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Healthcare in Bavaria

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Bavarian Ministry of Economic Affairs,
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Trendsetter for health

Small and medium-sized companies are driving forward advancement in medical technology

Be it computer tomographs or highly sensitive measuring devices, high-tech implants or laser applications, Bavaria occupies an internationally leading position in numerous key technologies within the field of medical technology. It is primarily the more than 250 small and medium-sized companies which are time and again pushing forward this development and are reinforcing the location's leading role within Germany.

Innovative companies in an excellent environment

Bavaria is synonymous with almost a third of medical technology production and even with more than 60 per cent of electromedical device production in Germany. The companies are also successful on the global markets with their innovations, achieving an export rate of around 70 per cent, and are presently a key economic factor with more than 30,000 employees. Indeed, the trend appears to be climbing further. In Medical Valley European Metropolitan Region Nuremberg alone, around 100 new companies have been founded since 1998. In their research projects and developments, they can count on the proximity to more than 65 hospitals, more than 70 chairs at universities and universities of applied sciences and 20 non-academic research institutes. In addition, the university hospitals in Munich, Regensburg and Wuerzburg are synonymous with the scientific potential of the location. No less important are institutions such as the German Aerospace Centre and the Fraunhofer and Max Planck Institutes. The companies benefit in the case of all the cross-sector and cross-technology cooperations, which are purposefully promoted by the Forum MedTech Pharma network created by the Bavarian Ministry for Economic Affairs. Last but not least, the sector's rapid start-up scene is enjoying a disproportionately high level of commitment from venture capitalists, whereby publicly financed seed funds play just as important a role as private investors. National figures confirm the significance of medical technology. In 2011, it was counted among the three sectors that attracted the greatest level

of interest with regard to venture capital, recording capital inflows of EUR 66 million and a total of 77 investments.

Pioneers and market leaders

Medical technology in Bavaria therefore also has a good reputation, because it can demonstrate ground-breaking successes in many areas. One of these renowned pioneering companies is Peter Brehm GmbH, which is based in Weisendorf. In the middle of the 1980s, the company developed a cement-free hip implant made from titanium together with the Accident Surgery department of Friedrich-Alexander-Universität Erlangen-Nürnberg. During the same decade, the company made a splash with the artificial replica of a knee joint, and a decade later there followed the first robot-suitable hip implant. At the start of this millennium, the company ultimately created a new quality level with regard to the durability of artificial joints with the clinical introduction of the Brehm precision knee system. This was also met with resonance on an international level. In the case of the hip revision implants, which enable the exchange of individual parts, the pioneers from Franconia have long since been the market leaders in Europe.

Innovations in the area of imaging devices for use in ultra-modern operating theatres also have a long-standing tradition in Bavaria. Ziehm Imaging GmbH based in Nuremberg, for instance, was founded 40 years ago and since then it has pushed development in mobile X-ray technology to the fore. In 2006, the Franconian firm thus positively ushered in a new imaging era with the first fully digital, mobile C-arm. Ziehm Imaging is being spurred on by its own innovative force, by investing



In 2008, Human Optics launched the first foldable artificial iris on the market and thus helped individuals with eye problems to enjoy improved sight again.

Photo: © HumanOptics

15 per cent of its turnover in research and development each year.

Demand from all over the world

HumanOptics AG, which was founded in 1999 in Erlangen, is synonymous with innovations in the area of optical medical technology. Seven years after it was created, the company, which was initially financed with venture capital, made the jump to the Frankfurt stock exchange. In 2008, HumanOptics then made the professional world marvel, as it launched the first foldable artificial iris on the market and thus helped individuals with eye problems to enjoy improved sight again. The company also produces intraocular lenses, which are used in treating cataracts. Here, the estimated market growth lies at six to eight per cent yearly and the lenses are therefore growing in significance as an alternative to laser treatments. With its sales network in more than 40

countries, the optical specialist can in the future even benefit from the above-average opportunities for growth in Asia. Prospects such as these make investors prick up their ears, too. In February 2012, the Swiss holding company Medipart AG became the majority shareholder.

Successful service providers

Bavarian medical technology hasn't just created efficient networks. Service providers, which help other companies in developing and producing innovations, have also sprouted. One of these providers is Corscience GmbH & Co. KG based in Erlangen, which was founded at the start of the millennium and primarily focuses its energies on the development of diagnostic and treatment devices for cardiovascular diseases. In addition to the services, the B2B company offers completed basic technologies as well as production of devices on customer order. One of its latest developments

“The location can compete with international leading centres”

Interview with Dr. Peter Terhart, Chairman, S-Refit AG

Dr. Terhart, what makes Bavaria as a location for medical technology so special and thus interesting to investors, too?

The research and medical treatment infrastructure that has grown over the years is just as much an international example as the corporate landscape in the sector of medical technology. Furthermore, the Free State's high-tech offensive has ushered in a key development process. It is indeed a marathon as opposed to a sprint. But even now, the location can compete with international leading centres. Key reforms in patent systems have contributed to this, as has the foundation of an organisation for better commercial exploitation. This is the base on which leading research thrives and this attracts investors.

Which areas are companies, in which S-Refit is currently invested, operating?

One of the most interesting examples is Carbomed, which is based in Erlangen. By way of nerve stimulation with electrical pulses, it is developing new

treatments for neurological diseases such as depression, pains and epilepsy. There is still an immense requirement for this on a global scale. Aceos, which is based in Fuerth, is synonymous with the trend towards preventative measures in health-care. Among other things, it has developed a new measuring device for efficient endurance training.

Can you help the companies beyond the start phase?

A nucleus is created with us in Bavaria, both in BioPark Regensburg and in Medical Valley EMN. Afterwards, the companies have to strike out on their own at some point. If we, together with Sparkasse Erlangen, invest through medTECH Capital Funds which was initiated by Sparkasse Erlangen, we want to make the companies attractive to other investors, too. And that works. Generally speaking, we are currently recording, among other things, a high level of interest in Bavarian companies on the part of large medical technology funds from Switzerland.



Dr. Peter Terhart is heading S-Refit as sole member of the Management Board. He is also Chairman of the Board of the German Private Equity and Venture Capital Association.

Product focus of selected MedTech-SMEs

Source: own research

Company	Product focus	Founded
Ziehm Imaging GmbH	Mobile X-ray based imaging – focus on intraoperative imaging and innovative X-ray technology	1972
Peter Brehm GmbH	Spine-, hip- and knee-implants	1981
CT Imaging GmbH	Medical Imaging and Image Processing – focus on Computed Tomography systems including Micro-CT	1997
Human Optics AG	Ocular implants – focus on intraocular lenses, Add-on lenses and artificial iris	1999
Corscience GmbH & Co. KG	Cardiovascular therapy and diagnostics – focus on vital parameter sensor systems, electro-therapy, algorithm, wireless transmission technologies as well approval and production	2001
Cerbomed GmbH	Neuromodulation – focus on transcutaneous Vagus Nerve Stimulation for patients with hard-to-treat neurological and psychiatric illnesses	2005
Metrilus GmbH	Special applications 3D cameras – focus on Time-of-Flight (ToF) cameras	2010

is a small sensor, which detects cardiac arrest or apnoea within a few seconds through being stuck on to the throat of an unconscious individual; it can thus provide rapid information for implementing immediate measures.

From the university to starting a company

There certainly isn't a lack of promising start-ups nowadays. As a specialist in the computer tomography (CT) sector, CT Imaging, which was created as a spin-off from the Institute of Medical Physics (IMP) of the Friedrich-Alexander-Universität Erlangen-Nürnberg, is thus developing new procedures for medical imaging and image processing. The company already has eight patents issued and 11 patents published, and is focusing on high-resolution CT systems, which are just as much in demand among pharmaceutical companies as well as among further education establishments and industrial users. The world's first dual source micro CT system, for instance, with its extremely short scan times is used in research with regard to in vivo small animal imaging. In turn, a dedicated mammography system allows for tumours in the female breast to be diagnosed at an early stage. As the leading project in the Medical Valley top cluster, this breast CT is being promoted by the Federal Ministry of Education and Research (BMBF). Metrilus GmbH, which was founded from the Friedrich-Alexander-Universität Erlangen-Nürnberg in 2010, was also able to make use of aid money from the BMBF. The company has also already been honoured with prize money as the winner of the Northern

Bavaria Business Plan Competition. Metrilus GmbH develops software products for real-time recording of 3D data for so-called time-of-flight cameras. Among other things, this technology enables more efficient respiratory measurements or clearer recording of beating hearts, too.

Venture capital for new ideas

Cerbomed GmbH based in Erlangen is counted among the companies, which in addition to public aid money can also build on solid funding through venture capital. The firm, which was founded in 2005, was provided with assistance by a whole range of venture capital firms early on, in order to enable the development of an innovative neuro simulation technology. It is aiming to allow individuals with neurological and psychiatric diseases to have an improved quality of life while simultaneously incurring fewer treatment costs. The company has also received European approval (CE symbol) for several indications, including one in August 2012 for the vagus nerve simulation in the treatment of chronic pain. All too often, drugs have not achieved the desired effect for this indication, which is among the most widespread conditions in industrialised countries. Cerbomed is thus symptomatic for what medical technology from Bavaria can achieve: helping people and, at the same time, tapping into an immense market potential.

Norbert Hofmann