

INDUSTRY OVERVIEW

The Machinery & Equipment Industry in Germany

ISSUE 2022/2023



Germany – Innovative Excellence in Engineering

“Germany has a lot of industry and logistics – so that’s right at the core of our go-to market plan. We see a lot of potential in helping German companies be more effective and flexible, thereby giving them a competitive advantage. And we see that our customers also want us to be near them as well.”

Daniel Hessen, Chief Commercial Officer,
Wheel.me Service AS, Norway

Number 1

domestic industry sector by level and degree of innovation

3.5%

value added share of German economy gross value added

EUR 17 bn

total domestic industry research and development spending in 2021

16%

share of global machinery trade and world’s leading supplier

EUR 260 bn

domestic post-Covid-19 record industry turnover in 2021

81%

of machinery turnover generated from international exports in 2020

Machinery & Equipment (M&E) is the second largest and the most innovative industry sector in Germany. It is one of the technological motors that drive the country as a high-tech nation – and one that combines all of the key future technologies (including electronics, robotics, materials, and software).

The M&E sector is developing the climate-neutral manufacturing solutions to help Germany realize its climate goals. Industry will be transformed through the provision of “Carbon Contracts for Difference” to make climate-neutral manufacturing and production economically viable for industry. The new industry-friendly funding and investment framework will help businesses make the transition to climate-neutral production.

In 2021, mechanical and plant engineering was once again the most important driver of growth in German industry. Turnover increased to EUR 260 billion – a new record that contributed considerably to the upturn in the German economy. The fourth industrial revolution is already in full swing with the country’s ambitious Industrie 4.0 initiative. This landmark project will usher in a new age of decentralized production that will transform industry.

Double-digit billion euro investments in the country’s semiconductor and battery production sectors will see significant demand – and market expansion – for mechanical engineering solutions over the next five years and beyond.

Germany's Machinery & Equipment Industry in Numbers

World's Top M&E Manufacturer

With global machinery trade share of almost 16 percent, Germany's M&E industry sector remains the world's leading supplier of machinery – consolidating its position ahead of both China and the USA. In 2020, German machinery and plant manufacturers were world market leaders in 13 (rank 1) and 8 (rank 2) out of 31 M&E sectors. Germany is home to Europe's best-performing M&E sector, with record turnover in the region of EUR 260 billion in 2021. The positive turnover trend is set to continue with market forecasts for 2022 (EUR 265 billion) and 2025 (EUR 290 billion) and beyond predicting growth at the same level. German export levels have almost reached pre-crisis levels, increasing by 9.8 percent to EUR 179.4 billion in 2021. Mechanical engineering is also one of the largest industry sectors in the European Union (EU), with the EU single market generating M&E turnover of around EUR 586 billion.

FDI Magnet

Germany is the preferred M&E investment location in Europe, attracting around 24 percent of all M&E projects. This makes the M&E sector the largest industry sector in inward investment terms, with one in five of all M&E manufacturing and R&D investment projects. With 397 projects in the period 2018 to 2021, Germany is ahead of the UK (297), France (160) and Spain (119). The USA is the biggest inward investor in terms of both manufacturing and R&D projects and sales and service-related projects in Germany.

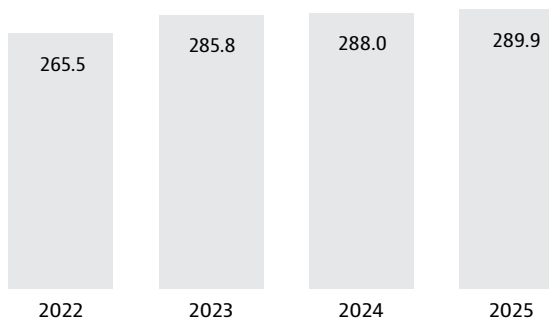
Most Important Industry Sector

Machinery & equipment is Germany's largest sector by level of activity, boasting almost 6,600 companies – of which nearly 90 percent are SMEs – along the value chain. The German M&E industry remains Germany's largest industrial employer: The German M&E industry currently employs a workforce of over one million people. With total R&D expenditure of almost EUR 17 billion in 2021, the M&E industry counts among the most innovative industry sectors in the country. Within the mechanical engineering sector, the machine tools, drive technology and material handling equipment sectors are amongst the most important in terms of annual turnover.



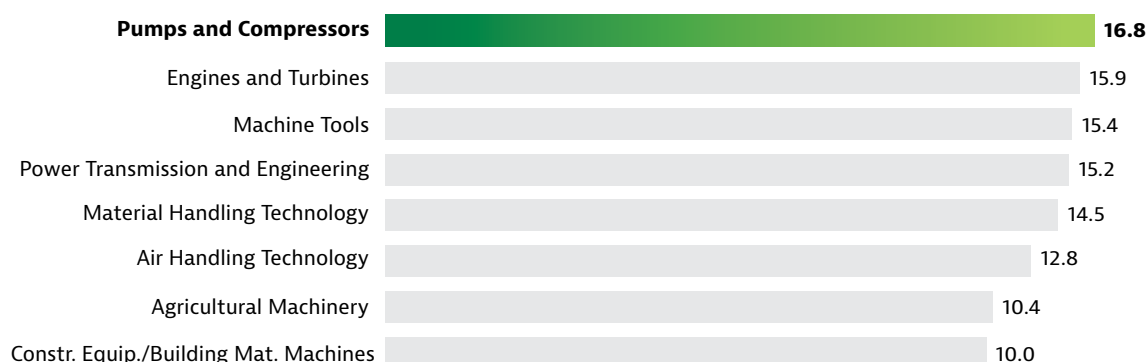
Germany is Europe's top M&E FDI location.

German M&E Industry Turnover Forecast in EUR billion



Source: Statista 2021

Production Value in Selected M&E Sectors in Germany 2020 in EUR billion



Source: VDMA 2021

New Technology Trends

As the world's leading M&E market, Germany plays a significant part in setting new trends and developments. The country is pioneering the "decarbonization" of industry on the way to climate neutrality. This is being complemented by advances in advanced manufacturing and the deployment of digital and energy-efficient solutions in the future production space.



Visit Germany Trade & Invest's 3D Printing website for current additive manufacturing developments: www.gtai.com/3d-printing

Additive Manufacturing

Additive manufacturing, more commonly known as "3D printing," is finding increased industrial application beyond its rapid prototyping origins. Germany already enjoys a reputation as a leader in a market that is set to exceed EUR 21.5 billion by 2023. The country occupies third spot internationally – behind only the USA and Japan – in terms of distribution of industrial additive manufacturing installations. The M&E sector is the major application industry for additive manufacturing. Toolless manufacturing, increased efficiency for materials and freedom of design will all become reality thanks to additive manufacturing. Germany boasts engineering facilities that allow international investor to expand their operations to Europe.

Energy-efficient Technologies

Industry sectors, including the plastics and metal industries, are increasing their investment in energy-efficient production. This is due in large part to Germany's ambitious "Energy Transition" project. Energy-efficient machinery, optimized components and systems (e.g. cross-sectoral technologies including electric motor systems, pumps and fans) have a decisive role to play in complying with climate protection and cost-saving goals. German companies active in energy-intensive industry sectors have been working for decades to optimize production process energy-efficiency levels. The government has set aside more than EUR 17 billion in funding as part of the "National Plan on Energy Efficiency 2050" for the period 2020 to 2023.

Industrie 4.0 – Lead Market and Provider

Germany is one of the world's leading advanced manufacturing nations. The German market for Industrie 4.0 solutions (software, IT services, and IT hardware) increased from EUR 95 billion in 2019

to almost EUR 102 billion in 2021 (equivalent to annual growth of around six percent over the period). This is forecast to rise to EUR 109 billion for 2022.

According to bitkom, German companies have spent more than EUR 10 billion on Industrie 4.0 solutions during the period 2015 to 2020 – with spending of more than EUR 2.6 billion in 2020 alone. More than 65 percent of German companies already use or plan to use special Industrie 4.0 applications. Continued double-digit growth is forecast in the respective software, IT services, and hardware segments that make up Industrie 4.0 solutions. Extra value added potential of more than EUR 400 billion has been forecast for the period up to 2025. The main application industries driving Industrie 4.0 solution uptake are the automotive, mechanical and plant engineering, electronics, and high-tech sectors. The additional value created by the "Industrie 4.0" digitalization of production, supply and distribution chains is forecast to provide the German economy with a productivity boost of 12 percent by 2025.

Information and Connectivity

Production technology stands on the verge of radical change with the arrival of the Internet of Things and services in the factory. Automation and electrification linked to intelligent control systems is directing new product development in many M&E segments and has enormous market potential for the future. Germany's lead market for 5G networks and applications ambitions have led to the creation of a number of 5G production test beds in real-world scenarios. The 5G Alliance for Connected Industries and Automation working group of the German Electro and Digital Industry Association (ZVEI) promotes the successful industrial implementation of 5G on the way to Industrie 4.0 among all relevant industry stakeholders.

Industrie 4.0 is expected to increase M&E sector gross value added by EUR 23 billion through to 2025. As well as concentrated engineering and production-related IT competence, the country also boasts top-class know-how in automation technology. More than a third of engineers active in the M&E sector are already dealing with matters IT and automation related – with the trend set to continue.

Robotics and Automation

The robotics and automation (R&A) industry is one of the most innovative in Germany's mechanical engineering sector. Germany is one of the world's five major markets for industrial robots, with the R&A sector set to generate turnover of EUR 13.4 billion in 2021 according to the VDMA Robotics + Automation association. Germany has the highest density of industrial robots in Europe and German OEMs count among the world's leading R&A companies. Human-robot collaboration (HRC) and machine vision (MV) technologies are considered major strengths in a global hub that boasts R&A players from all market segments.

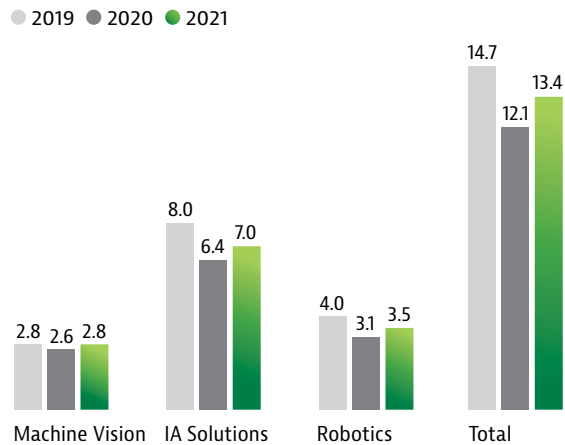
Demand for products "Made in Germany" is higher than ever before: Around 50 percent of German R&A manufacturing turnover is generated in international markets. Automotive manufacturers and suppliers remained the main drivers of growth in 2020. The electrical and electronics industry is also investing heavily in production automation and new production processes. The fast-growing service robot sector is providing opportunities to companies delivering innovative service robot applications – 82 percent of the world's service robot suppliers are SMEs, reflective of Germany's strong *Mittelstand*.

Application Industries

Germany's highly industrialized environment is just one of the reasons for the continued success of the M&E industry. Germany's largest industries (chemicals, electronics, automotive, and the food & beverage sectors) are the four largest client sectors driving market growth.

Almost 16 thousand companies, employing a combined workforce of more than 3 million, are active in these four sectors – generating combined turnover of around EUR 980 billion in 2021. New market opportunities are also opening up in the thriving renewable energies and resources sector.

R&A Turnover Development in Germany in EUR billion



Source: VDMA 2021

Automotive

Automotive industry manufacturers, suppliers and service providers represent Germany's largest industry in revenue terms – 968 companies generated turnover of EUR 380 billion in 2020. Germany is the European car production leader: 3.1 million passenger cars were manufactured in German plants in 2021. Germany is Europe's electric mobility champion and the world's second-biggest electric car market, with 400,000 new electric passenger vehicle registrations in 2020. Total R&D investment in 2021 topped EUR 50.9 billion, making the auto industry the country's most innovative industry sector. Significant investment is being made in battery cell R&D and production to establish the country as an electric vehicle battery leader.

Electronics

Germany is an important location for the high-end production of complex electronic components. The ambitious development of semiconductor-based applications in the automotive, energy and manufacturing sectors is critical to the country meeting its climate goals. Total industry turnover reached EUR 200 billion in 2021 according to industry association ZVEI, with real production growth of four percent forecast for 2022. Germany's ambitions are helping attract more and larger investment projects, such as Intel and Infineon's mega investments.



Download our Robotics & Automation Industry fact sheet for more R&A developments. www.gtai.com/robotics-fact-sheet

MARKET OPPORTUNITIES

Chemicals & Plastics

The chemical and pharmaceuticals industry is one of Germany's most important M&E application industries. Germany is the European chemicals market leader, with total chemical product originating in Germany equivalent to more than EUR 200 billion in 2020. In the same year, around EUR 9 billion investment in new production facilities in Germany was made. Almost forty highly developed chemical parks with excellent infrastructure represent an optimal base for chemical processors, refiners, and end-product producers. Around one third of all European chemical industry investment is made in Germany. The country is also home to Europe's leading plastics processing industry. With industry turnover in 2021 of over EUR 61 billion, the domestic plastics industry counts as one of Germany's most significant industry sectors. The plastics and rubber machinery is a major supplier to the chemicals and plastics industry – with

every fourth plastics machine produced in the world coming from Germany. Major opportunities also exist in areas as diverse as chemical recycling and the recycling economy as the country pursues its climate-neutrality goals.

Food & Beverages

The food and beverages sector provides further profitable market opportunities for M&E companies in Germany. The industry generated more than EUR 200 billion turnover in 2021. Robust competition within the food retail market has led to high automation standards in production. In terms of machine production, the food processing and packaging machinery industry ranks third in the German machinery industry (nearly EUR 14 billion in 2020). Eighty-four percent of domestic industry investment – equivalent to EUR 4 billion – was spent on new machinery in 2020.

International R&D Leadership

Europe's Innovation Leader

Germany is Europe's major investor in innovation. Total R&D expenditure of EUR 105 billion in 2020 make Germany Europe's biggest research spender. Internationally, only the US, Japan, and China have larger R&D budgets. Germany is also one of the European leaders in terms of R&D investment as a proportion of the GDP – at 3.1 percent the country outperforms the 2020 EU-27 average of 2.3 percent considerably. A study carried out by the German Institute of Economic Research (DIW) concludes that, at 12 percent, no other industrialized country has a larger share of gross value added generated in research-intensive manufacturing industries.

Patent Nation Germany

Germany is one of the most innovative countries in the world according to the World Economic Forum's Global Competitiveness Report 2020. German patent figures pay testimony to the innovation done in German companies. With more than 25,000 patents granted at the European Patent Office in 2020, Germany's share of patents is more than twice as large as that of France. Germany is also a leading European nation in triadic patents (i.e. patents registered at the three major

global patent offices: the European Patent and Trademark Office, the United States Patent and Trademark Office, and the Japan Patent Office). With 57.4 triadic patents per one million inhabitants in 2019, Germany ranks fourth in Europe only behind Sweden, the Netherlands and Denmark. With its world-class R&D environment and strong export orientation, Germany combines two essential locational factors. Germany, thus, is a major source-country for innovative products.

Public Cluster Funding

The federal and state governments have a comprehensive raft of cluster development measures. The most high-profile instrument of the Federal Government's cluster promotion policy, the "Leading-Edge Cluster Competition," was officially launched in 2007 and was the first nationwide cluster-funding program open to all technologies. The successor "Internationalization of Leading-Edge Clusters, Forward-Looking Projects, and Comparable Networks" initiative promotes international cooperation between German clusters, networks and innovation regions. On the basis of the internationalization concept, individual R&D partnership projects will be developed with partners from the prioritized international innovation regions.



Germany is Europe's biggest research spender, with total R&D spending of EUR 105 billion in 2020.

Supporting Innovation Leadership

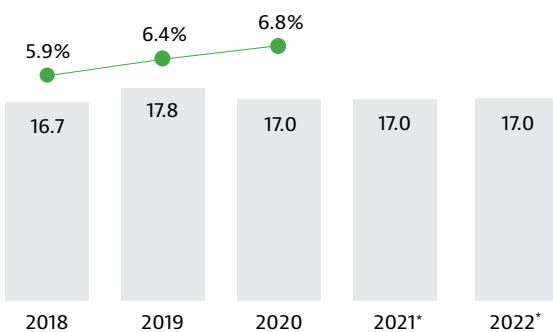
International reports and studies regularly identify Germany as one of the world's most innovative locations. Germany's government is seeking to consolidate the country's internationally leading innovation position through the provision of innovation-friendly framework conditions and market-oriented support programs. To further increase the attractiveness of Germany as a research location, a number of tax-based R&D subsidies – including the Research and Development Tax Subsidy Act – have been introduced. The Research Allowance Act also promotes private sector R&D activities in the areas of basic research, industrial research and experimental development.

M&E Technology Investment

The M&E industry counts as one of the most innovative sectors in the economy. According to the ZEW ("Centre for European Economic Research") Industry Report Innovation – Machinery Industry 2021, almost 80 percent of M&E companies were active innovators in 2020. Of these, 61 percent brought new or significantly improved products to the market, while 60 percent of M&E companies introduced new or noticeably improved and cost-cutting process technologies. Machinery and equipment innovation outlay reached a new high of nearly EUR 17 billion in 2021, with further R&D budget of EUR 17 billion forecast for 2022. With a 6.8 percent share of innovation expenditure to turnover in 2020, the M&E industry belongs to the five most most innovative sectors in Germany. The German economy retains its role as a globally competitive and flexible R&D test bed.

M&E Innovation Expenditures in Germany in EUR billion

● Share of innovation expenditures to turnover

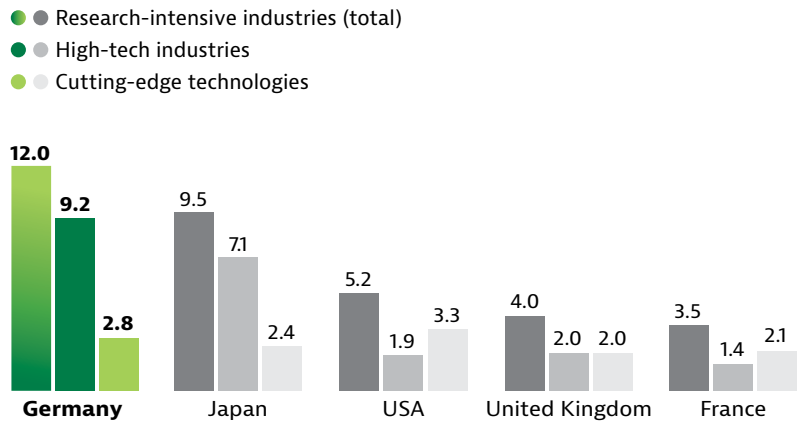


Source: ZEW 2022
*forecast

“Europe and Germany in particular are seeing a large wave of investments into semiconductor fabs. Intel's landmark decision to build two such 'fabs' in Magdeburg for EUR 17 billion is the prime example. This ramping of capacity will need a lot of plant engineering as well as manufacturing equipment – opening up opportunities for both German and international companies.”

Max Milbredt, Project Lead Intel,
Senior Manager Electronics, Germany Trade & Invest

Share of Research-intensive Industry in Gross Value Added 2018 in percent



Source: DIW 2021

New High-Tech Strategy

All research programs financed by the German federal government have been concentrated within the Federal High-Tech Strategy. One major goal of the strategy is to increase R&D expenditure as share of GDP to 3.5 percent by 2025. Additionally, a series of new research policy initiatives is planned through to 2021 and existing funding programs will be optimized. Research and development projects can take advantage of generous financial support in the form of grants, with interest-reduced loans and special partnership programs rounding off Germany's public R&D project support measures. The Federal Ministry for Economic Affairs and Climate Action provides targeted financial support to small and medium-sized enterprises through the promotion of research and development activities, innovation consulting and cooperation with science.

German Engineering Excellence

German manufacturers are the world leaders in 13 out of 31 M&E sectors in international comparison. In a further eight categories, German companies occupy second spot compared to their international rivals. These numbers show very clearly that developing and manufacturing machinery in Germany delivers strong results.

Value Chain Opportunities

Complete value chain coverage is one of the main drivers of the sustained success of the German M&E industry. Numerous research institutions, close proximity to key supplier industries – including electronics, robotics, materials, and software – and a strong industry base guarantee a pooling of resources of all actors within the value chain to promote innovation and R&D excellence. Service & maintenance and repair & overhaul are other value chain areas proving attractive thanks to their market size and healthy growth prospects.

With expertise running the gamut from energy conversion to energy-efficient components and production, mechanical engineering plays a central

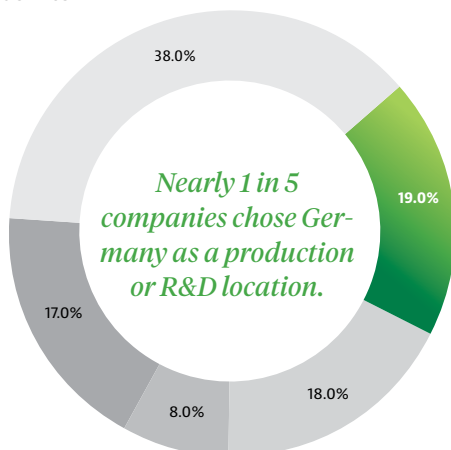
role in the future prospects of the environmental technology sector and is also an integral part of the electric mobility value chain. Many electric vehicles no longer require “traditional” parts, with new components instead needing to be integrated. Technological advances are also making a difference to the perceived value percentage in vehicle pricing. Germany’s track record and technology leadership will ensure that the German M&E industry remains competitive on all fronts.

M&E Innovation Clusters

The decentralized nature of the M&E industry has allowed innovation clusters to develop strong science and industry networks. This has helped them secure an internationally leading position in various technology fields and consolidated their international benchmark status. Germany’s industry cluster concept has created an environment in which operators from all sectors are able to flourish in close proximity with other important actors.

Greenfield and Expansion Investments by Business Activity 2020 in percent

- Manufacturing + R&D
- Sales, Marketing & Support
- Business Service
- Logistics
- Other Activities



Germany Trade & Invest, Regional Development Agencies, 2021

go-cluster

The “go-cluster” excellence program brings together almost 100 innovation clusters from across Germany. Funding is provided to model projects for the development of forward-looking cluster concepts and novel business models. In 2021, the Federal Ministry for Economic Affairs and Climate Protection published a public notice announcing new funding to encourage the development and implementation of resilient cluster concepts and business models that allow German cluster management organizations to secure the future of their cluster actors and support them in asserting their position in domestic and international competition.

Fraunhofer Innovation Cluster

As part of Europe’s largest applied science research organization, institutes belonging to the Fraunhofer-Gesellschaft are active in developing new technologies for industry and the public sector. More than 30,000 Fraunhofer employees

develop cutting-edge technologies in 76 research institutions spread across Germany (20 Fraunhofer research institutes specialize in matters purely M&E related). Fraunhofer innovation clusters are based on established networks of research institutions, investors and companies that lead to new business ideas and start-ups. Regional innovation clusters help close the gap between science and industry. Successful clusters stimulate competition while creating productive collaboration.

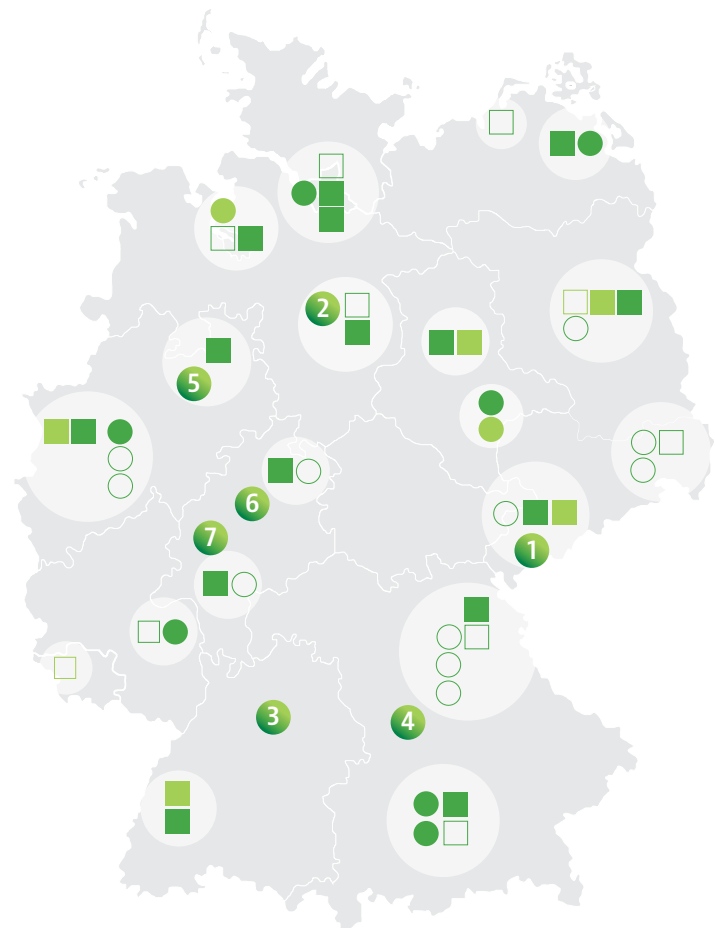
Clusters4Future

As the new flagship measure of the German government's High-Tech Strategy 2025, the *Zukunftscluster-Initiative* (Clusters4Future) will make a special contribution to knowledge and technology transfer across the country. Created to establish a new generation of regional innovation networks, the cluster competition will help Germany build on and consolidate its strong position among the world's innovation leaders and master the challenges in important future fields. The Clusters4Future Initiative launches the competition for the best ideas for new value creation in Germany.

Clusters4Future: SmARThI

The SmARThI collaboration between the TU Chemnitz, TU Dresden, HTW Dresden, and Fraunhofer UWI was selected as one of 15 successful Clusters4Future finalists. The future cluster, located in the Chemnitz-Dresden region, is developing smart robots for time-flexible, immersive and location-independent application. Focal points include automation, AI, sensor technology, human-robot collaboration, system integration, and artificial reality and virtual reality solutions integration. The cluster, in what has been dubbed "Robot Valley Saxony," has access to the 5G Lab Germany and IIOT testbeds at the TU Dresden and HTW Dresden respectively.

Selected M&E Industry-related Clusters in Germany



- □ go-cluster
- □ Fraunhofer Innovation Cluster
- ■ Production Technology
- □ Automation and Transportation Technology/Aerospace
- ● Materials Technology
- ○ Electronics/Measurement/Sensors

Selected: Cluster4Future

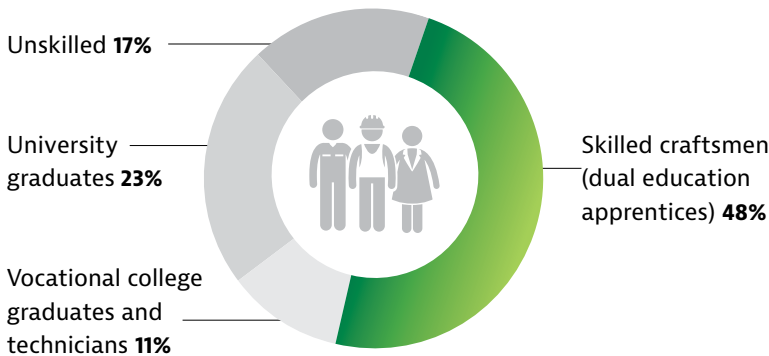
- ① SmARThI (Smart Robotic - Robot Valley Saxony)
- Selected: International Cluster & Partner Countries
- ② CFK Valley/Japan
- ③ Leichtbau BWE/France, Canada
- ④ Cluster Mechatronic & Automation/Netherlands
- ⑤ its OWL/Canada
- ⑥ Wetzlar Network/Czech Republic
- ⑦ Software Center Darmstadt/Brazil, Singapore, USA

Sources: Fraunhofer Innovation Clusters, go-cluster BMBF, GTAI Research (02/2022)

Dynamic Labor Market

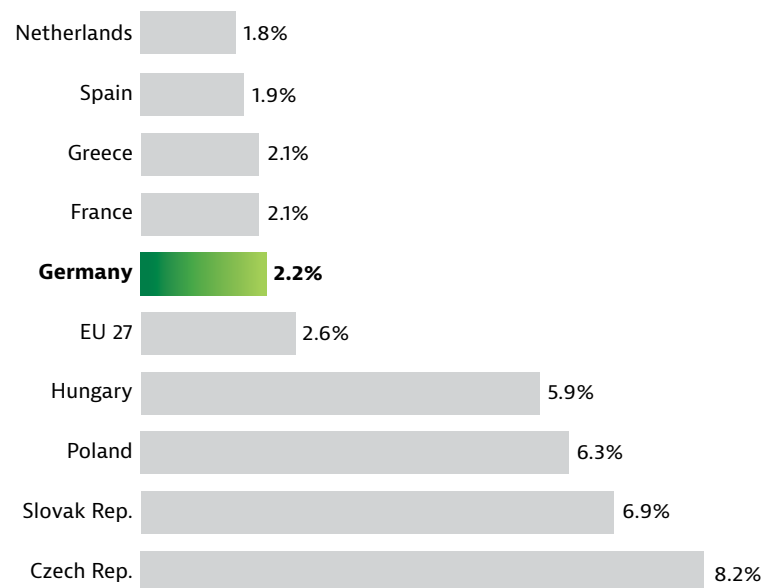
Germany enjoys a long and successful tradition in mechanical engineering and manufacturing. Researchers, companies and employees alike continue to profit from the country's global know-how. The "Made in Germany" quality seal has long been recognized across the globe as a sign of engineering excellence and precision.

Workforce in Germany by Level of Professional Education 2019
percent of total workforce



Source: Federal Statistical Office 2021

Growth of Labor Costs in Manufacturing 2017-2020
annual average growth in percent



Source: Eurostat 2022

Engineering Excellence

According to the German Federal Statistical Office, Germany has a particular high number of first-year students. In the 2020/21 winter term, more than 418,000 students – at 422 institutions of higher education – embarked on a course of academic study. Germany's share of university students in the natural sciences, mathematics and statistics, in information and communication technologies, and in engineering is the highest in the EU, with more than 37 percent of all students enrolled.

Dual Education System

In order to secure the economy's demand for highly qualified personnel, Germany developed a dual system in vocational training – combining the benefits of classroom-based and on-the-job training over a period of two to three years. In close cooperation with the German government, the German Chambers of Industry and Commerce (IHKs) and the German Confederation of Skilled Crafts (ZDH) ensure that exacting standards are rigidly adhered to, guaranteeing the quality of training provided all over Germany. Approximately one in five German companies participates in the dual vocational training system, thereby turning apprentices into specialists who fit each company's needs. Most apprentices receive an employment contract after training. Companies participating in vocational training usually take over around 74 percent as employees, underlining the importance of the training system. More than 1.3 million young people are currently in vocational training in Germany.

Competitive Labor Costs

High productivity rates and steady wage levels make Germany an attractive investment location. Since 2017, wages in the manufacturing sector have risen among EU-27 countries, with a growth rate averaging 2.6 percent. While some countries – particularly in Eastern Europe – experienced a rise of more than five percent, Germany recorded one of the lowest labor cost growth rates with 2.2 percent in the EU manufacturing sector. Highly flexible working practices such as fixed-term contracts, shift systems, and 24/7 operating permits enhance Germany's international competitiveness as a suitable investment location for internationally active businesses.

Creating Investment Stability

The German market is open for investment in practically all industry sectors, and business activities are free from regulations restricting day-to-day business. German law makes no distinction between Germans and foreign nationals regarding investments, available incentives or the establishment of companies.

The FDI legal framework in Germany favors the principle of freedom of foreign trade and payment. Generally, there are no restrictions or barriers to capital transactions or currency transfers, real estate purchases, repatriation of profits, or access to foreign exchanges.

Sound and Secure Legal Framework

According to the World Economic Forum (WEF), Germany is one of the world's best locations in terms of planning and operating security. Germany is also one of the world's leading nations in terms of intellectual property protection and protection from organized crime. German regulatory authorities are highly professional in their operations. The German legal system also counts as one of the world's most efficient and independent. Social, economic, and political stability provides a solid base for corporate investment projects. Contractual agreements are secure and intellectual property is strictly protected in Germany.

First Choice Business Location

According to a survey of 550 decision-makers, Germany was ranked the highest country of all European Union member states with "the most credible and investment-friendly COVID-19 recovery plans." The European Attractiveness Survey confirms Germany's reputation as one of the most attractive business locations in the world. Germany has caught up with France and the United Kingdom so that the three nations are tied as Europe's best investment destinations. According to preliminary data produced for the Financial Times' fDi Markets database, Germany was Europe's leading – and the world's third leading – FDI project destination location in 2021. The AmCham Business Barometer 2021 highlights the positive regard in which US companies active in Germany hold the country. Asked about their opinion on the German business environment, 63 percent of US company respondents rated Germany as "good" or "very good" business location.

TOP 10 M&E FDI Destination Countries in Europe

number of projects

Destination Country	2018	2019	2020	2021*	Total
Germany	101	127	112	57	397
United Kingdom	101	95	48	53	297
France	56	57	28	19	160
Spain	34	39	17	29	119
Russia	42	34	18	15	109
Turkey	22	16	24	21	83
Netherlands	24	22	22	12	80
Poland	20	18	25	15	78
Belgium	12	10	12	18	52
Italy	7	17	8	15	47
Europe total**	534	554	416	347	1.851

Sources: fDi Markets , GTAI FDI Competence Center , 02/2022, 2021* preliminary data

**All European countries

Reliable Logistics Infrastructure

Germany's infrastructure excellence is confirmed by a number of recent studies including the Swiss IMD's World Competitiveness Ranking 2021 and various investor surveys conducted by institutions including the WEF World Economic Forum and Ernst & Young. The 2012-2018 Logistics Performance Index of the World Bank ranked Germany first worldwide for its logistic proficiency; singling out Germany's quality of trade and transport infrastructure. 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 information infrastructure.

Internationally Competitive Tax Conditions

Germany offers one of the most competitive tax systems of the big industrialized countries. The average overall tax burden for corporations is just below 30 percent, with a number of municipalities offering lower rates. Moreover, Germany provides an extensive network of double taxation agreements (DTA) ensuring that double taxation is ruled out, e.g. when dividends are transferred from a German subsidiary company to the foreign parent company.

Financing & Incentives in Germany

Incentives programs in Germany are available through different public funding instruments and for different funding purposes. The individual funding requirements may, for example, result from investment projects, research and development activities, personnel recruitment, working capital needs or other specific purposes. The different incentives instruments including grants, loans and guarantees are generally available for all funding purposes and can ordinarily be combined; thus matching the different business activity needs at different development stages of the company.



Please visit our website for more incentives information: www.gtai.com/incentives

Investment Project Financing by Private Equity

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 Bundesverband Deutscher Kapitalbeteiligungsgesellschaften e.V. (BVK – German Private Equity and Venture Capital Association). Special conferences and events like the Deutsches Eigenkapitalforum (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.

Investment Project Financing by Bank Loans

Debt financing is a central financing resource and the classic supplement to equity financing in Germany. It is available to companies with a continuous cash flow. Loans can be provided to finance long-term investments, working capital and operational costs (R&D, personnel) and for bridging temporary financial gaps. Besides offers from commercial banks, investors can access publicly subsidized loan programs in Germany. These programs usually offer loans at attractive interest rates in combination with repayment-free start-up years, particularly for small and medium-sized companies. These loans are provided by the KfW federal development bank and also by regional development banks.

Investment and R&D Incentives

When it comes to setting up production and service facilities, investors can count on a number of different public funding programs. These programs complement investment project financing. 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 and machinery. 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 High-Tech Strategy to push the development of cutting-edge technologies. Substantial annual funding budgets are available for diverse R&D projects.

Labor-related Incentives

After the location-based investment has been initiated or realized, 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. Labor-related incentives play a significant role in reducing the operational costs incurred by new businesses.

Incentives in Germany

Funding purposes				
Investments	Working Capital	Research & Development	Specific Purposes	Personnel
Financing supported by any of the following public funding instruments (combinations of instruments usually possible)				
Public funding instruments				
Grants	Loans	Guarantees	Equity Capital	Mezzanine Capital

Best Practice Example: Wheel.me Service AS Norway

Germany Trade & Invest provides a range of inward investment services to international investors. After careful consultation with the individual investor, a support program of consultancy and information services is drawn up to help set the stage for investment success.

Company Information: Wheel.me Service AS
Norwegian robotics and IoT company Wheel.me was established in Oslo in 2013. The company claims to be the provider of the world's first autonomous wheel whose patented system consists of a robot component, indoor navigation technology and data analytics. The innovation allows almost anything to be easily transformed into an autonomous robot and with no need to change design or form factor. Large-scale industrial application areas include the transportation of parts within manufacturing facilities and the autonomous movement of patient beds and equipment in hospitals.

Project Information

Wheel.me AS required a new manufacturing site to meet new customer demand in Europe as well as to serve its existing international customer base. Germany Trade & Invest was informed of the company's investment plans by the German Chambers of Commerce Abroad (AHK Norway) in Oslo. The company also advised of its plan to enter the German market providing rental management solutions.

Germany Trade & Invest Support

Germany Trade & Invest provided an overview of the market and identified a number of potential market-entry strategy options. Germany Trade & Invest worked closely with partners from the German Chambers of Commerce Abroad as well as local economic development agency partners Hessen Trade & Invest and FrankfurtRheinMain on behalf of the investor. Contact with potential partners and multipliers was initiated and all necessary legal and financial information made available in customized form.

In a brief period, Germany Trade & Invest's industry experts and economic development agency partners set up visits to potential production sites. Supplementary support services specific to company formation, personnel recruitment, incen-

tives application processes, and company expansion procedures were also provided. After a comprehensive site-selection process, the company chose the Frankfurt (Main) area in Hessen as its preferred location.

“Being strategically located in Frankfurt in Hessen – the most important region for excellent international connections – was an obvious choice. The German culture of quality and excellence is what ‘Made in Germany’ is all about. Wheel.me AS shares this same commitment to quality and competitiveness.”

Daniel Hessen, Chief Commercial Officer,
Wheel.me Service AS, Norway

Investment Project Time Line

November 2021

Initial investor contact with Germany Trade & Invest established.

January 2022

First online meeting to discuss investor requirements. Frankfurt (Main) area in Hessen identified as site.

February 2022

Contact to Hessen Trade & Invest (HTAI) and FrankfurtRheinMain economic development agencies initiated and support services secured. Rental of office space in Frankfurt (Main).

March 2022

Preparation of the company formation (GmbH) in Frankfurt region

April 2022

Germany Trade & Invest provides further support with marketing and testimonial activities. Project handover HTAI.

From May 2022

Market expansion within Germany and other European countries. Participation at internationally leading trade fairs with application industries in Germany.

2023-2025

Investment expansion and R&D project plans and realization. Plans for own production facility and R&D project realization in Germany.

Germany Trade & Invest Helps You

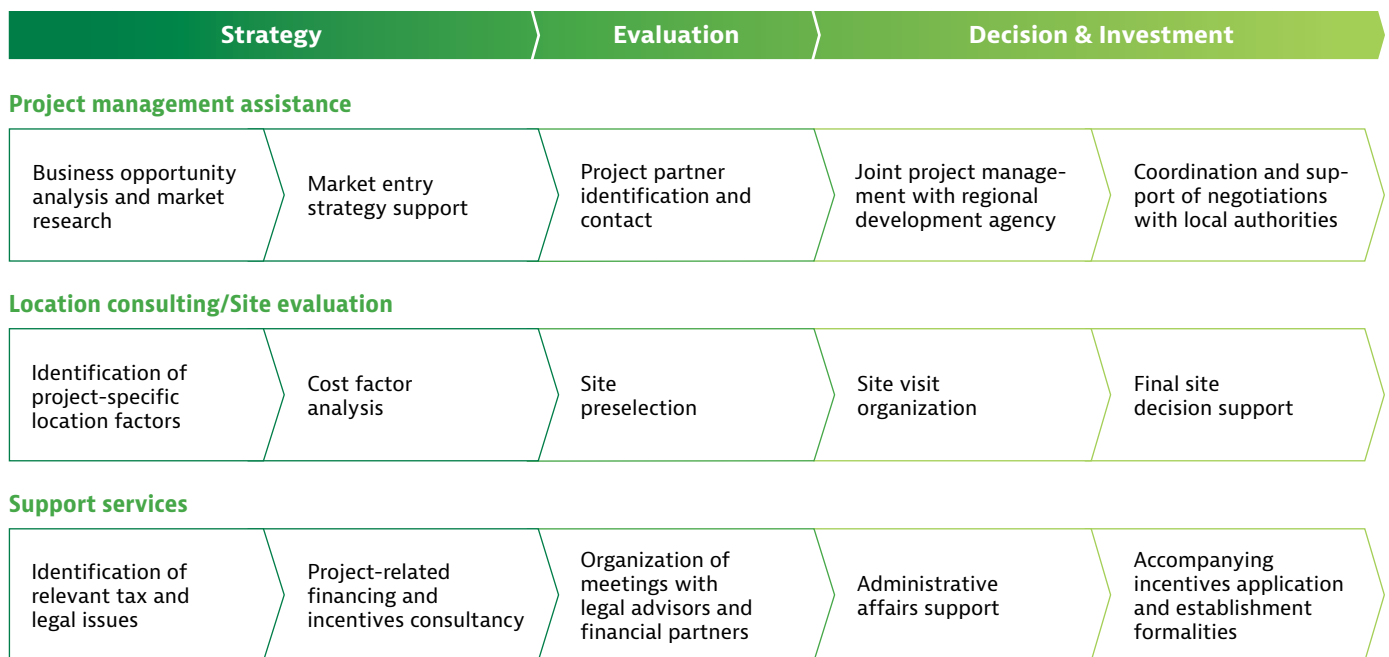
Germany Trade & Invest’s teams of industry experts will assist you in setting up your operations in Germany. We support your project management activities from the earliest stages of your expansion strategy.

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. Our 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.

Our support services for your investment project



Investor Consulting



Ms. Peggy Görlitz is the senior manager responsible for machinery and equipment in Germany Trade & Invest's Mechanical & Electronics Technologies (MET) team. She is an acknowledged industry expert with a wealth of 30 years' experience and a proven track record in helping international companies set up their business operations in Germany.

For questions on how to establish your business or service center in Germany, please contact Ms. Peggy Görlitz at peggy.goerlitz@gtai.com

For more information about the machinery & equipment industry in Germany, please visit our website at www.gtai.com/machinery

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Notes

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About Us

Germany Trade & Invest (GTAI) is the economic development agency of the Federal Republic of Germany. The company helps create and secure extra employment opportunities, strengthening Germany as a business location. With more than 50 offices in Germany and abroad and its network of partners throughout the world, GTAI supports German companies setting up in foreign markets, promotes Germany as a business location and assists foreign companies setting up in Germany. All investment services and related publications are free of charge.

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