Website address:
https://www.gesundheitsindustrie-bw.de/en/article/dossier/medical-technology-serving-healthcare

Medical technology – serving healthcare

Modern healthcare would be impossible without medical technology. The achievements in medical technology are indispensable for our health and quality of life. The range of medical technology available covers surgical instruments and implants to diagnostic methods and medical devices.

Medical technology plays a discreet but efficient role in the field of healthcare. Many innovative medical products are so firmly anchored in everyday medical treatment that they are taken for granted, such as X-ray examinations or magnetic resonance imaging (MRI). The use of diagnostic tests, for example to determine the specific characteristics of tumours, also belongs to the field of medical technology. The days when the membrane of a heart-lung machine oxygenator was made from the same material as the skin of a sausage, or a ladies stockings company that also produced non-absorbable nylon threads used in surgery are long gone. Medical technology has long become an own economic sector that produces technologically advanced products. And suture material has also developed further, for example into special 'shape memory' suture materials that can be activated by a patient's body temperature.



The range of products offered by medtech companies is very diverse and indispensible for human health and quality of life
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The medical technology (medtech) industry

Medical technology has a long and successful tradition in Germany. Today it is a sector with enormous future potential. With nearly 15 percent of the global medtech market, Germany is still the second largest exporter behind the USA. However, compared to 1991, Germany has dropped nearly six percentage points. On the other hand, German medtech export has risen considerably and now accounts for between 60 and 65 percent (compared to 50 percent in the mid-1990s).

Following a crisis-related drop in sales in 2009, the German medtech industry has recovered and experienced considerable growth in turnover since 2010. This increase is mainly due to growth from exports; German medtech companies achieved an increase of eight percent in international sales between January and August 2012, while the sales within Germany more or less stagnated. The major problem in Germany is that the statutory health insurance does not reimburse new medical products due to the fact that many new regulations make it difficult for new medical products to enter the reimbursement scheme.

Baden-Württemberg is one of the strongest medtech locations in Germany. One fifth of all German employees in the medtech sector work in Baden-Württemberg and achieve around 25% of the sector's total turnover in Germany. The Baden-

Württemberg medtech sector is dominated by small- and medium-sized companies: 568 of the 603 medtech companies listed in BIOPRO Baden-Württemberg's company database have less than 250 employees. The sector receives input from the diverse and well-structured research environment in Baden-Württemberg, including nineteen universities, four university hospitals and a large number of economically oriented research institutions and highly innovative biotechnology companies. Baden-Württemberg has a long tradition in the manufacture and development of surgical instruments; a large number of specialised companies have settled in the Tuttlingen area. Other Baden-Württemberg medtech areas focus on regenerative medicine (Tübingen/Stuttgart/Neckar-Alb area), dental technology (Northern Black Forest region) and diagnostics/molecular medicine (Rhine-Neckar area).

Made in Baden-Württemberg: an intelligent plaster for the non-invasive testing of renal function
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The growing speed of innovation is an enormous challenge for the future of the medtech sector. New products quickly become outdated: one third of the turnover achieved by German medtech manufacturers comes from products that are less than three years old. International competition on the market requires the rapid transformation of new ideas into marketable commodities.

Innovative developments with future potential require a high degree of interdisciplinarity and dialogue between the different fields of research such as the medical, engineering and the natural sciences as well as information technology. Further innovation potential can come from improved cooperation between manufacturing companies and early coordination between industry and users.

Medical technology and the healthcare system

The first PET/CT system in Europe
© Siemens AG

The average age of the population in the USA, Japan and Europe is constantly increasing. In 2008, Germany was home to around 4 million people over 80, which accounts for around five percent of the German population. According to estimates from the German Statistics Office (Destatis), this number will rise to 10 million in 2050. This process, as well as the increasing demand for new treatment options for chronic and lethal diseases poses a huge challenge to the German healthcare system, in particular as far as the financing of treatment is concerned. It is therefore of paramount importance to exploit progress in the medical technology field as efficiently as possible. This includes improvements in diagnostics and therapies and also the creation of new possibilities in the fields of prevention and rehabilitation. Innovative medical technology has the potential to significantly contribute to limiting healthcare cost developments.

Most important advancements in the medtech sector

The constant development of new products and an active research landscape are of paramount importance for sustainable and financial growth in the medical technology sector. The German Association for Biomedical Technology within VDE (DGBMT) has identified five future-oriented categories that are particularly relevant to developers of medical devices:

Miniaturisation: Creation of ever smaller technical components and systems, e.g. instruments used in the field of minimally invasive surgery and portable sensor systems for the monitoring of vital parameters (see article entitled "Sense2care - new dimension of blood gas analysis systems").

Biologisation: Integration of biological and technical components, e.g. biological implants such as cartilage and vascular implants, molecular imaging, e.g. the use of antibodies coupled to radionuclides (see also articles entitled "Vascular grafts: biomolecules to prevent blood vessels from reclosing" and "Novalung GmbH receives EU grant for the development of a cell-coated artificial lung")

Computerisation: Integration of information and communication technologies into medical systems, e.g. in computed tomography (see also "syneed imaging: precise visualisation of functional tissue properties").

Personalisation: Coordination of treatment and hence the use and adaptation of "custom-made" medical components, devices and systems to the requirements of individual patients and disease courses.

Networking: Integration of medical products into existing data- and communication networks, e.g. the connection of different technical devices in the operating theatre.

Dossier

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