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LIFE SCIENCE AUSTRIA

Life Science Report Austria 2011
MEDICAL TECHNOLOGY SECTOR SURVEY 2011: FACTS AND FIGURES

Preface

The market for medical devices is subject to rapid growth. Estimates predict an increase in the volume of the Austrian health market of up to 70 billion € by 2020. This will also lead to an increase in the demand for medical devices. Demographic change and an ageing population are some of the reasons why diagnostics, therapy, rehabilitation technology, prevention and care are constantly increasing in importance. Computerisation, miniaturisation and molecular biology are playing an important role for innovation in these areas. Materials such as metals, plastics, ceramics and biomaterials which are used in various combinations in medical technology are becoming increasingly important.

Austrian companies have already achieved an excellent reputation as suppliers of medical equipment and constructors of facilities to hospitals around the world, and have carved out niches for themselves in international markets. Universities and advanced technical colleges also contribute well-trained graduates to the general workforce who show great enthusiasm for their work and produce impressive results.

The Austrian government is at the forefront to ensure further growth and prosperity for the Austrian medical device sector. With investments into R&D in 2011 at an all time high of 2.79 % of GDP, Austria already invests into R&D significantly above EU average. However, the new strategy for research, development and innovation of the Austrian Government aims even higher

in making Austria an innovation leader within the European Union and raise the share of investments into R&D to 3.76 % of GDP by 2020.

Most innovative ideas are only of use when they have successfully bridged the gap from lab to market. Austria supports young high-tech companies to reach this goal by offering a wide array of national and regional funding schemes. Austria Wirtschaftsservice, the Austrian national funding bank, provides financial support for start-up ideas for life-sciences through its funding programmes 'PreSeed LISA' and 'LISA Seedfinancing'. Furthermore, the government raised the R&D cash tax-premium for companies from 8 % to 10 % at the start of 2011. All these measures are now bearing fruit, creating new and exciting jobs whilst simultaneously securing Austria's future as an innovative country.

Austria is one of the leading countries in Europe for sustainable development in its life science industries, taking a lively, creative and highly innovative approach rooted in world class engineering and science. With the current mix of government funding and political innovation framework, Austria offers a dynamic setting for scientific business.

**Dr. Reinhold Mitterlehner,
Federal Minister for
Economy, Family and Youth**



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Austrian Medical Technology 2011

Located in the heart of Europe, Austria has one of the world's best health-care systems. Along with high-class clinics, excellent research facilities and well-trained doctors, it is also based on superb equipment incorporating state-of-the-art technology. Not only does this make Austria an attractive market for medical technology products, it also makes it an important location for development and production which benefits from a long tradition in the field of engineering and precision mechanics.

Based on the guidelines of the Global Medical Devices Nomenclature Agency (GMDN), medical devices in the following report include all apparatus, equipment or materials that are used in human medicine for diagnosis or treatment. Altogether in 2010, there were 112 companies working in Austria that developed, produced or sold such medical devices. In total, 98 of these companies are dedicated medical technology enterprises that work exclusively in this market. They include among them hearing implant specialist MED-EL and orthopaedic equipment producer Otto Bock. The sector is an im-

portant employer: More than 4,200 people work in the dedicated medical technology companies.

There are 14 further companies with registered offices in Austria that are only partly involved with medical technology. They include, among others, glove manufacturer Sempermed, the optical company Carl Zeiss and the materials specialist Heraeus Kulzer. A total of 1,633 people work within these companies and 500 of these jobs can be assigned to medical technology.

Medical technology, however, is not only an important employer in Austria but also a key economic factor. In 2010, the combined turnover of the sector was just short of 1.6 billion euros. The dedicated companies achieved a turnover of 730 million euros. The companies active in medical technology added a turnover of 864 million euros, 73 million of which was generated in medtech-related areas. The medical technology companies provide the basis for further growth with high expenditure for research and development. In 2010, the dedicated com-

panies invested at total of approximately 93 million euros in Austria. These small and medium-sized companies in particular rely on a continuous supply of new ideas in order to succeed in international competition. The large number of start-ups in the sector are also highly innovative - in all, six new companies were established in 2010.

Unlike drug development, for example, medical technology is among the less capital-intensive fields of the Life Sciences. This is also reflected in lower financial receipts. The dedicated companies received a total of 37 million euros in 2010. The information presented in this brochure is the result of a survey conducted between March and June 2011 by BIOCOM AG on behalf of the Austrian Federal Ministry of the Economy, Family and Youth and Austria Wirtschaftsservice GesmbH (aws). The information collected was for the first time based on the GMDN guidelines. This accounts for differences in figures compared with previous surveys. The cut-off date was 31.12.2010. For further information on the survey see 'Methods' page 18.

Number of dedicated medical technology companies	98
Number of other companies active in medical technology	14
Total number of employees in the sector	5,846
Number of employees in dedicated medtech companies	4,213
Number of employees of other companies (thereof in medtech-related areas)	1,633 (500)
Combined turnover	EUR 1.593 BILLION
Turnover of dedicated medtech companies	EUR 729 MILLION
Turnover of other companies (thereof with medtech-products)	EUR 864 MILLION (73 MILLION)
R&D expenditure of dedicated medtech companies	EUR 93 MILLION
Total Financing of dedicated medtech companies	EUR 37 MILLION

TAB 1: KEY FIGURES OF THE MEDICAL TECHNOLOGY SECTOR IN AUSTRIA

Structure of the Medical Technology Sector

With constant new developments, medical technology in Austria is a sector which with constant new developments focuses not only the present but also the future of healthcare. The historic roots of some companies, however, reach far back into the past. Carl Reiner GmbH, for example, started to build surgical instruments as far back as 1912. The medium-sized company, which is currently opening up the global market with products for ventilation technology, still has its headquarters in Vienna's Alsergrund district. Also in existence since 1912 is Grall Medizintechnik GmbH which, among other things, designs special lightweight stretchers for use in helicopters at its parent factory in Graz.

The following look at the sector will consider the dedicated medical technology companies first, that is to say the 98 companies in Austria that are involved exclusively with medical technology. Even though the number of long-established companies is by no means small, the sector has seen tremendous growth recently. There has been a whole string of new start-ups particularly in the last two decades. The average com-

pany is only 15 years old. New companies are continuing to be established; six new companies were established in 2010. Four of these start-ups are located in Vienna with one each in Tyrol and Carinthia.

The geographic distribution of the companies illustrates the sector's evolving structure. There are medical technology companies in all nine federal states. Nevertheless, five priority areas, which are home to almost 90 percent of all the companies, have evolved as time has passed. As a result, Lower and Upper Austria, Styria and Tyrol are each the location for between 11 and 17 companies. No less than 33 companies have settled in Vienna; one in three companies is located here. Four companies were recorded in Salzburg, two each were counted in Burgenland, Carinthia and Vorarlberg.

B. Braun Austria GmbH is located in Maria Enzersdorf in Lower Austria. It is a subsidiary of the German medtech group B. Braun Melsungen. Established with 8 employees in Vienna in 1960, B. Braun Austria now employs 130 people and has split into four divisions: Hospital Care, Aesculap (for sur-

gical processes), Out Patient Market (non-hospital out-patient and day patient care) and B. Braun Avitum Austria which concentrates on treatment systems for dialysis and apheresis. Avitum Austria operates more than 80 dialysis centers in 10 European countries. In 2010 B. Braun opened its own development facility in Graz for the development and clinical testing of a new glucose sensor in close cooperation with Graz University of Technology (TUG) and Medical University of Graz (MUG).

In addition to the 98 dedicated medical technology companies, there are 14 companies in Austria with only part of their business in this sector. Five of these companies are located in Vienna, including Austrian subsidiaries of companies with global activities such as the imaging specialist Carl Zeiss and dental laboratory supplier Heraeus Kulzer. Sempermed has an extensive range of activities. The glove manufacturer is considered to be the European pioneer of plunge latex and employs a workforce of 94 at its production site in Vienna. It produces a wide range of gloves for the medical sector.

State	Dedicated medtech companies	Employees of dedicated companies	Turnover in million euros	Research & Development investments in million euros
Burgenland	2	55	7.9	0.8
Carinthia	2	12	1.7	0.3
Lower Austria	14	622	134.2	10.2
Salzburg	4	115	20.9	2.5
Styria	17	532	89.9	11.7
Tyrol	11	975	160.6	22.4
Upper Austria	13	869	165.8	11.5
Vorarlberg	2	202	31.9	3.6
Vienna	33	831	115.7	30.3
Total	98	4,213	728.6	93.3

TAB. 2: STRUCTURE OF THE MEDTECH SECTOR BY FEDERAL STATES (IN ABSOLUTE FIGURES)

Employee Structure

The picture which emerges from the information collected about employees is that of a sector characterised mainly by medium-sized companies. In 2010, the 98 dedicated medical technology companies employed a total of 4,213 people. Added to this are 500 medical technology employees who work in the 14 companies whose business activity does not concentrate exclusively on medical technology. In total, these companies have 1,633 employees in Austria.

A glance at the geographic distribution of jobs reveals that even if the majority of medical technology companies are located in Vienna, the capital only ranks as the sector's third-highest employee location with 831 employees. Number one among the federal states is Tyrol with 975 employees. In second place with 869 employees is the state of Upper Austria. Lower Austria has 622 employees in companies focusing on medical technology. These are followed by Styria (532), Vorarlberg (202) and Salzburg (115). A small number of employees work in Burgenland (55) and Carinthia (12). The high proportion of small and medium-sized

companies is typical of the medical technology sector. 93 of the 98 dedicated medical technology companies employ fewer than 250 people and therefore fall within the EU category of small and medium-sized enterprises (SME). Companies with fewer than 10 employees form the biggest contingent (45 companies, 45.9%), between 10 and 50 employees work in 38 of the dedicated medical technology companies (38.8%). Ten companies have between 50 and 250 employees on their payroll. Only five companies in Austria have more than 250 employees.

The firm with the highest number of employees among the dedicated companies is MED-EL Elektromedizinische Geräte GmbH. The hearing implant specialist employs 600 workers and specialists. The company headquarters in Innsbruck are the location for research and development in addition to the production of cochlear and middle ear implants.

The second-largest medtech company with 492 employees is Greiner-Bio One. The laboratory supplier based in the Upper

Austrian town of Kremsmünster specialises in the field of pre-analytics. The company manufactures products for sampling body fluids such as blood and urine.

The Austrian subsidiary of medtech company Otto Bock Healthcare Products GmbH in Vienna is the third largest medtech company in Austria with 462 employees. Among the company's most important products for the world market is the C-Leg, a high-tech leg prosthesis with a microprocessor built into the knee joint which was developed in Vienna. Austria is among the key research and development locations of the German Otto Bock group of companies. Other high-tech prostheses, such as myoelectric arm prostheses, are also developed and produced in addition to leg prostheses.

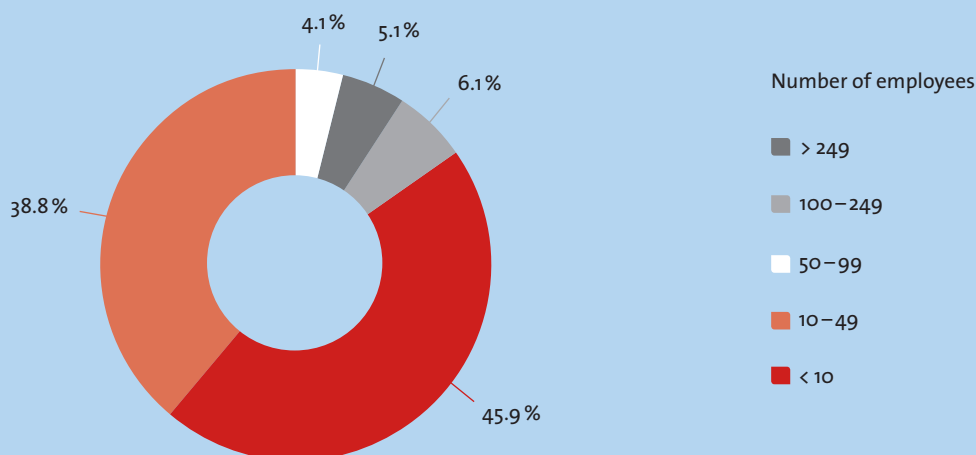


FIG. 1: EMPLOYEE STRUCTURE OF DEDICATED MEDTECH-COMPANIES

Turnover, Research and Development, Financing and Cooperations

The turnover of the Austrian medical technology sector is a key factor in the Austrian economy. The sector generated 1.6 billion euro in 2010, of which 729 million were contributed by the dedicated companies. The other companies, only partly active in medical technology, turned over a total of 864 million euros, 73 million euros of which was accounted for by medical technology products.

The sector is broadly based but regional centres have established themselves. The leaders are Upper Austria and Tyrol which with 166 million and 161 million euros respectively pooled 23 and 22 percent of the total turnover generated by the dedicated companies in their territory (see Tab. 2 on p. 6). In third place is Lower Austria where the medical technology sector generated 134 million euros and thus 18 percent of Austria's total turnover in 2010.

The federal capital Vienna, registered office of many sales locations belonging to international medical technology companies, is

in fourth place in terms of turnover from dedicated companies at 116 million euros (16 percent). With 90 million euros (twelve percent) and in fifth place is Styria which is also an important location for medical technology. Following at a distance but not to be ignored are Vorarlberg (32 million euros, four percent) and Salzburg (21 million euros, three percent). Burgenland (eight million euros, one percent) and Carinthia (two million euros) complete the rankings.

The innovation rate in medical technology is high. From neurostimulators and molecular-biological diagnostic systems to high-resolution computer tomography equipment – many products that are now part of medicine's standard repertoire were not even available to patients a few years ago or access to them was extremely limited. This intensive development activity makes its presence felt in a high research budget. In 2010, the 98 dedicated companies in Austria spent 93 million euros on research and development (R&D). That equates to 12.8 percent of turnover.

The regional distribution of R&D expenditure allows one to draw conclusions about the structure of medical technology in Austria. So although the companies in Vienna do not by any means have the highest turnover compared to the other federal states, when it comes to research activities the capital claims first place. Vienna attracts 30 million euros and therefore almost a third of all investment made in research. This may be due to the high number of small innovative start-ups that have emerged from Vienna's universities. MySugrApps is one example of this new generation of medical technology companies and the academic ecosystem surrounding them. One of the founders of MySugrApps is studying medical computer science at the Technical University Vienna. Work is being carried out here on programs that diabetics can download onto their smartphones to enable them to adjust their diet to their disease.

With 22 million euros of annual research expenditure, the companies located around Innsbruck push the federal state of Tyrol

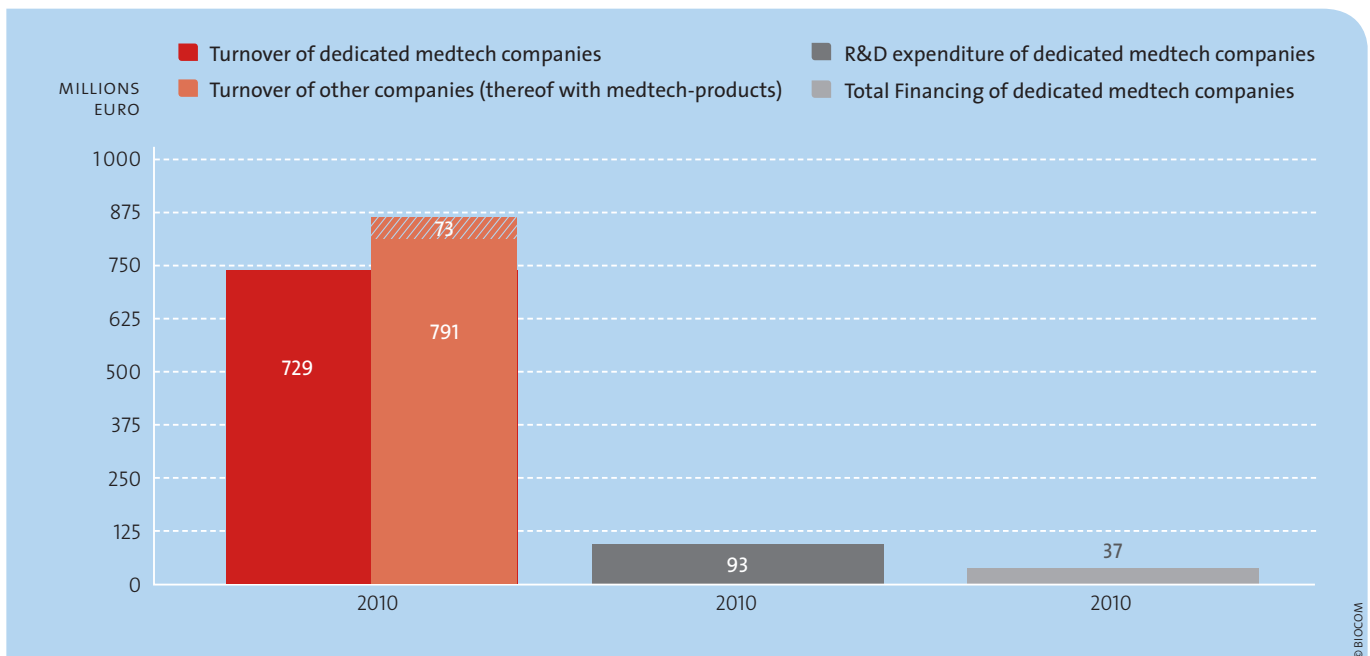


FIG. 2: TURNOVER AND R&D EXPENDITURE OF DEDICATED AND OTHER MEDTECH COMPANIES

into second place in the list of innovators. In Innsbruck, Ergospect GmbH is developing special ergometers which can be introduced into magnetic resonance imaging scanners thus enabling real-time measurements of dynamic processes such as muscle contractions. Extensive R&D-investments are also being made in Styria (11.7 million euros) and Upper Austria (11.5 million euros).

Graz has established itself as an important regional centre for medical technology. The Swiss pharmaceutical company Roche has chosen Graz for the research, development and production of blood gas, electrolyte and metabolite analysis systems for the world market. Tyromotion GmbH is located close by. The medium-sized company develops electromechanical appliances which use sensor control to assist in the rehabilitation training of injured arms and hands. In Carinthia, the Wild Group produces a variety of equipment such as laser scanner tomography devices, head-mounted surgical microscopes and components for prostheses. The individual companies in the group

are also active in other areas but a large proportion of the group's turnover in 2010 amounting to 60 million euros came from medical technology.

Even if the innovation rate is high – medical technology is considered to be among the less capital-intensive sectors of the Life Sciences compared to drug development – the dedicated companies surveyed put the funds received from venture capitalists in 2010 at four million euros. Private investors and business angels provided a further 2.3 million euros. Public funds continue as before to be a significant item in the financing mix. 4.7 million euros of subsidies were made available to companies to push ahead with research and development projects. Apparently, however, the banks are still the biggest source of funds. In 2010, the credit institutions authorised loans amounting to 25.2 million euros. The actual numbers are probably even higher, considering the fact that not all companies surveyed provided data in this area. Cooperations in research and development as well as in sales and

distribution are the norm rather than the exception and will increase still further in their intensity and diversity in coming years. An example is AFreeze in Innsbruck. The company is concentrating on the therapy of cardiac arrhythmia using cryotechnology. Due to its tight cooperation with the Innsbruck Medical University, with UMIT (The Health and Life Sciences University Hall) and industrial partners, AFreeze is constantly deepening its competence in cryoablation therapy.

The Austrian medical technology companies are linked in a global network: 111 of the cooperations mentioned by the dedicated companies, so two out of three, are taking place with partners from outside Austria. In this case, research institutions are the preferred partners and this applies at all stages of the value creation process from research and development to validation. As expected, sales alliances are concluded exclusively between companies.

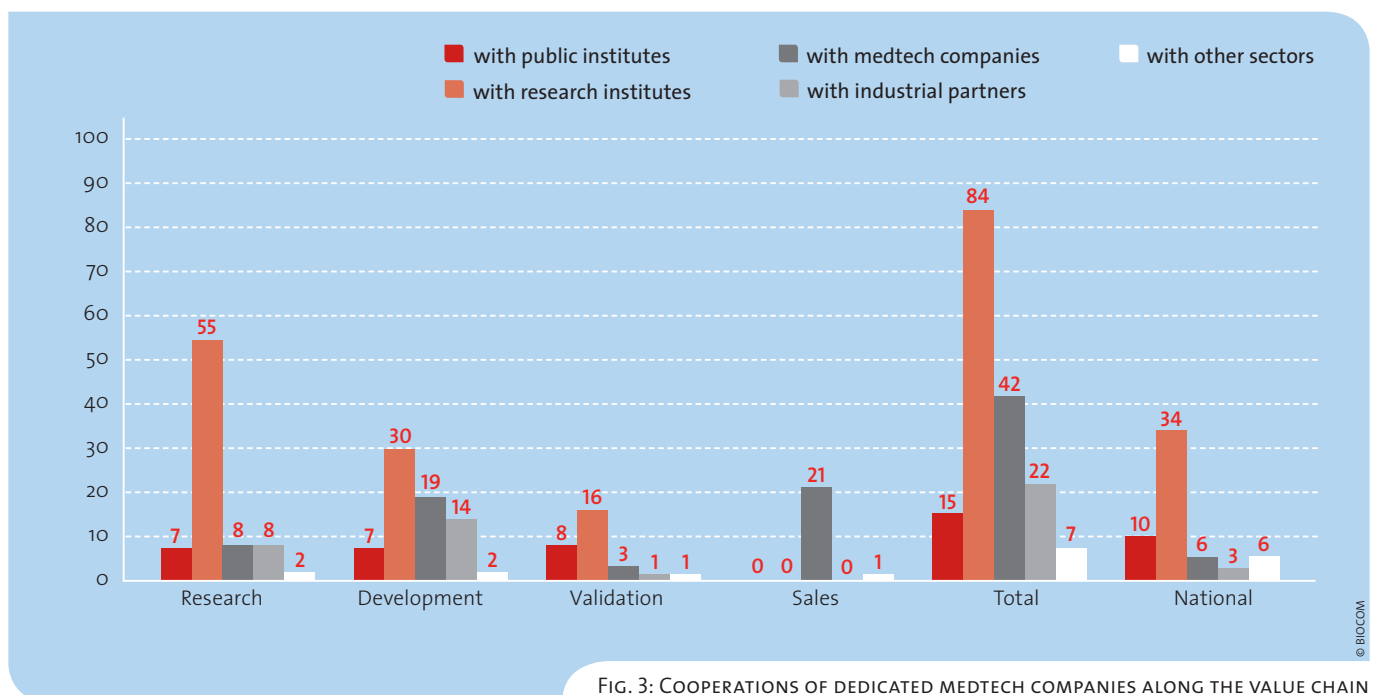


FIG. 3: COOPERATIONS OF DEDICATED MEDTECH COMPANIES ALONG THE VALUE CHAIN

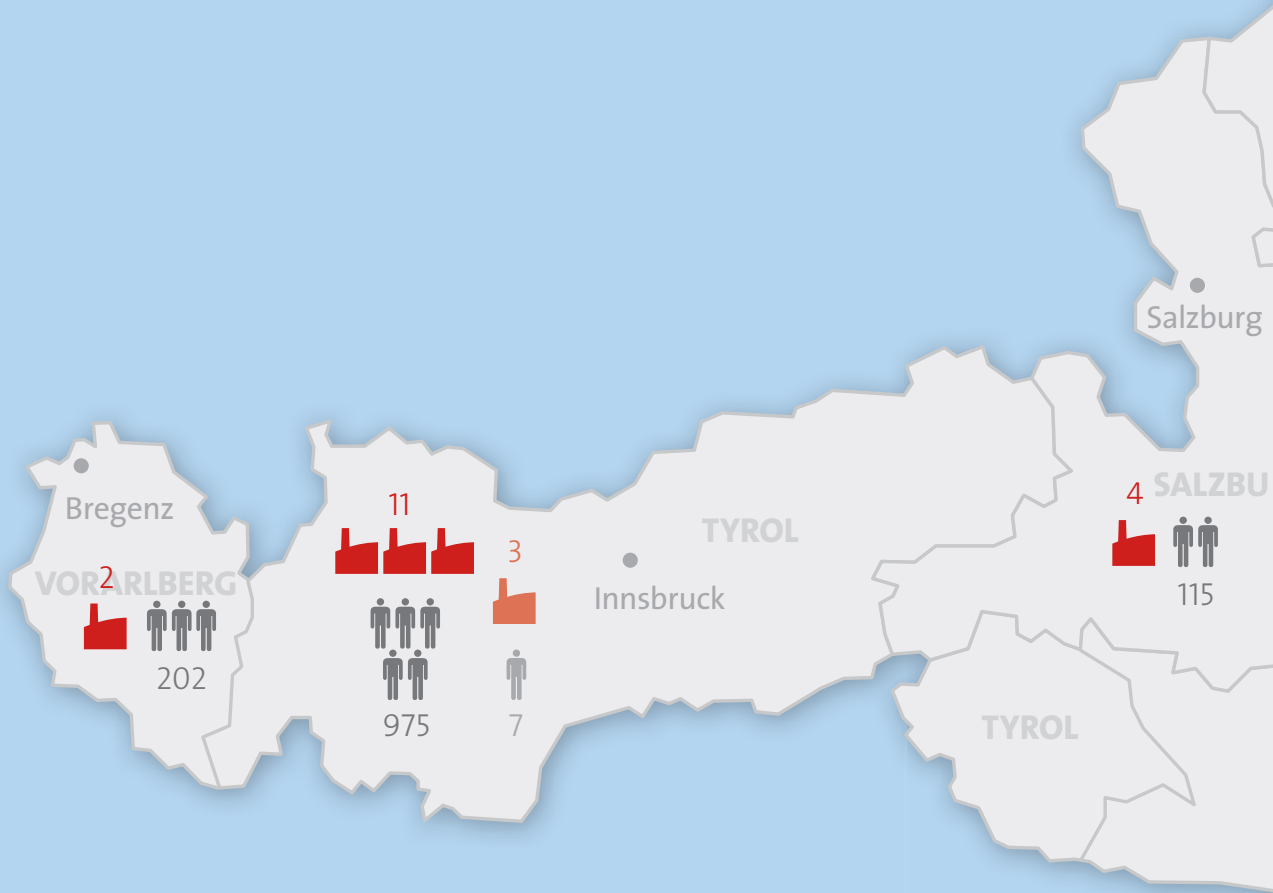
Number of companies



Number of employees



- Dedicated companies
- Other companies with medtech activities
- Employees of dedicated companies
- Medtech employees of other companies with medtech activities



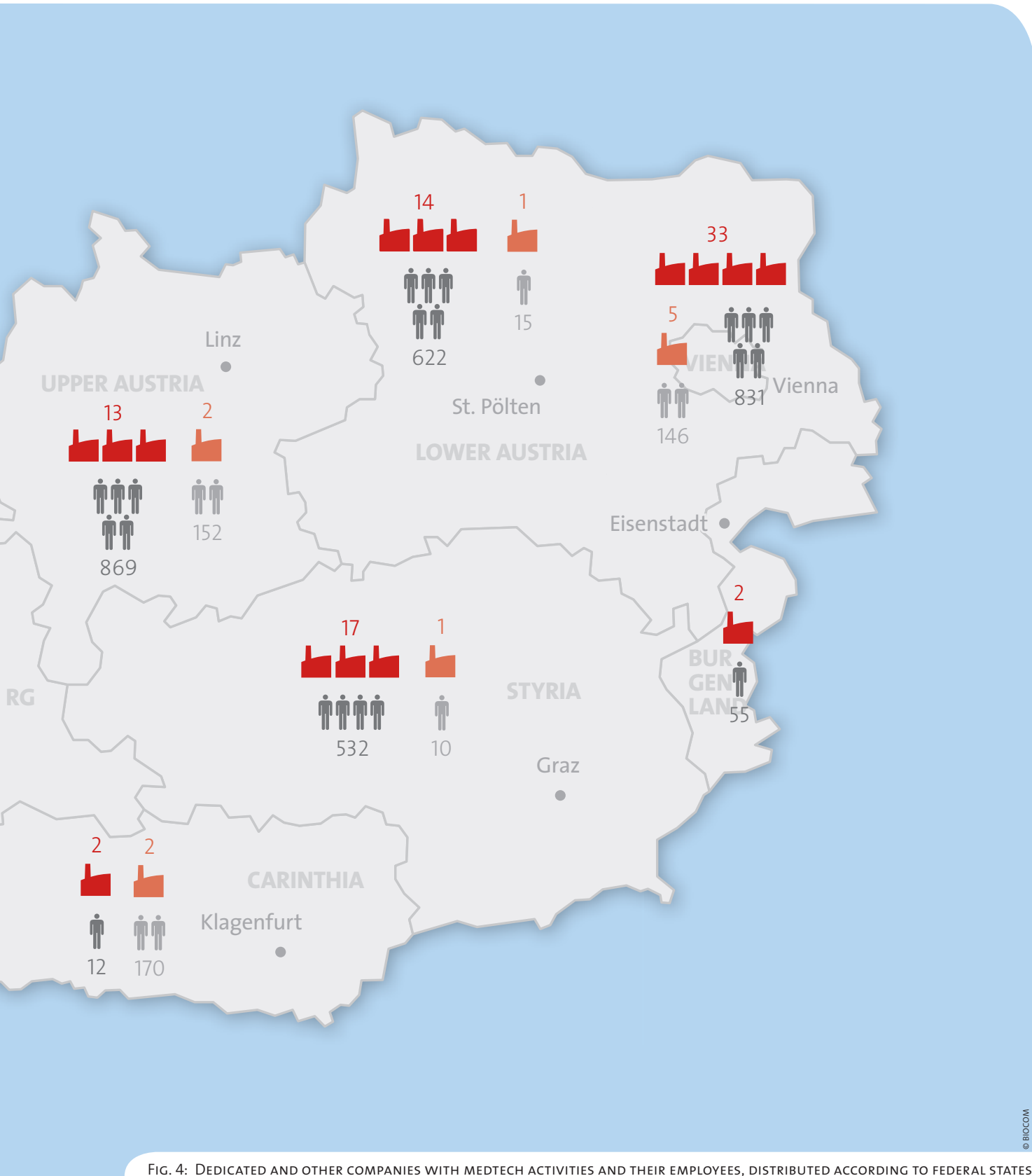


FIG. 4: DEDICATED AND OTHER COMPANIES WITH MEDTECH ACTIVITIES AND THEIR EMPLOYEES, DISTRIBUTED ACCORDING TO FEDERAL STATES

Fields of Activity

In the survey, the Austrian medical technology sector presents itself as extremely multi-faceted. It consists of a colourful mix of established and young companies. This diversity is also reflected in the products offered. As part of the survey, 57 dedicated medical technology companies categorised themselves according to the classification of medical devices based on the Global Medical Device Nomenclature (GMDN). This designation system was drafted by the European Committee for Standardisation (CEN) and is subject to continuous development. There are currently 14 product classes (see p. 18). They cover everything from anaesthesiology to in-vitro diagnosis and consumables. For the most part, the companies are not restricted to one product category and they typically cover several categories. Nevertheless, some areas dominate.

According to the information provided, the majority of Austrian companies are active in the field of electromechanical medical technology. 42% of companies assigned their products to this area. Examples of this are smaller companies such as SOT Sonotechnik GmbH from Carinthia which develops and produces equipment for cardiological diagnosis such as ECG, vascular investigations and oxygen measurements. The Austrian subsidiary of the GE Healthcare Group has also specialised in the development of 3D and 4D ultrasound systems at its site in Zipf, Upper Austria.

Ionimed is another successful company in this field with expertise in the detection and quantification of trace amounts of volatile organic compounds in air. Ionimed constructs analytical instruments based on the technique of proton-transfer-reaction mass spectrometry (PTR-MS) as well as the associated gas calibration equipment. This know-how is sought after by the pharmaceutical industry for real-time monitoring

of fermentation processes. Ionimed is currently focusing on breath gas analysis for the non-invasive diagnosis of diseases and for treatment monitoring. It is cooperating with the Oncotyrol consortium to investigate this technique for the detection of certain tumours.

More than a quarter of the companies assigned themselves to the category of consumables. Greiner-Bio One GmbH is a prominent example of this. Austria's second-largest medtech company in terms of employee numbers manufactures products that are used for sampling and storing body fluids such as blood and urine including, for example, cannulas and small plastic tubes.

A large number of medical technology companies have specialised in developing and offering software for medicine, telemedicine and the eHealth field. A quarter of the companies identified themselves in the survey as having skills and products in this category. The aim of Tissuegnostics GmbH in Vienna is to automate the analysis of blood and tissue samples using a software program thus considerably speeding up the evaluation of prostate cancer. The D.A.T.A. Corporation Softwareentwicklungs GmbH in Vienna specialises in software solutions that are used to map and integrate all radiology processes.

The Austrian medical technology sector is also well-positioned in the field of laboratory diagnostics. Roche Diagnostics Graz GmbH is among the largest suppliers of in-vitro diagnostic solutions. The Swiss pharmaceutical company's subsidiary has located its research, development and production centre for blood gas, electrolyte and metabolite analysis systems in Styria. These systems are used in hospitals, for example, to measure vital parameters in whole blood.

The reusable instruments category traditionally forms a key area of medical technology. Eight companies assigned their products to this category according to GMDN criteria. Among them were long-established companies such as Carl Reiner GmbH in Vienna which not only produces instruments for ventilation technology but also cannulas for tissue biopsies.

Implants are another important element in the range of products offered by Austrian medical technology companies. In matters relating to non-active implantable technology, suppliers include A.M.I GmbH in Feldkirch which offers, among other things, implants for coloproctology. Hofer GmbH develops and produces orthopaedic implants such as are used in trauma surgery at its site in Fürstenfeld, Styria. By comparison, Falcon Medical Medizinische Spezialprodukte GmbH in Mödlingen (Lower Austria) specialises in artificial hip joints.

According to the survey, two companies which belong to the largest medical technology groups in Austria are working in the highly-innovative field of active electronic implants. MED-EL Elektromedizinische Geräte GmbH supplies the whole world with electronic hearing aids from its headquarters in Innsbruck. Active neuroimplants are among the high-tech products at Otto Bock Healthcare. Otto Bock's product range also includes neurostimulators and myoelectric arm and hand prostheses. It is also developing a mind-controlled prosthetic arm which is still in the testing phase.

On balance, the survey draws a picture of a vital and dynamic medical technology sector which can draw on an extremely varied range of products. As future markets such as information and communication technology are also represented, the sector harbours very promising potential for growth.

Market, Framework Conditions, Healthcare System

Austria, with a nominal gross domestic product (GDP) of over 32,800 euros per capita, is one of the richest countries in the world. At the same time, it also has one of the best developed and equipped healthcare systems. The market for medical devices is large and subject to continuous growth, driven by rising investments in healthcare from the public and private sector.

According to the latest information provided by the Austrian office for statistics, the population of Austria is approximately 8.4 million. The population is set to grow in coming decades due to increased immigration and it is forecast that by 2050 9.5 million people will live within the country's borders. Not only are Austrians increasing in number, they are also increasing in age. If 23% of the population are currently 60 and over, this figure will rise to around 26% in the medium term (2020) and to more than 30% in the long term (by 2030). According to official estimates, the absolute figure for people over the age of 80 will increase from 400,000 at present to 630,000 in 2030. Expenditure for healthcare will in-

crease in parallel. The demographic changes will cause the demand for products from the medical technology sector to rise even further in Austria.

According to the Ministry of Health, Austria spent 30.3 billion euros on healthcare in 2009 which equates to 11 percent of the gross domestic product (GDP) and a per capita healthcare expenditure of approximately 3,400 euros. This quota lies considerably above the European average of 8.3 %. If anything, budgeting has been quite prudent in recent years. Between 1998 and 2008, the total healthcare expenditure per capita actually increased annually by 2.7 percent on average whereas the EU average was 4.6 percent (OECD, 2010). When this consolidation phase is complete and when the expenditure dynamics have aligned themselves with neighbouring countries again, this could well develop into a further significant stimulus for growth particularly for the Austrian medical technology sector.

The healthcare system in Austria is financed by a mixture of income-dependent

social security contributions, tax-financed public funds and private payments in the form of direct and indirect cost sharing. Approximately 76 percent of healthcare expenditure is raised from public funds (Austrian Federal Institute of Health, ÖBIG 2010). In this case, the most important financier of the healthcare system is social health insurance which at 14 billion euros financed almost half of all healthcare expenditure in 2009. While the extramural area is financed almost exclusively by social health insurance, costs in the intramural area of the hospitals are split between public funds and social security.

At five percent, the share of medical technology products in healthcare expenditure per capita was close to the European average in 2009, according to the World Bank. There ought to be potential for future growth particularly in demographically sensitive areas such as orthopaedics, dental implants, cardiology, ophthalmology in addition to diagnostic systems and rehabilitation equipment. Austrian companies are well-placed to benefit from these demand stimuli.

Total population (2010)	8.4 MILLION
Population growth (p.a., 2009)	0.3 %
Age structure (2010)	
– Proportion under 19 years old	33.6 %
– Proportion over 65 years old	28.6 %
average life expectancy at birth in years (2010)	80.4
Gross domestic product per capita	EUR 32,800
Healthcare expenditure per capita	EUR 3,358
– of which for medical technology products	EUR 175
Share of healthcare expenditure in GDP (2009)	10.3 %
Number of hospitals	267
Number of beds in hospitals	64,300

Source: BMG, ÖBIG, Statistik Austria

TAB 3 : KEY FIGURES HEALTH SYSTEM AUSTRIA

Each year, the majority of healthcare expenditure flows into in-patient care, followed by the outpatient sector. Austria has a dense network of medical care facilities. According to the study by ÖBIG, there were 267 hospitals with around 64,300 beds in 2008. Healthcare in Austria is traditionally hospital-centred and as a result 2.7 million hospital stays were recorded in 2007. Austria heads the table in a European comparison with 28 hospital stays per 100 inhabitants.

The medical technology sector benefits from this because hospitals are traditionally among the most important institutional customers. In recent years, there has been increased investment in state-of-the-art technology at many locations in Austria. Hospitals and doctors' practices increasingly have large items of high-tech equipment available. In 2008, there were already 249 CAT scanners and 150 MRI scanners nationwide, around two thirds of which were situated in hospitals. Around 920,000 CT and MRI scans were performed in the part publicly-funded hospitals alone in the year 2007.

In the case of medical devices, access to the market is not as strictly regulated for medical technology products as it is for drugs. There are essentially three applicable EU directives: 90/385/EEC for "Active implantable medical devices (AIMD)", 93/42/EEC for "Medical devices" (MD) and 98/79/EC for "In-vitro diagnostic medical devices (IVD)". The Medical Devices Act transposes these EU specifications into national Austrian law. In addition to the Medical Devices Act, the Medical Devices Operator Directive has also been in force since April 2007. It specifically regulates the use of medical devices in Austrian healthcare facilities.

To be able to sell a product, it is necessary in Europe to have a CE mark which is a similar requirement to that for other product classes such as toys. The manufacturer's self-information certifies its compliance with the criteria of the directives. In the case of medical devices falling within Class IIa to III, however, the manufacturer must also employ a European accreditation body to validate the information which the manufacturer has provided. A 4-figure number after the CE

mark indicates which of these "notified bodies" was involved.

Medical technology companies that have their headquarters in Austria must also have their new products registered prior to the sales launch. The Austrian Health Institute has set up the "Austrian Register for Medical Devices" for this purpose at <http://medizinprodukte.oebig.at>. In particular, manufacturers of medical devices and in-vitro diagnostic medical devices as well as importers from countries outside the European Economic Area are subject to registration.

CLASS I

Products with low risk, e.g. crutches, wheelchairs, spatulas, examination beds, dressings, etc.

CLASS IIa

Active and non-active products with medium risk, invasive and non-invasive products for short-term use, e.g. electrical diagnosis equipment, blood pumps, cannulas, hearing aids, contact lenses, etc.

CLASS IIb

Active products with medium risk, which emit substances or energy with potential risk and products for longer term use, e.g. anaesthesia/ventilation equipment, defibrillators, HG surgical equipment, etc.

CLASS III

Products with high risk and those that come into contact with the vascular system or the central nervous system, e.g. medical devices in the central nervous and cardiovascular system, cerebral probes, heart valves, medical devices with drug components, etc.

Sales Location Austria

Austria is a key market for medical technology and is also seen as the gateway to Central Europe. This makes it an ideal location for companies involved in research, development and production. It is also one of the many reasons why all the major international medical technology groups have established branches here, allowing them to organise sales, service and consultancy not only for Austria but for the rest of Central Europe as well.

The Siemens company from Germany is one of the world's largest medical technology companies. The Austrian branch of Siemens Healthcare is the Group's skills centre for imaging and therapeutic systems and supervises sales for the whole of Europe, Africa, Central Asia and the Middle East. In 2010, Siemens Healthcare employed a workforce of 323 in Austria. It is Austria's market leader in equipment for generating diagnostic data.

In 2010, for example, Siemens Healthcare equipped Linz General Hospital and the University Clinic Innsbruck with the new

“Magnetom Skyra” magnetic resonance imaging scanner. A newly developed digital 3D breast tomosynthesis unit was installed in the mammography centre of Vienna's General Hospital.

The Austrian branch of Roche's diagnostics division is also a major player. In addition to the site in Graz, the Swiss pharmaceutical giant also maintains an independent sales office and is the market leader in the field of in-vitro diagnostics.

The US healthcare company Abbott is also represented in Austria with approximately 200 sales employees located in Vienna. Among other things, Abbott supplies diagnostic products and solutions for minimal-invasive cardiac and vascular surgery and treatment in the medical technology sector.

The Johnson&Johnson Group, which is also domiciled in the USA, sells a large number of medical technology products through subsidiary companies: DePuy works in the field of endoprosthetic orthopaedics, sur-

gery and traumatology; Ethicon sells products for wound closure, implantations, haemostasis and operative treatment procedures; Ethicon Endo-Surgery specialises in instruments for use in open and minimal-invasive surgery. The diverse range is rounded off with blood sugar measuring systems from the Johnson subsidiary LifeScan and contact lenses from VisionCare.

GE Healthcare, the healthcare division of General Electrics based in Connecticut, America, employs more than 100 staff in its Austrian sales office and is represented in the corporate divisions of Diagnostic Imaging, Ultrasound, Clinical Systems, IT Solutions, Medical Diagnostics and Life Sciences.

The other heavyweights in medical technology have at least sales offices in Austria: Medtronic (USA), Baxter International (USA), Covidien (USA), Philips (Netherlands), Boston Scientific (USA), Becton Dickinson (USA), B. Braun Melsungen (Germany) to name only the largest among them.

Company	Turnover worldwide in billion euros
Johnson & Johnson	16.5
Siemens Healthcare	12.1
GE Healthcare	11.2
Medtronic	10.2
Baxter International	8.8
Philips Healthcare	7.8
Abbott Laboratories	5.9
Boston Scientific	5.7
Covidien	5.4
Becton Dickinson	5.0

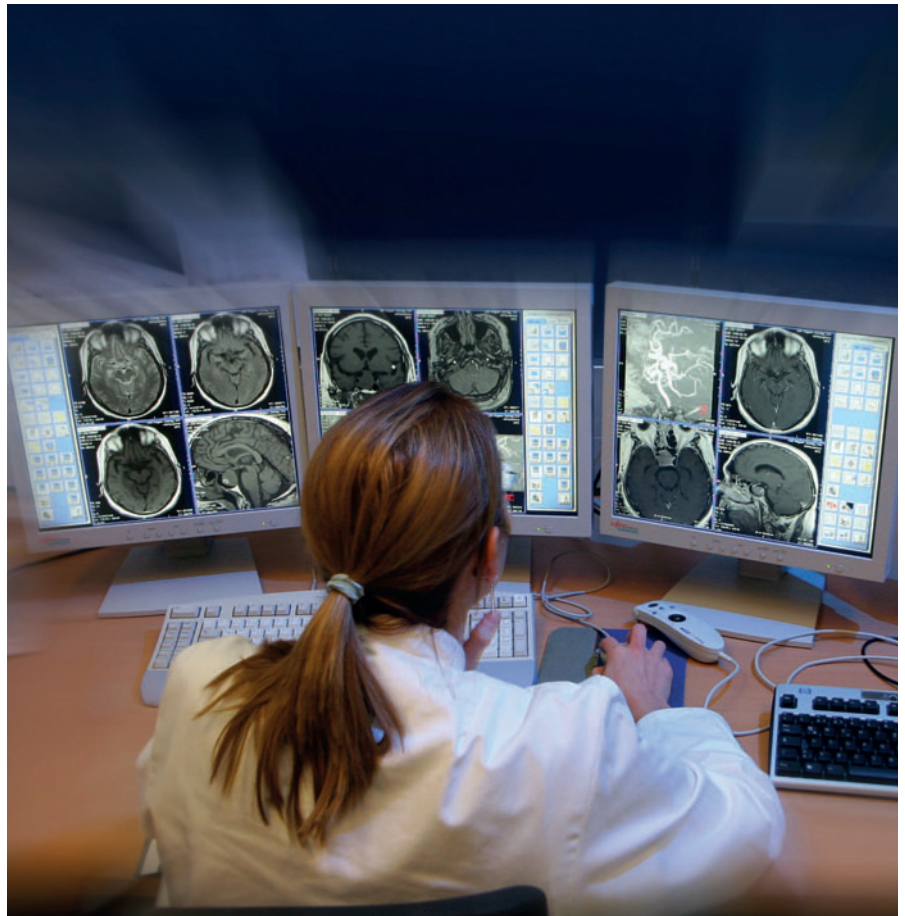
Prospects

Medical technology, as a driver of innovation and provider of premium jobs, is already extremely important to Austria as a location. The significance of this dynamic sector will continue to increase in coming years in terms of both the economy and society in particular. With innovative solutions for diagnosis, treatment and prevention, the sector will find itself at the centre of coping with one of the main challenges that Austria is facing – that of an ageing society. This is where medical technology offers solutions that will make the healthcare of the future more productive and more efficient.

One example of this is the EU's eHealth initiative in which Austria is taking a leading role by providing the conceptual design for electronic health records (EHR). From 2012, every patient should have the ability to produce his or her medically relevant data digitally on request and to make it accessible to attending physicians independently of each other. This will create transparency and the basis for comprehensive treatment and health concepts. It will reduce the costs incurred by illnesses being treated twice and make it easier to identify and prevent any dangerous interactions when several drugs are taken.

This is not only a step towards more effective treatment but will also help to make the healthcare system more productive, more effective and more cost-efficient. In the long term, the plan is for the healthcare system in Austria to use state-of-the-art medical technology to develop away from purely repair medicine and towards a package of measures which focus on prevention and health promotion.

Medical technology will not only create closer treatment links. Due to its high export share, the Austrian medical technology sector will also ensure closer integration of



the Austrian economy with areas of dynamic growth and profitable markets worldwide.

Austria will soon advance to become one of the most innovative countries within the EU. In March 2011, with this "Innovation Leadership" in mind, the Federal Government adopted a national strategy for research, technology, and innovation. The healthcare sector and therefore medical technology too will play a key role in this. With targeted funding of strategically important research and development projects, the plan is to set the course for making Austria fit to cope not only with demographic change but also the scarcity of resources and climate change.

Regardless of the financial and economic crisis, the Austrian Federal Government is

thus committed to the sustained investment of significant resources in research, technological development, and innovation. By 2020, it is planned to increase research spending to 3.76%, with an emphasis on ensuring efficient utilisation of this funding. The central objective is to become one of Europe's most innovative countries.

Public Funding for the Austrian Life Science Industry

The most innovative ideas are of use only, when they have successfully bridged the gap from lab to market. Austria has a wide array of national as well as regional funding schemes on offer. Focusing on start-up ideas in biotechnology and medical devices, *austria wirtschaftsservice* (aws), the Austrian promotional bank, provides financial support with its funding programs “LISA PreSeed” and “LISA Seedfinancing”. The two programs aim at encouraging the implementation of scientific discoveries into businesses and to raise the number of new business ventures in the life sciences.

“LISA PreSeed” provides funding for the phase before a life science company is set

up. Costs related to the scientific implementation and the economic application of a project can be funded. The maximum amount of this non-refundable financial support is 200,000 euros.

The setting-up of an innovative and internationally competitive high-tech company needs a lot of know-how, courage and capital. With “LISA Seedfinancing” aws supports the starting phase of young high-tech companies with up to 1 million euros, combined with tailored advice and support. Once the company is making profit or sold, financial support must be refunded. Customary securities usually needed for bank loans are not necessary. However, the com-

pany must be partly and adequately funded through private capital. To overcome critical competence gaps, aws supports young high-tech companies, which are already funded through the LISA Seed financing programme. With up to 50,000 euros or a maximum of 50% of the costs, external advice in the areas of finances, sales or technology can be funded.

aws financing is complemented by other agencies. The Austrian Science Fund (FWF) is funding basic research, while the Austrian Research Promotion Agency (FFG) is in charge of applied research funding. Also a wide range of regional funding tools is on offer.

Life Science Austria – LISA

Life Science Austria (LISA) promotes the life science sector in Austria on the international stage and is the first point of call for enquiries relating to it. Austrian life science is renowned for its sustainable growth, taking a lively, creative and highly innovative approach rooted in world class engineering and science. Organised through the regional life science clusters, LISA represents companies in the therapeutic, medical technology and diagnostic sectors as well as providers of enabling technologies and related service companies located in the following regions:

- > Lower Austria (ecoplus)
- > Styria (Human Technology Styria)
- > Tyrol (Life Sciences Cluster Tirol)
- > Upper Austria (Health Technology Cluster)
- > Vienna (LISA Vienna Region)



LISA is committed to the development, growth and prosperity of the Austrian life science industries as a leading component of the Austrian economy. On the international front, LISA also works towards Austria itself being a country known worldwide for the excellence of its life science sector. For more information please visit: www.lifescienceaustria.at

Life Science Austria is run by *austria wirtschaftsservice* (aws) on behalf of the Austrian Federal Ministry of Economy, Family and Youth (BMWFJ). As a promotional bank, *austria wirtschaftsservice* is fulfilling the task of supporting Austria's economy by the funding of companies and know-how transfer. The state-owned bank is particularly funding small and medium sized companies through guarantees, favourable credits, equity and other financial support. The aim of aws is to promote the founding of new companies, the growth of existing ones, regional development and the implementation of innovation and new technologies.

Methods

There are two challenges when attempting to isolate medical technology conceptually. On one hand, the field is extremely diverse in terms of content and the range of products covers everything from latex gloves to CAT scanners. On the other hand, due to the high innovation rate, new and above all innovative products are continually being added.

At licensing level, the term 'medical device' applies as specified in EU directive 93/42/EEC. The directive differentiates between medical devices, accessories, in-vitro diagnostic medical devices and custom-made devices. The Global Medical Device Nomenclature (GMDN) was introduced in November 2001 to better illustrate the different facets of medical technology in international comparison. GMDN is adjusted on an ongoing

basis and currently contains 14 main categories with almost 9,000 terms and over 10,000 synonyms for medical devices (see below). The nomenclature was adjusted for the survey. One category (supplementary equipment) was deleted and two new ones were added: "software, e-health" and "others". BIOCOM AG created a questionnaire based on these definitions for the purposes of this survey. Between March and June 2011 a total of 402 Austrian companies were contacted and requested to fill in the questionnaire. The corporate databases of aws and BIOCOM AG were used in the selection of those written to and in addition the GMDN classification was used to identify other potential companies. 127 companies responded, either in writing or by way of additional supplementary telephone interviews. This equates to a response rate of 31.6%.

In line with OECD guidelines, care was taken when selecting the companies to ensure that all the companies recorded are involved in medical technology in Austria and are based in the country. For this reason, we also considered companies that are majority-owned by a non-Austrian parent company but which have R&D activities in Austria. The survey was only conducted for the Austrian sites of a company when recording jobs, business figures and business segments. A company with more than one site in Austria is only taken into consideration once with correspondingly accumulated values. The cut-off date for the survey was 31.12.2010. In 2009 aws conducted a survey of the sector based on different basic definitions. Therefore the results of 2009 and of this study are not directly comparable.

Code Explanation

01	Active implantation technology, cardiac pacemakers, neurostimulators
02	Anaesthesiology and ventilation technology, oxygen masks, ventilators for anaesthesia, gas supply units
03	Dental technology, dental equipment, fillings
04	Electromechanical medical technology, ECG, EEG, sonography machines, lasers
05	Hospital equipment, hospital beds
06	In-vitro diagnostics, pregnancy test, blood sugar tests, genetic tests
07	Non-active implantable technology, hip and knee joints, arterial stents
08	Ophthalmic and optical technologies, spectacles, contact lenses, ophthalmoscopes
09	Reusable instruments, surgical instruments, endoscopes, blood pressure cuffs, stethoscopes, skin electrodes
10	Consumables, syringes, needles, latex gloves, balloon catheters
11	Technical aids for invalids, wheelchairs, walking aids, hearing aids
12	Diagnostic and therapeutic radiation technology, X-ray equipment, CT, radiotherapy equipment
13	Means based on biological materials, substitute tissue, products of regenerative medicine
14	Software for medicine, telemedicine and e-health
15	Others

We bring Life Sciences to Life.

50.000 Euro

Temporary Management:

Financing of complementary management expertise

awsg.at/maz

200.000 Euro

PreSeed:

Financing of the pre-start phase

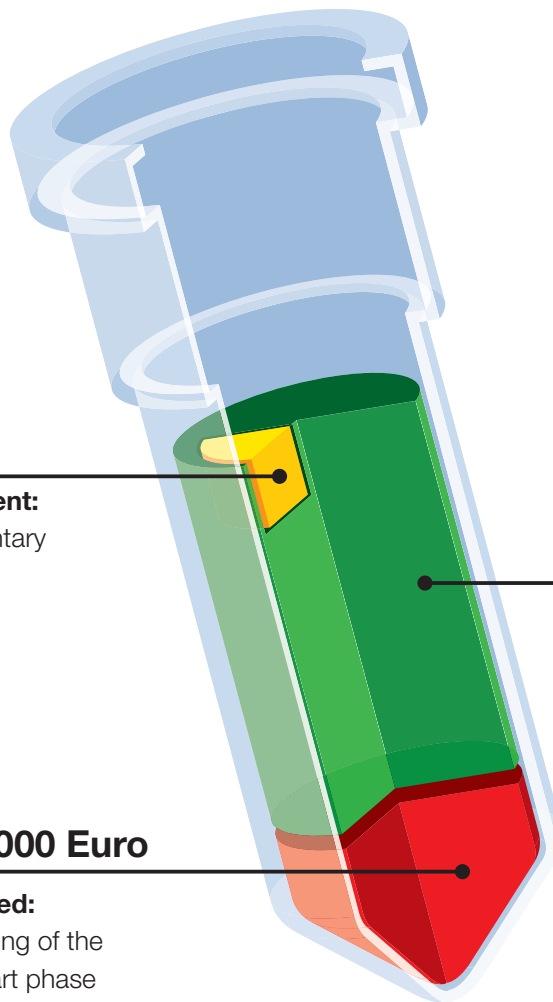
preseed.at

1.000.000 Euro

Seedfinancing:

Financing of the start-up phase of high-tech companies

seedfinancing.at



Wanted: Innovative products and procedures in the life sciences sector. What we offer: Optimal financing mix for maximum growth effects. aws business development bank supports the establishment and development of high-tech companies with financing and targeted consultation, thereby strengthening Austria as a business location. For details and conditions of financing please visit www.awsg.at



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