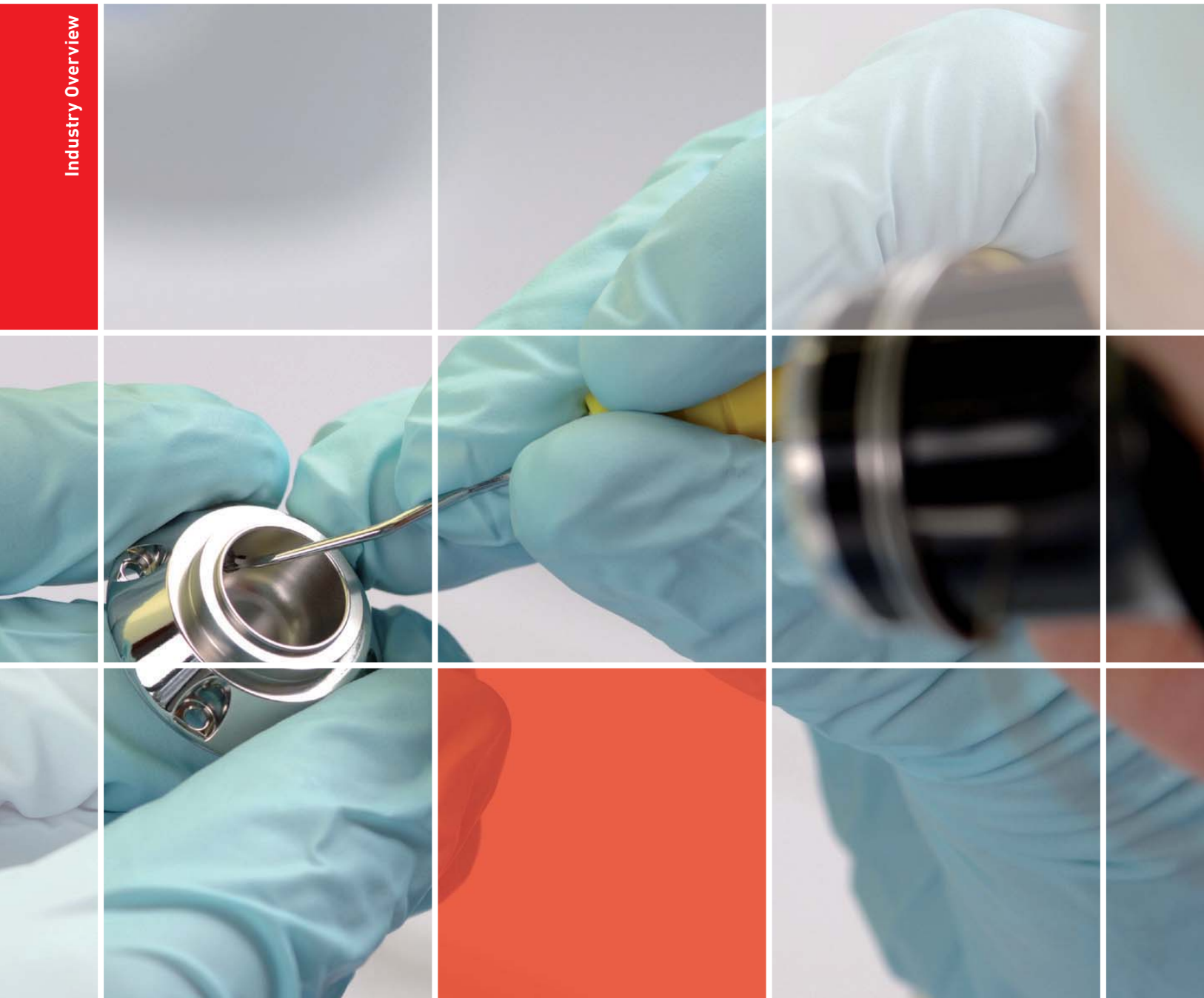


The Medical Technology Industry in Germany

Issue 2011

Industry Overview



GERMANY
TRADE & INVEST

Medical Technology in Germany – Health for the World

“Medical devices made in Germany” - German medical technology has developed into one of the mainstays of the health care industry. Germany is Europe’s leading business location for medical technology. The medium-sized enterprise dominated sector has also maintained results – despite the international recession.

Being strong exporters, and market leaders in many sectors, German medical technology companies are operating in a very favorable technical and economical environment.

As a result of significant demographic and technological developments, the world market for medical technologies currently totals in the region of more than EUR 200 billion per year - a figure which is increasing all the time.

Germany is the third biggest medical technology products producer and medical services provider in the world. In terms of new patent registrations, German manufacturers currently lie second behind the

USA, making Germany Europe’s strongest location for innovation in this industry. German medical technology producers achieve roughly a third of their turnover with products that are less than three years old.



Source: Financial Times; Germany Trade & Invest, February 2009

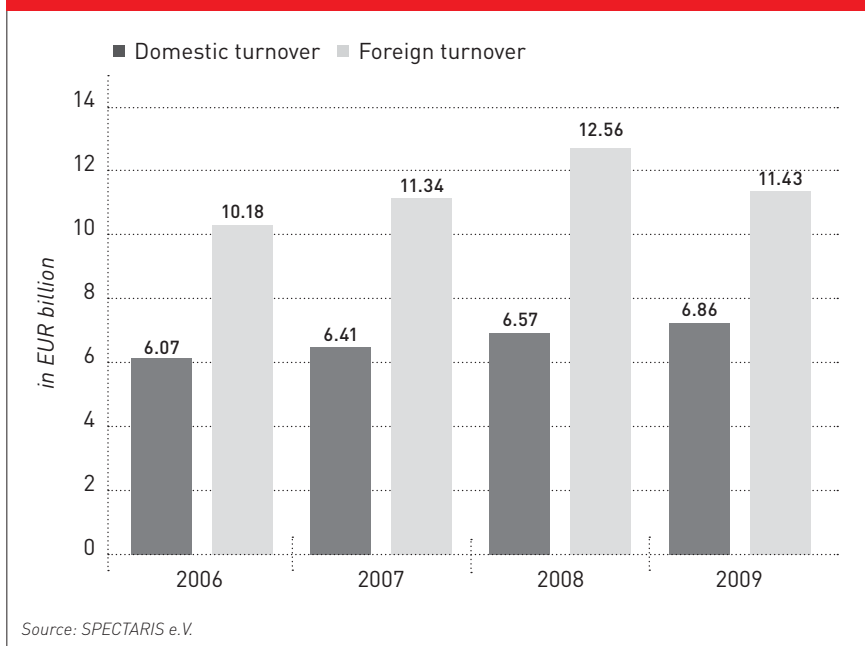
The German Medical Technology Industry in Numbers

The German medical technology industry is a high-tech sector with high levels of innovation and a strong export orientation that is characterized by small and medium-sized companies. Of course, companies in the medical technology sector were not entirely unaffected by the international financial and economic crisis which hit its peak in 2009. However, the sector has been affected less by the crisis than other industries, proving itself to be much less reliant on the economic situation.

Following significant gains made in the last five years, total turnover in the German medical technology sector receded marginally in 2009. At approximately EUR 18.3 billion, revenue was down just 4.3 percent on 2008 figures.

The decrease was primarily the result of an export business falling off of around nine percent to EUR 11.4 billion. In this context, exports to European Union (EU) countries and North America were respectively two and three percentage points below 2008 levels. At the same time, German manufacturers increased domestic turnover to EUR 6.9 billion for the year – 4.5 percent more than in 2008. With 87,000 employees, the number of workers within the medical technology industry remained constant.

Development of domestic and foreign turnover in the German medical technology industry



The SPECTARIS industry association has forecast a seven percent medical technology industry growth rate for 2010. The reasons for this include the innovative strength of the small and medium-sized company sector, a sound capital base, and a relatively constant level of demand within the health care sector.

Increased Medical Technology Exports in 2010

Following the fall in exports experienced in 2009, the medical technology sector began recording strong levels of export growth in the third quarter of 2010. The most important target export regions were EU countries – accounting for approximately 40 percent of all sales. Compared with the same period in 2009, exports to EU member states increased by six percent and to the rest of Europe by 19 percent.

With a share of 20 percent, North America is the sector's second most important export region. Exports to this region were almost 13 percent higher than they were for the same period in the previous year. The sector recorded its strongest growth in Asian export markets. Here, exports went up by more than 26 percent which means that the share of exports going to Asia increased to more than 17 percent. Increases of over 28 percent also saw a clear gain in exports to Middle and South America, resulting in the total market share increasing to four percent.

Medical Technology Trends

Germany enjoys universal recognition as a location for the manufacture of products intended for use in a number of international medical technology markets. Available products include everything from high-end products to commodities suitable to more general health care provision. New markets are being explored and products tailored to suit the specialized needs of foreign markets.

German companies are innovation drivers and world market leaders in a number of sectors. A unique characteristic of German medical technology is the medium-sized company oriented structure which makes it possible to react in a flexible way, cover a multitude of themes and provide niche products for specialist application. Simultaneously, a significant number of manufacturers pursue a product strategy which goes beyond pure product provision. Integration and compatibility into and with existing systems are the key words in this respect. After-sales provision - including, for example, training, after-care service, and repair services - also belong to the portfolio of services which especially distinguish German companies.

As well as being a major export force, German medical technology companies stand out in terms of their innovative strength. In its study entitled, *"The Identification of Hurdles to Investment in the Medical Technology Sector"* (2008), the Federal Ministry of Education and Research identified the key developmental trends in the sector for the years to come. These are as listed below.

Imaging Systems

In addition to classic imaging procedures (x-ray, computer tomography, magnet resonance tomography and ultrasound), new methods such as positron emission tomography (PET) and single photon emission tomography (SPECT) are gaining in importance. Other important innovation-related themes include screening/early diagnostics, therapy monitoring, molecular imaging, multimodal systems, image-guided intervention, 4D/functional imaging, and image and data processing. Wide-ranging financial measures supporting imaging procedures have been put in place by the German government.

Prostheses and Implants

Important subareas in this innovation field include technical aids for the disabled and rehabilitation, neuroprosthetics/functional electrostimulation, as well as intelligent and nano and/or bio-functionalized implants. In terms of industry structure, prosthesis and implant innovation is largely carried out by small and medium-sized companies. The sector is also characterized by a wide range of technology which stretches from simple mechanical systems to complex, active implants. A direct reference to the material and biosciences is also available, showing an example of excellent interdisciplinary cooperation.

Telemedicine and Model-based Therapy

Telemedicine is the name given to diagnostics and therapy measures which make use of telecommunications to bridge location and time distances between doctors and patients or between consulting doctors. E-Health refers to specific concepts, ways of thinking, approaches and obligations towards networked and

global thinking for the improvement of health care using information and communications technology (ICT). Key themes and particularly innovative subdivisions include electronic patient records, telemonitoring, expert systems, ambient assisted living, and virtual reality in medicine.

Operational and Interventional Devices and Systems

This area of innovation includes devices and procedures for operational interventions on the human body - meaning direct, manual or instrument-based interventions. Key themes and particularly innovative subareas in this field include minimally invasive surgery, robotics and navigation in surgery, surgical instruments, and intensive medicine. In addition to this, networking concepts in the context of interoperable devices and systems play as much of a specialist role as simple and intuitive ease-of-use. A specific feature is the strong industrial base in Germany, primarily in the small and medium-sized family-owned company sector.

In-Vitro Diagnostics

In-vitro diagnosis (IVD) consists of instruments and apparatus (including software) which are used together with reagents for the laboratory or on-site examination of samples which originate from the human body. They provide information specific to physiological or pathological states, congenital defects, recipient tolerance levels, and therapeutic condition monitoring. In this context, important innovative subareas include lab-on-chip technology, molecular diagnostics, immunodiagnosics, decentralized diagnostics, and individualized medicine.

Device and System Networking

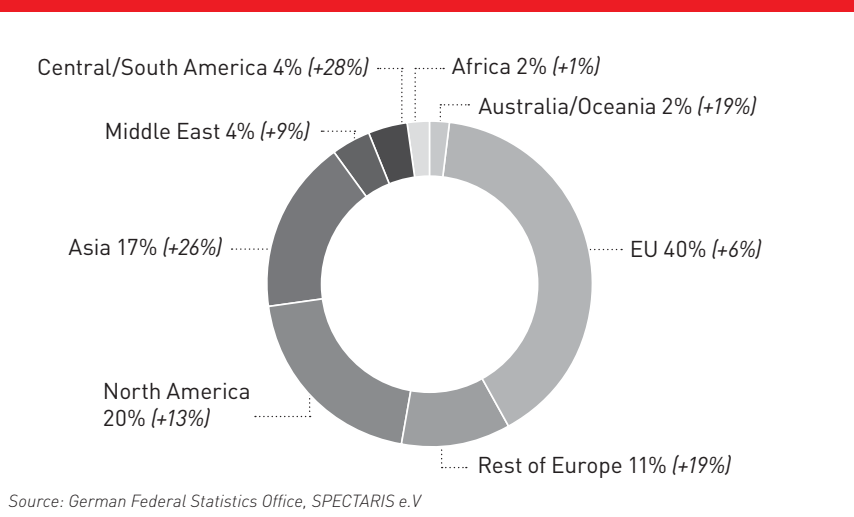
In most application areas today, medical technology devices tend to be operated as individual devices. However, the linking of medical technology devices to systems and their incorporation into hospital IT infrastructure is on the increase. This integration is creating new possibilities in therapy and process optimization terms. Moreover, it also provides a complete picture of the patient's medical history, the procedures undertaken and their current status.

By comparing the progress of previously evaluated standard procedures with the progress of the current operation, it is possible to acquire information about its subsequent progression. With a workflow analysis of this kind it is possible, for instance, to determine the forecast ending of the operation and therefore arrange the scheduling of the next patient in optimum and timely fashion.

The Medical Aid Industry in Germany

A major segment of the medical technology industry is the manufacture of medical aids. According to the Federal Office of Statistics, some 74 companies (with 50 employees or more) are based in Germany for the manufacture of orthopedic products in addition to eleven plants for the production of wheelchairs and vehicles for handicapped people. All told they employ around 15,000 people and achieve sales of around EUR 2.2 billion. However, this is only a small proportion of the medical aid industry. There are numerous small businesses and companies assigned to other areas for reasons of statistical classification.

German medical technology export share in the target regions Q1-3 2010 (comparison to the same period in the previous year)



The German medical aid industry generates a large share of its sales by exporting products such as artificial joints; apparatus for ozone, oxygen and aerosol therapy; artificial respiration for resuscitation; and other equipment and devices for orthopedic purposes. This said, the domestic market nevertheless remains the key market for the German medical aid industry. According to figures provided by the Federal Association of Orthopedic Technology, the orthopedic technology market alone constitutes EUR 4.32 billion. Of this sum, around EUR 3.45 billion is generated by the country's 1,873 prosthetists and 2,491 medical suppliers.

Germany's health spendings on medical aids totaled EUR 12.8 billion in 2008 which corresponds to a five percent share of the total expenditures.

The Private Market as Chance

In the long term, the medical technology industry must be prepared to define new target groups and additional sales channels beyond health insurance reimbursement. The demographic changes and health awareness of the new generation already offer the industry potential in the private market – with increasing tendency. Many manufacturers have recognized the opportunities these changes already implemented and included them in their product lines as so-called premium brands, both with regard to the processed materials and to design.

Medical Technology in the Federal States

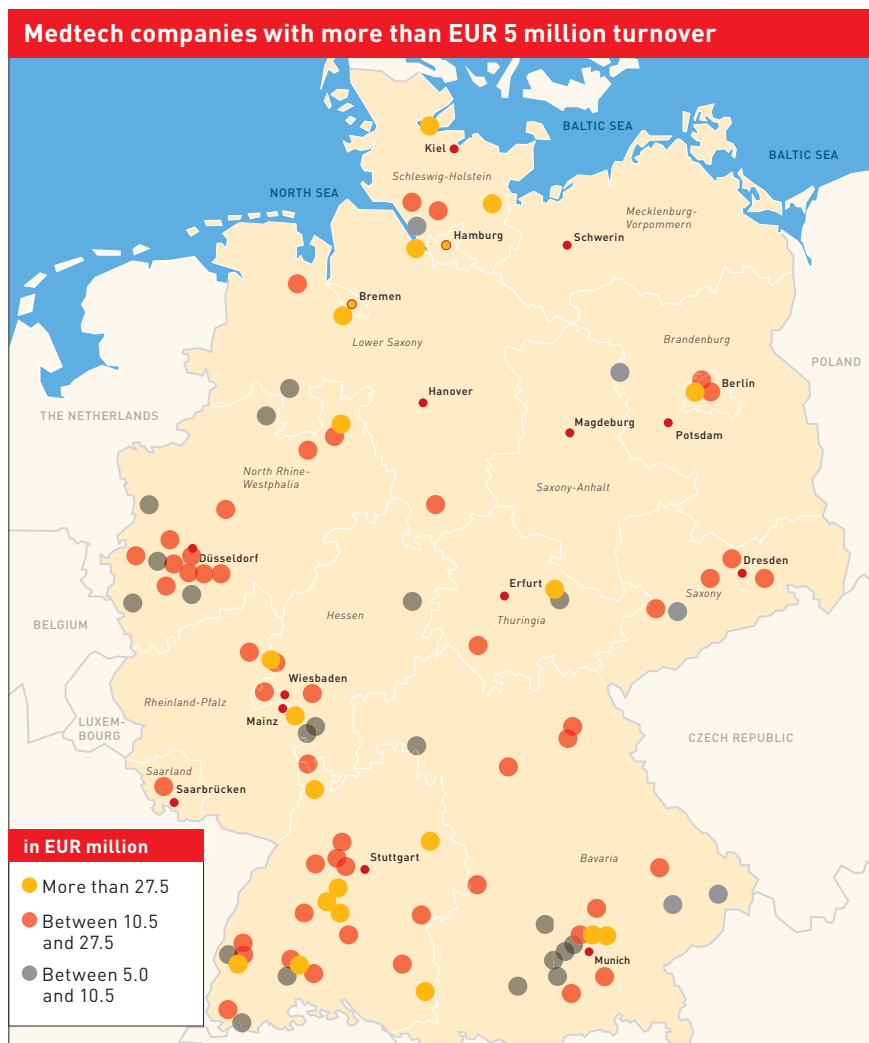
A large proportion of the German medical technology industry is concentrated in southern Germany, primarily in the federal states of Baden-Württemberg and Bavaria. The 350 companies (each with more than 20 employees) active in these two federal states account for more than half of the total turnover achieved by this sector in the whole of Germany. A wide range of medical technology companies are also based in the federal states of Hessen, Schleswig-Holstein, North Rhine-Westphalia, and Berlin. These represent roughly a quarter of the whole market. On an international level, the federal states have been able to position themselves very successfully as highly specialized locations in different sub-branches of the medical technology sector.

R&D Framework

Research and Product Development

Germany enjoys a positive international reputation as a global innovative force. Thanks to its outstanding engineering capabilities it is also the place to branch out into new technologies and product divisions.

Close cooperation between Germany's R&D institutes and equipment manufacturers, not to mention a plethora of in-house R&D facilities, helps maintain an internationally unparalleled competitive edge. R&D is considered to be among the most important areas for the development of the German economy. R&D projects can count on numerous types of financial support in the form of grants, interest-reduced loans, and special partnership programs.



All investors, regardless of whether they are from Germany or abroad, have access to attractive R&D incentives. The 1,200 companies (each with more than 20 employees) active in the medical technology sector invest around nine percent of their turnover in R&D. Around 15 percent of all employees in this industry work in R&D, highlighting the significant importance Germany attaches to R&D and innovation in the medical industry.

High Innovative Strength

The German medical technology industry generates one third of its turnover from products less than

three years old. However, this is only one indicator for the high level of Germany's innovative strength. In terms of all European patent applications made in 2009, Germany holds a share of almost 20 percent of the 134,542 patent applications registered at the European Patent Office. With 17,200 patent applications in 2009, the medical technology sector is leading from the front. Germany is in second place behind the USA in terms of the number of international patents in medical technology.

Workforce

World-Class Education Standards

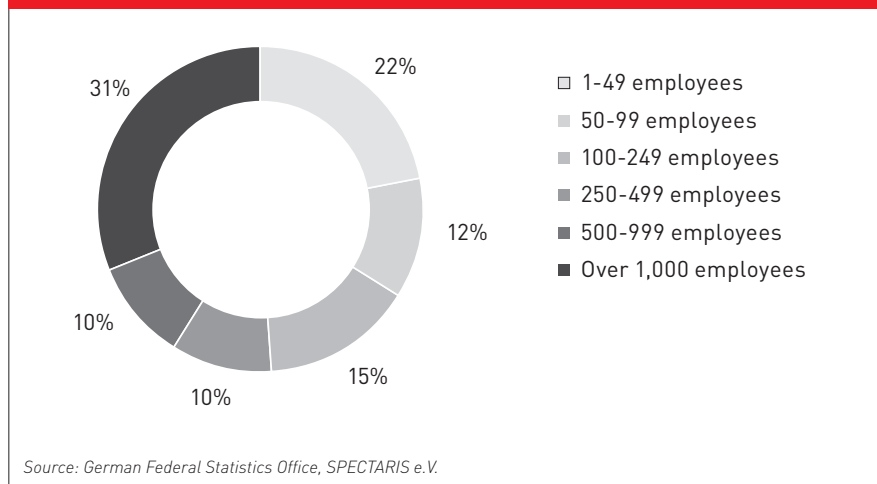
Germany's world-class education system ensures that the highest standards are always met. Eighty-four percent of the German population have been trained to university entrance level or possess a recognized vocational qualification – above the OECD average of 67 percent. The country's dual education system for apprenticeships – unique in combining the benefits of classroom-based and on-the-job training over a period of two to three years – is specifically geared to meet industry needs. The German Chambers of Industry and Commerce (IHK) ensure that exacting standards are adhered to; guaranteeing the quality of training provided across the country. Germany provides direct access to a highly qualified and flexible labor pool to meet industry needs whilst ensuring that skilled and unskilled workers are well prepared for the workplace.

Diversified Education in Medical Technology

Academic training in the medical technology sector in Germany is of the highest caliber. In order to maintain and enhance the country's excellent medical technology R&D standards, key skills in engineering and natural sciences – and especially in information technology – are taught in medical technology training.

Knowledge transfer and the continuous flow of researchers between public and private research institutions is one way of staving off the shortage of emerging young academic talent. However, in recent years, the total number of students in German universities has been increasing, as has the share of students in natural sciences and engineering.

Distribution of employees in German medical technology companies according to size of organization in 2008



Numerous interdisciplinary courses for the training of medical technicians exist. Having obtained a vocational qualification in the metal or electricity industry it is possible to gain further qualifications in medical technology. A number of universities also offer advanced courses as a supplement to the traditional technical fields of study. In the universities of applied sciences there are even several separate programs in biomedical or clinical engineering.

Thriving SME Sector

The German medical technology sector is largely made up of small and medium-sized enterprises (SMEs). Ninety-seven percent of all medical technology firms in Germany employ less than 500 employees and 15 percent of all employees work in businesses with less than 50 employees. The big companies with more than 500 employees account for roughly 60 percent of the total turnover in this sector. The smallest companies (less than 50 employees) account for nine percent of total turnover.

With an average of 78 employees per company, the medical technology industry is typically more small- and medium-scaled than German industry by and large – with an average employee number of around 130. Based on the number of companies, the sales and total employment, it is a small industry within the manufacturing industry that has developed in dynamic fashion. However, in contrast to the overall manufacturing sector which has seen employment levels decline over the past decade, the medical technology industry workforce has grown.

Creating Investment Stability

Open and Transparent Markets

German law makes no distinction between Germans and foreign nationals regarding investments, available incentives or the establishment of companies. The legal framework for foreign direct investment in Germany favors the principle of freedom of foreign trade and payment. There are no restrictions or barriers to capital transactions or currency transfers, real estate purchases, repatriation of profits, or access to foreign exchanges.

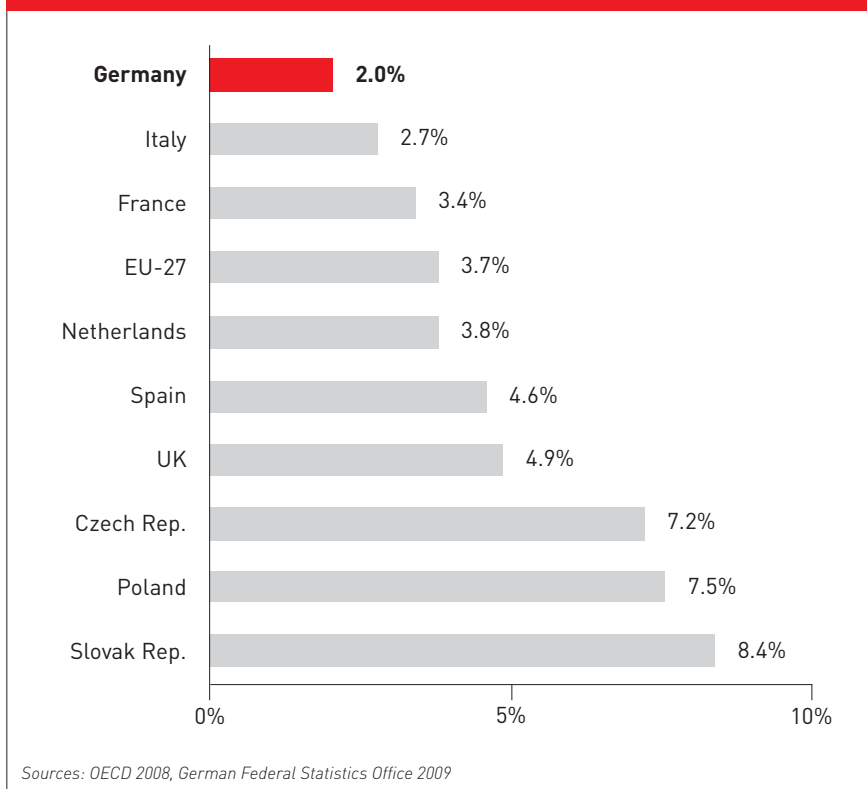
Reliable Logistics Infrastructure

Germany's infrastructure excellence is confirmed by a number of recent studies including the Swiss IMD's World Competitiveness Yearbook and various UNCTAD investor surveys. The 2009-2010 Global Competitiveness Report of the WEF ranked Germany first for infrastructure; singling out Germany's extensive and efficient infrastructure for highly efficient transportation of goods and passengers for special praise. Accumulated in this score for Germany are high marks for the quality of roads and air transport, excellent railroads and port infrastructure, as well as its communications and energy infrastructure.

Competitive Labor Costs

High productivity rates and steady wage levels make Germany an extremely attractive investment location. Labor cost increase levels have been the lowest in Europe in recent years. German productivity rates are almost ten percent greater than the average of the EU's 15 core national economies, and almost one quarter higher than the OECD average. Highly flexible working practices

Growth of labor costs 2000-2008 (annual average growth expressed as percentage of total economy)



such as fixed-term contracts, shift systems, and 24/7 operating permits contribute to enhance Germany's international competitiveness as a suitable investment location for internationally active businesses.

In economically challenging times, a safe and attractive investment like medical technology proves particularly attractive to investors. As a comparatively low-risk investment, the medical industry requires stable policy frameworks and sufficient legal stability. Germany is world renowned for its highly developed economic, legal and political frameworks which provide investors – in all industry sectors – with the necessary security for their business investments.

Internationally Competitive Tax Conditions

Germany offers a competitive tax system providing attractive tax rates for companies. In recent years, the German government has implemented root and branch reforms of the tax system to make the country a more attractive business location. The German tax system allows for differing tax rates in German municipalities. On average, corporate companies face an overall tax burden of less than 30 percent. Significantly lower tax rates are available in certain German municipalities – up to eight percent less. The overall tax burden can therefore be as low as 22.83 percent. This makes Germany's corporate tax system one of the most competitive tax systems among the major industrialized countries.

Financing & Incentives

In Germany, investment projects can receive financial assistance through a number of different instruments. These instruments may come from private sources or consist of public incentives programs available to all companies – regardless of country of provenance. They fit the needs of diverse economic activities at different stages of the investment process.

Early Stage Investment

Project Financing

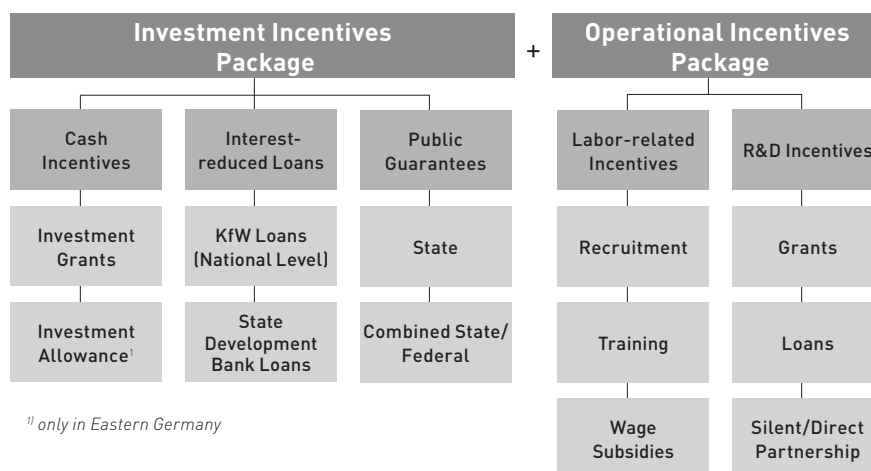
Technologically innovative start-ups in particular have to rely solely on financing through equity such as venture capital (VC). In Germany, appropriate VC partners can be found through the German Private Equity and Venture Capital Association (BVK). Special conferences like the German Equity Forum provide another opportunity for young enterprises to come into direct contact with potential VC partners. Public institutions such as development banks (publicly owned and organized banks which exist at the national and state level) and public VC companies may also offer partnership programs at this development stage.

Later Stage Investment

Project Financing

Debt financing is a central financing resource and the classic supplement to equity financing in Germany. It is available to established companies with a continuous cash flow. Loans can be borrowed for day-to-day business (working capital loans), can help bridge temporary financial gaps (bridge loans) or finance long-term investments (investment loans). Besides offers from commercial banks, investors can access publicly subsidized loan

Types of incentives in Germany



programs in Germany. These programs usually offer loans at attractive interest rates in combination with repayment-free start-up years, in particular for small and medium-sized companies. These loans are provided by the state-owned KfW development bank and also by regional development banks.

Cash Incentives for Investment Projects

When it comes to setting up production or service facilities, investors can count on a number of different public funding programs. These programs complement the financing of an investment project. Most important are cash incentives provided in the form of non-repayable grants applicable to co-finance investment-related expenditures such as new buildings, equipment or machinery.

Labor-related Incentives and R&D Project Grants

After the location-based investment has been initiated, companies can receive further subsidies for building up a workforce or the implementation of R&D projects. Labor-related incentives play a significant

role in reducing the operational costs incurred by new businesses. The range of programs offered can be classified into three main groups: programs focusing on recruitment support, training support, and wage subsidies respectively.

R&D project funding is made available through a number of different incentives programs targeted at reducing the operating costs of R&D projects. Programs operate at the regional, national, and European level and are wholly independent from investment incentives. At the national level, all R&D project funding has been concentrated in the so-called High-Tech Strategy to push the development of cutting-edge technologies. Substantial annual funding budgets are available for diverse R&D projects.



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Germany Trade & Invest's teams of industry experts will assist you in setting up your operations in Germany. We support your project management activities from the earliest stages of your expansion strategy.

We provide you with all of the industry information you need – covering everything from key markets and related supply and application sectors to the R&D landscape. Foreign companies profit from our rich

experience in identifying the business locations which best meet their specific investment criteria. We help turn your requirements into concrete investment site proposals; providing consulting services to ensure you make the right location decision. We coordinate site visits, meetings with potential partners, universities, and other institutes active in the industry.

Our team of consultants is at hand to provide you with the relevant background information on Germany's tax and legal system, industry regulations, and the domestic labor market.

Germany Trade & Invest's experts help you create the appropriate financial package for your investment and put you in contact with suitable financial partners. Incentives specialists provide you with detailed information about available incentives, support you with the application process, and arrange contacts with local economic development corporations.

All of our investor-related services are treated with the utmost confidentiality and provided free of charge.



SPECTARIS

German Industry Association
for Optical, Medical and
Mechatronic Technologies

SPECTARIS

SPECTARIS is the German industry association for the high-tech medium-sized business sector and representative body in the areas of medical technology, optical technologies and analytical, biological, laboratory, and ophthalmic devices. Innovation and growth characterize the different industry sectors. Technologies developed here are used in almost all branches of industry, making them an important motor for the German economy.

In the medical technologies sector, SPECTARIS represents around 150 German capital goods and auxiliary aid companies who mostly produce

high-tech products and have a pronounced export orientation. Member companies cover an extensive research and applications environment which includes medical products for diagnostic and surgery purposes to supply systems and anesthesia and intensive care devices. As well as this, the association also represents manufacturers of ophthalmic devices, large and small sterilisators, medical functional room equipment, respiratory home therapy, rehabilitation aids, and orthopedic technology. The SPECTARIS medical technology trade association considers itself to be the industry representative body and service provider of Germany.

SPECTARIS pools the interests of around 400 member companies from Germany, associated in four different sector-specific associations. Through its political activities, public relations and industry marketing, the association gives its members a voice, formulates new responsibilities and opens up new markets. This ensures the international competitiveness of German industry in these sectors and thus safeguards locations and jobs.

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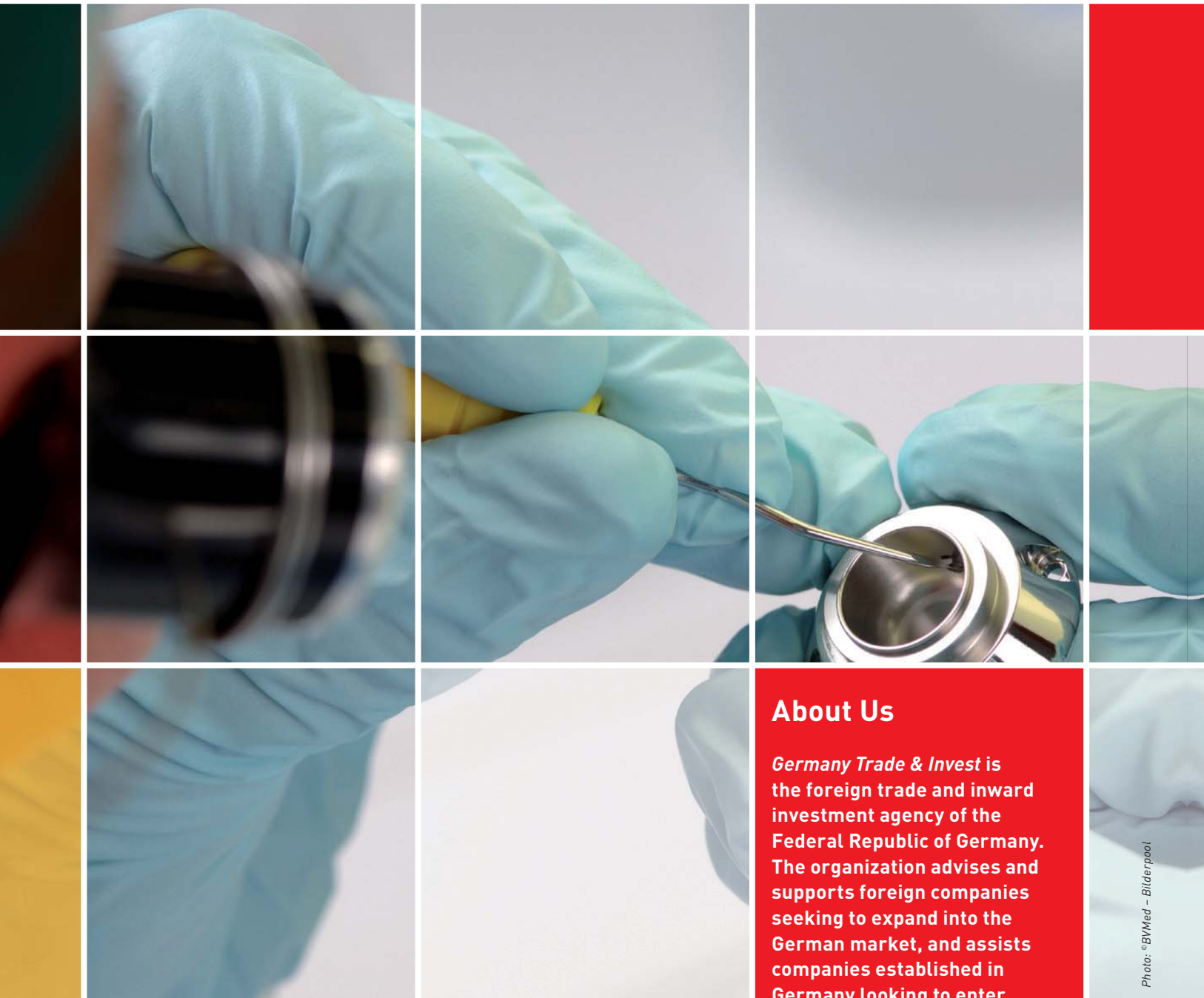
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