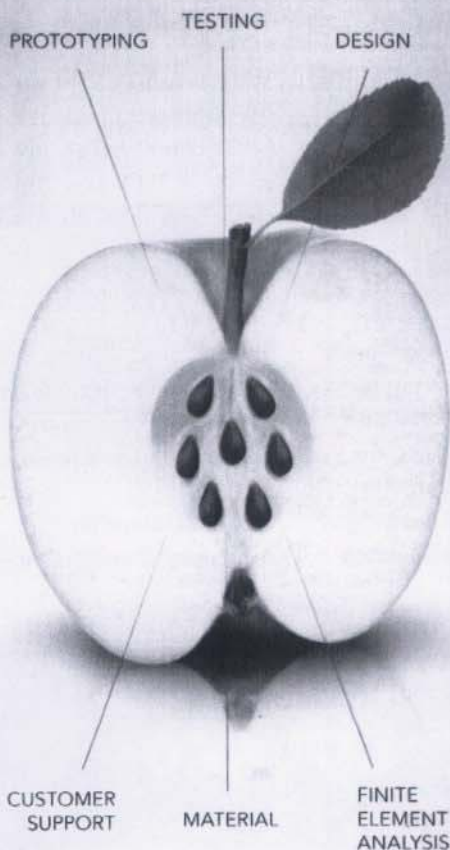


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Duesseldorf 14. - 16.11.2012  
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COMPAMED | Exhibition Preview

## Moulded Parts, Tubing

**Helix Medical Europe KG.** The one-stop shop for tubing and precision-moulded parts manufactured in cleanrooms dedicates its R&D and production activities to meeting the demands of customers in the medical, biotech and pharmaceutical sectors. The company helps customers develop individualised solutions by offering a range of standard products along with such value-added services as pad-printing



and precision tube-cutting to length, punching and tip trimming. Difficult moulded-part designs can be realised in silicone and thermoplastics and using two-component technology.

With its partners VistaMed and Cambus Medical, the company can produce complex catheter systems.

» Hall 8b, Stand E04  
[www.helixmedical.de](http://www.helixmedical.de)

## Sensors and Microsystems

**HSG-IMIT.** The Institut für Mikro- und Informationstechnik der Hahn-Schickard-Gesellschaft e.V. presents novel microsystems and sensors for medical technology. Highlighted is a MEMS flow sensor for medical emergency ventilation (pictured). This device features an integrated heating chip that helps prevent condensation from humid exhaled air from impairing function of the system's sensor.



Also on display is the BuccalDose drug-delivery system for liquid or water-soluble pharmaceuticals. Designed as a disposable device lacking active electric components, it attaches to a removable partial denture in order to deliver drugs directly to the buccal mucosa of patients.

» Hall 8a, Stand F29  
[www.hsg-imit.de](http://www.hsg-imit.de)

## Decubitus Monitoring System

**Hydrotechnik electronics GmbH.** The provider of electronics services to medical OEMs has developed an intelligent system for decubitus prophylaxis that is being premiered. The system uses specialised software to determine the position of a patient in a bed and works in conjunction with a multicellular pneumatic mattress that allows adjustment of supporting air pressure. It detects local differences in



pressure load, analyses the recorded pressure patterns, and regulates the pressure in each air chamber of the mattress to help prevent problems arising from nonoptimal pressure loads. The control device has a colour touch screen designed to make operation intuitively simple.

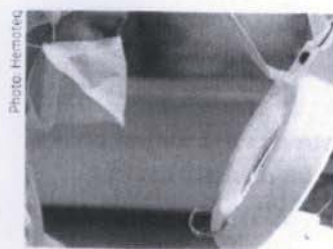
» Hall 8b, Stand J30  
[www.hydrotechnik-electronics.de](http://www.hydrotechnik-electronics.de)

DeviceMed in cooperation with Messe Düsseldorf | [www.compamed.de](http://www.compamed.de) | November 2012



## Customised Device Coatings

**Hemoteq AG.** The company provides bioadaptive surfaces for medical devices that promote healing, device biointegration, and regeneration. It develops and manufactures customised coatings for such devices as drug-eluting stents, implants and catheters. Its technical and professional know-how, short development cycles and compre-

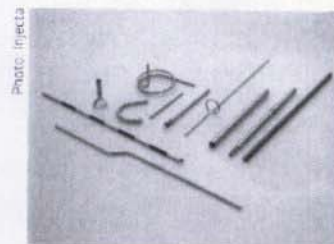


hensive regulatory support ensure fast market access.

» **Hall 8a, Stand F12**  
[www.hemoteq.de](http://www.hemoteq.de)

## Stainless-Steel Tubular Parts

**Injecta GmbH.** The company fabricates stainless-steel components for medical devices. It makes tubes with outside diameters of 0.40 to 4.50 mm from AISI 304 and 316 stainless steel and produces burr-free cut-offs 2 to 1,000 mm long, bevelled lancet and back-cut cannula needles, special cannulae for biopsy and other applications, and



tubular components for a range of medical uses.

» **Hall 8a, Stand F10**  
[www.injecta.de](http://www.injecta.de)

## Peristaltic Pump

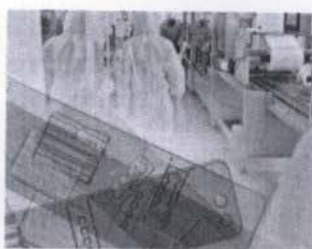


**Idex Health & Science.** The next-generation Ismatec Reglo ICC peristaltic pump is a single pump designed to work like three. By providing individually addressable control of each fluidic

channel, this pump can be substituted for multiple pumps, reducing benchtop clutter, and enables complex medtech applications to be controlled with one pump. Independent channel calibration minimises tube-to-tube differences, making possible very high accuracy for a multichannel peristaltic pump.

» **Hall 8a, Stand C04**  
[www.gettheicc.com](http://www.gettheicc.com)

## Packaging Services, Materials



**Inpac Medizintechnik GmbH.** Medical device cleaning, assembly, packaging and sterilisation services are provided by a company that also produces materials for sterile packaging.

Staff members implementing validated processes in GMP-compliant cleanrooms of ISO class 7 include biologists, chemists and engineers. Inpac develops sterile barrier systems from peel pouches, soft blisters, hard blisters and combinations of these, with full documentation to support product validations.

» **Hall 8a, Stand J31**  
[www.inpac-medizintechnik.de](http://www.inpac-medizintechnik.de)

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### for medical fields

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- ▶ Optional monitor bracket for up to two single monitors

Further product information: Haseke GmbH & Co.KG

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## Testing Equipment



Photo: Instron

**Instron Deutschland GmbH.** A versatile line of medical device and biotechnology testing systems for tissues, materials and components includes tensile and bend testing machines for very

small to medium loads, such as synthetic skin, thin films and foils, yarns, filaments and wires, stents, tendons and bone, and metals. It also comprises impact testing systems and dynamic testing systems for monitoring long-term failure mechanisms in prostheses and implants in load-cycling tests.

» **Hall 8b, Stand C08**  
[www.instron.de](http://www.instron.de)

## Forum and Product Market

**IVAM.** The specialist micro-technology association offers its expert forum in Hall 8a, this time renamed the COMPAMED High-Tech Forum (see page 22). Speakers address the topics of "Microprecision, Manufacturing and Processing", "Examining, Measuring, Quality Assurance", "Electronic Manufacturing Services" and Laser & Photonic



Photo: ivam

Applications". IVAM has organised the product market "High Tech for Medical Devices" in parallel.

» **Hall 8a**  
[www.ivam.de](http://www.ivam.de)

## Product Development

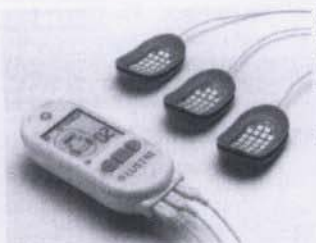


Photo: Kinneir Dufort

**Kinneir Dufort.** Working from the manufacturer Ambicare's concept, the design agency developed the Lustre Pure Light portable rechargeable system for acne treatment. Applying

natural blue light, the product has patented therapeutic heads that conform to the patient's skin contours. KD took the idea all the way to generating production data for series manufacture and offered electronics development services. The agency also compiled regulatory documentation for CE-marking.

» **Hall 8b, Stand K14**  
[www.kinneirdufort.com](http://www.kinneirdufort.com)

## Gas-Mixing Systems

**Kuhnke Automation GmbH & Co. KG.** Gases or liquids used in medical and lab devices must be precisely mixed. These applications require accurate fluid sensing, dosing and mixing, which is Kuhnke's speciality. The gas-mixing-system supplier offers expertise gained from long experience with valves and control technology. It applies

Photo: Kuhnke



in-house mechanical design and software and hardware development capabilities to create custom solutions.

» **Hall 8b, Stand J10**  
[www.kuhnke.com](http://www.kuhnke.com)

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## Custom Tube, Package Extrusion

**Kelpac Medical.** The US-based manufacturer of medical device tubing and packaging opened its seventh global facility in Ireland, a medical extrusion plant that provides regional logistic efficiencies for customers in Ireland and

all of Europe. The Irish facility offers an ISO class 8 cleanroom, in-house tooling and equipment design, product and process R&D capabilities, an in-house testing lab, 100% in-line inspection and off-line automated optical meas-

urement, customer support and a managed-inventory programme.

Kelpac's medical tubing facilities in Ireland and Costa Rica have quality-management systems certified to the ISO 9001:2008 standard.



Photo: Kelpac Medical

» Hall 8b, Stand G20-5

[www.kelpacmedical.com](http://www.kelpacmedical.com)

## Gold-Contact Snap Domes



Photo: Kleiner

**Kleiner GmbH.** The specialist offers snap domes spot-electroplated with gold in precisely the areas of the device where the gold is technically necessary. Available in dimensions of 12.2 x 10 and 10 x 10 mm, the snap domes are plated with Spotgold via an innovative procedure that delivers individual spots of metal only at the contact points. Wearable hard-plated gold is used in order to ensure reliable function of the contacts.

This technique minimises consumption of the precious metal, making possible direct cost savings even as device switchability and contact capability are fully preserved. The manufacturer can supply customised designs upon request.

» Hall 8a, Stand M03

[www.kleiner-gmbh.de](http://www.kleiner-gmbh.de)

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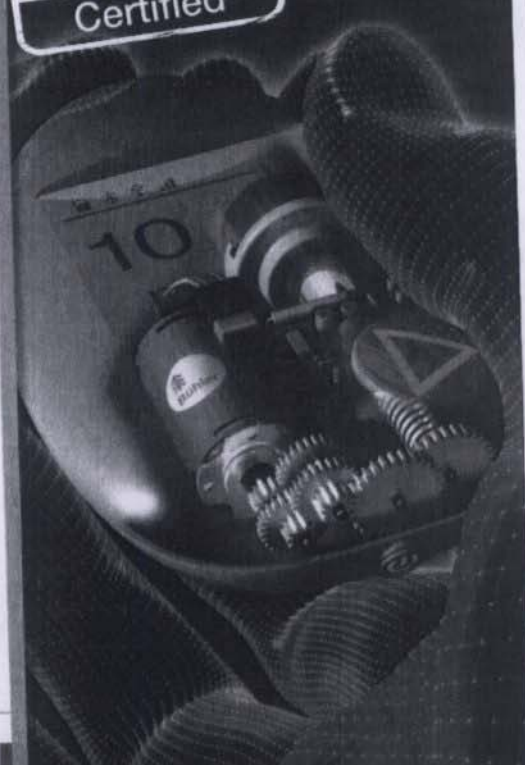
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Hall 8a  
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Fax: +49(0)911/45 46 26  
[info@buehlermotor.de](mailto:info@buehlermotor.de)

COMPAMED | Exhibition Preview

## Miniature Magnetic Valves

**LEE Hydraulische Miniaturkomponenten GmbH.**

The company offers miniature magnetic valves and downstream components specifically for micro-fluidic applications.

One range centres on a 2/2-way media-separated membrane magnetic valve that is small and lightweight, making it possible for designers to realise more functions in a tiny space. This reagent-saver has an internal volume of just 13- $\mu$ l. Also available is



Photo: LEE

a 2/2-way magnetic valve in normally closed and plug-in variations. The manufacturer plans to follow with versions that can be flanged and that allow hose connection.

Featuring minimal power consumption of only 0.85 W, the 2/2-way valve comes standard with a 12- or 24-V-DC coil.

» Hall 8a, Stand K09

[www.lee.de](http://www.lee.de)

## Compliance Management Software

**MasterControl Global Ltd.**

The company provides software solutions for quality management that are intended to help medical device manufacturers fulfil compliance requirements while reducing the time necessary to get products to market. Its MasterControl MD system for medical technology offers functionality covering project management, document management, quality-event management, training

Photo: MasterControl



management, supplier quality management, and management of design history files, as well as bills of materials, the automation of device history records, and much besides. A team of professionals focuses on delivering products and

services designed to meet unique medical device industry requirements.

» Hall 8a, Stand R11

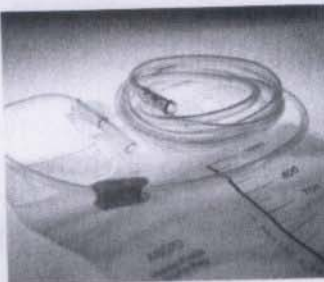
[www.mastercontrol.com](http://www.mastercontrol.com)

## Single-Use Fluid Components

**MedNet GmbH.** New to the portfolio of the provider of single-use components for fluid and infusion management and for angiography and cardiology procedures is a system designed for safe disposal of contaminated liquid waste.

With a capacity of 1,000 ml, the bag of the Fluid Waste System collects waste resulting from interventional procedures, with the accumulated volume being recorded by a clearly

Photo: MedNet



visible precision scale. A rotating adapter between the manifold and the bag maintains correct bag orientation, and a special valve facilitates access to flushing fluids. This closed system prevents

accidental spilling of contents and thus prevents users from being exposed to pathogens.

» Hall 8a, Stand H14

[www.medneteurope.com](http://www.medneteurope.com)



## Drive Systems



Photo: Maxon Motor

**Maxon Motor AG.** The focal point of the trade fair presentation is a planetary gear train in which ceramic components are used. This construction results in a longer operational lifetime

and a doubling of the continuous-torque rating. In addition, the company has extended the range of spindle gears it makes toward greater miniaturisation with the introduction of a 16-mm option that is simple to configure. Another component on display is an integrated axial bearing for high loads.

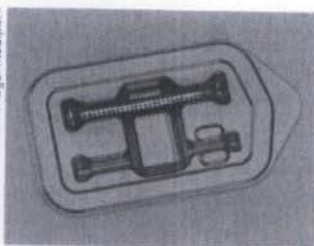
» Hall 8a, Stand K11

[www.maxonmotor.com](http://www.maxonmotor.com)

## Packaging Solutions

**Medipack AG.** Comprehensive packaging solutions for medical technology companies encompass package development, cleanroom blister production, sealing technology and full packaging services. The ISO 9001:2008- and ISO 13485:2003-certified company offers modern packaging machinery, packaging materials (it

Image: Medipack



makes its own PETG) and custom packaging services.

» Hall 8b, Stand J01

[www.medipack.ch](http://www.medipack.ch)

## Supplier Representation

**MER-Europe.** The technical and service-oriented manufacturers' representative offers 20-plus years of medical device industry experience. It represents companies supplying advanced components, production and inspection equipment, and design and assembly services, including Advanced Polymers, Contract Medical International, FEops, K-Tube, MPT Europe, Specialty Silicone

Fabricators and Stellar. These innovative suppliers provide heat-shrink and extruded tubing, catheter balloons, silicone parts, precision-machined precious-metal parts, miniature stainless-steel tubing, balloon and stent design and analysis, procedure simulations, OEM production services and more.

» Hall 8b, Stand K09

[www.mer-europe.com](http://www.mer-europe.com)

## Standard Valve Components

**Minivalve International B.V.** Supplying standard valve parts for medical devices that handle liquids and gases, the company offers more than 50 new device components. One is a 1-mm-diameter duckbill valve weighing 0.0013 g, for use in microfluidic devices. Another is a 27-mm-diameter trocar valve for pass-throughs. The mini-

Photo: Minivalve



valves are easy to put to use, integrated in devices or stand-alone in a tubing set.

» Hall 8a, Stand N19

[www.minivalve.com](http://www.minivalve.com)

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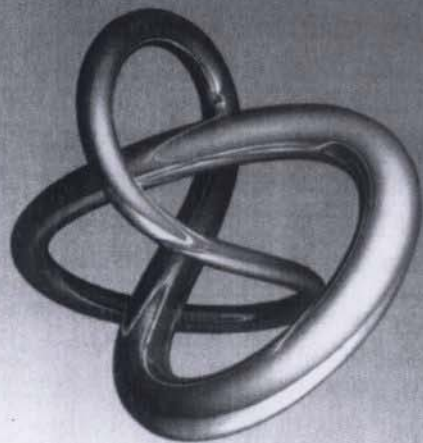
**CPC Colder Products Company**

[colder.com](http://colder.com)  
+49-6134-28780

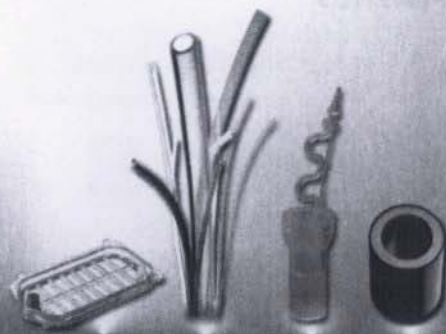
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## LSR Injection Moulding

**Starlim Spritzguss GmbH.** A full-service global processor of liquid silicone rubber (LSR) by means of injection moulding technology, the company caters to the medical and pharmaceutical sectors. It assumes project responsibility for all aspects of development and manufacturing, from idea generation and product design, through tool engineering, all the way to fully auto-

Photo: Starlim



mated series production at high volumes. The organisation carries certifications to industry-specific standards, has implemented a quality-management system with global relevance, and operates production cleanrooms to preclude contamination.

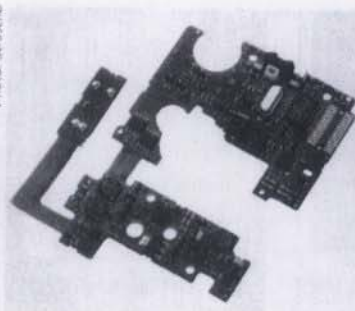
» **Hall 8a, Stand L04**

[www.starlim-sterner.com](http://www.starlim-sterner.com)

## Electronics Assembly

**Straschu Industrie-Elektronik GmbH.** The company manufactures electronic subsystems for medical devices. Certified to ISO 13485 to provide a complete and comprehensive service to customers in the medical technology sector, it offers assurance of risk management and product traceability. With recent expansion of the areas for administrative and production, Straschu's op-

Photo: Straschu



erating space totals 6,500 m<sup>2</sup>. The enlarged work area allows such special techniques as conformal coating and potting of assembled PCBs to be performed in-house.

Future plans include adding an RF chamber, SMD assembly lines and mechanical processes.

» **Hall 8a, Stand E19**

[www.straschu.de](http://www.straschu.de)

## Contract Manufacturing

**Teleflex Medical OEM.** The US-based enterprise is a single-source provider of design, development and production services for medical OEMs. Offering deep expertise and decades of experience, the manufacturing partner is equipped to solve tough new-product challenges, taking ideas from the customer's drawing board and shepherd-

Photo: Teleflex Medical



ing them through the development process until a finished product is able to be delivered to the medical technology marketplace. As visitors to the stand can see, the company produces custom extrusions, catheters, performance fibres, speciality sutures, bioresorbable resins and yarns, and medical devices.

» **Hall 8a, Stand L27**

[www.teleflexmedicaloem.com](http://www.teleflexmedicaloem.com)



## Embedded Processors



Image: TQ-Systems

**TQ-Systems GmbH.** A highlight of the display is a new module with an ARM Cortex A9 core, suitable for human-machine interface and animated display screen and multitouch ap-

plications. The full-service electronic manufacturing services specialist certified to ISO 13485 exhibits embedded processing modules for medical technology.

A complete medtech solutions partner, the company can tailor its service offering to meet the customer's needs by means of a solution kit.

» **Hall 8a, Stand N20**  
[www.tq-group.com](http://www.tq-group.com)

## Flow Control Components

**Vernay Europa B.V.** Designing and manufacturing complex precision flow-control components for critical medical device and diagnostic equipment, the company collaborates with customers in designing unique products that best satisfy the application's engineer-

ing and material specifications. With 65-plus years of market experience and a global engineering and materials reach, it can reliably handle projects from concept to launch.

» **Hall 8a, Stand G11**  
[www.vernay.com](http://www.vernay.com)

## Medtech Industry Journal



Photo: Vogel Business Media

components, semifinished products and materials, and custom contract assemblies, as well as other contract manufacturing arrangements. Completing the editorial offering are reports on software and services and on the strict regulations governing the manufacture of devices and durable equipment.

The 10 annual issues include a purchasing guide. DeviceMed is supplemented by weekly e-newsletters and a strong Web presence.

**Vogel Business Media GmbH & Co. KG.** In DeviceMed, the publisher has the leading German-language industry magazine aimed exclusively at manufacturers of medical technology. DeviceMed focuses on production machines and systems, OEM

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[www.devicemed.de](http://www.devicemed.de)

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 Your contact: Sven Richter



### 研討會紀錄表

課程名稱: 參加德國 ComPaMED 國際醫療器材展及技術研討會心得報告
日期: 101 年 12 月 19 日
時間: 10 時 30 分 至 11 時 30 分
地點: 680 館 六樓會議室
主辦人員: 許文榮 博士
講師: 邱鸞嬌
課程概述: 執行經濟部科技專案之「醫用數位 X 光系統開發計畫」, 赴德國參加 2012 年 ComPaMED 國際醫療器材展及技術研討會, 充分瞭解各國最新的醫療器材與 DICOM/PACS 技術之發展應用, 膠囊內視鏡、數位 X 光系統之功能技術發展現況, 以及醫療產業全方位產品解決方案等。 其中將針對出國過程、技術研討會, 及最新醫療器材技術、設備做一心得報告。內容分別為 1. 微系統技術; 2. 醫院資訊系統—PACS 與 DICOM; 3. 醫用儀器與手執行動裝置; 4. 影像感應器與顯示器; 5. 膠囊內視鏡與數位 X 光; 6. 未來角色—電子醫療器材。最後, 綜合所見所聞及計畫現況, 提出建議事項。
講義名稱: 參加德國 ComPaMED 國際醫療器材展及技術研討會心得報告一份
討論: 於會中, 針對自動將影像做最佳化, 說明以此最佳化流程, 可整合數種影像處理, 但使用者只需簡單的操作, 其餘由軟體設計在背後完成所有的運算; 並對可行性分析討論。

QMWI05-T7



## 受訓人員簽名單

課程名稱：參加德國 ComPaMED 國際醫療器材展及技術研討會心得報告      舉辦日期：101.12.19

單位	姓名	單位	姓名
加測組	陳宗麟		
光電組	鄧名曉		
加測組	黃吳璋		
加測組	黃科志		
加測組	黃柏榮		
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