

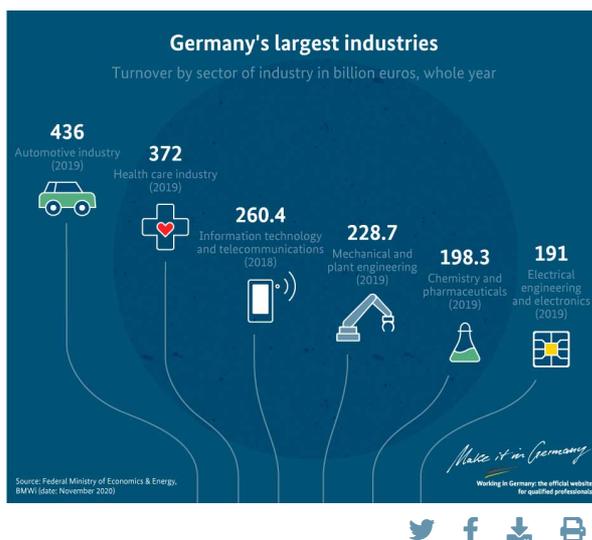
## Economy

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### German industry generates high earnings

Despite major economic fluctuations, earnings have risen in most sectors of industry over the past few years. The exporting sectors of industry play an especially important role in this. The automotive industry remains the leader: it posted earnings of 436 billion euros in 2019. As an innovation leader, it is an important contributor to growth and prosperity. Vehicle manufacturing also secures earnings for other sectors, as it has close links with companies in the chemicals, electrical engineering, steel, metal and textile industries.

Nevertheless, companies in other sectors also generate high turnovers: for example, in the healthcare industry (372 billion euros in 2019) or in the electrical engineering and electrical industry sector (191 billion euros in 2019). With a broad portfolio of services, these sectors offer a wide variety of employment opportunities.



### The German success model

Writing about Germany's successful economy, Time magazine recently remarked that many German companies have specialised in the "unsexy side of the industrial spectrum: not smartphones or iPads but machinery and other heavy equipment".

Some German companies, not least carmakers and the world's third-largest software supplier, might well disagree and insist that their products are very much on the "sexy side" of industry. Yet the analysis is essentially correct: it is highly specialised industrial companies producing highly specialised goods that constitute the engine of growth in the German economy. Following the much-lauded era of virtual wealth creation on the financial markets, it is as well to recall the following principle: industry has always been a major plank of our prosperity. It accounts for as much as 22 per cent of the German economy as a whole, a share that compares favourably worldwide.

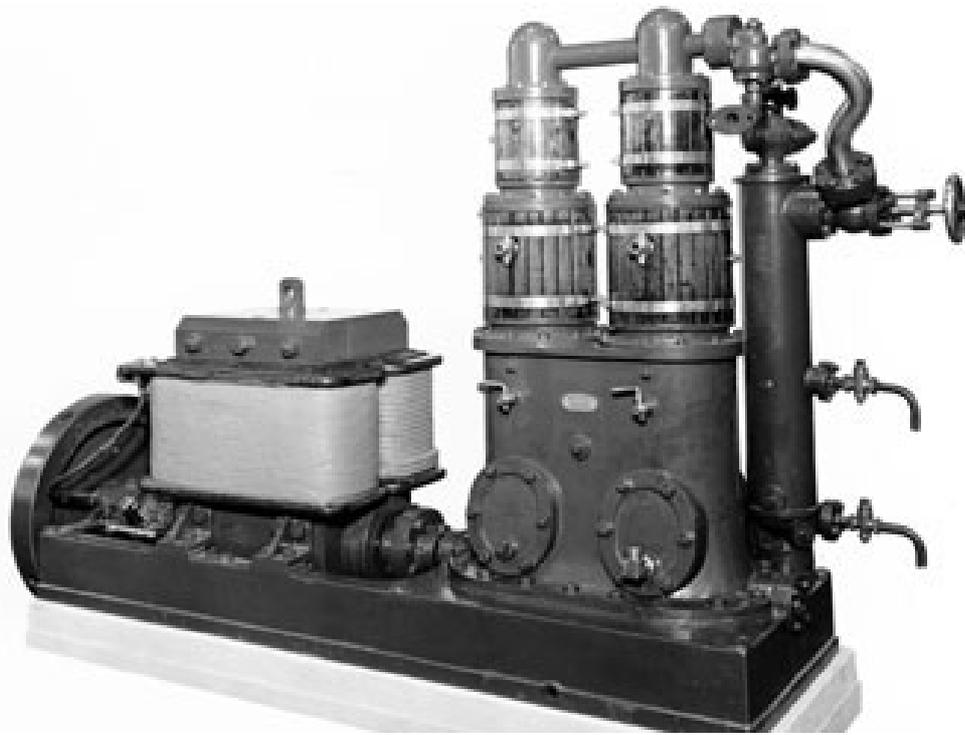
The majority of Germany's visible exports are industrial goods. German companies are leading in many sectors and in many markets worldwide. This applies, for example, to so-called green technologies -

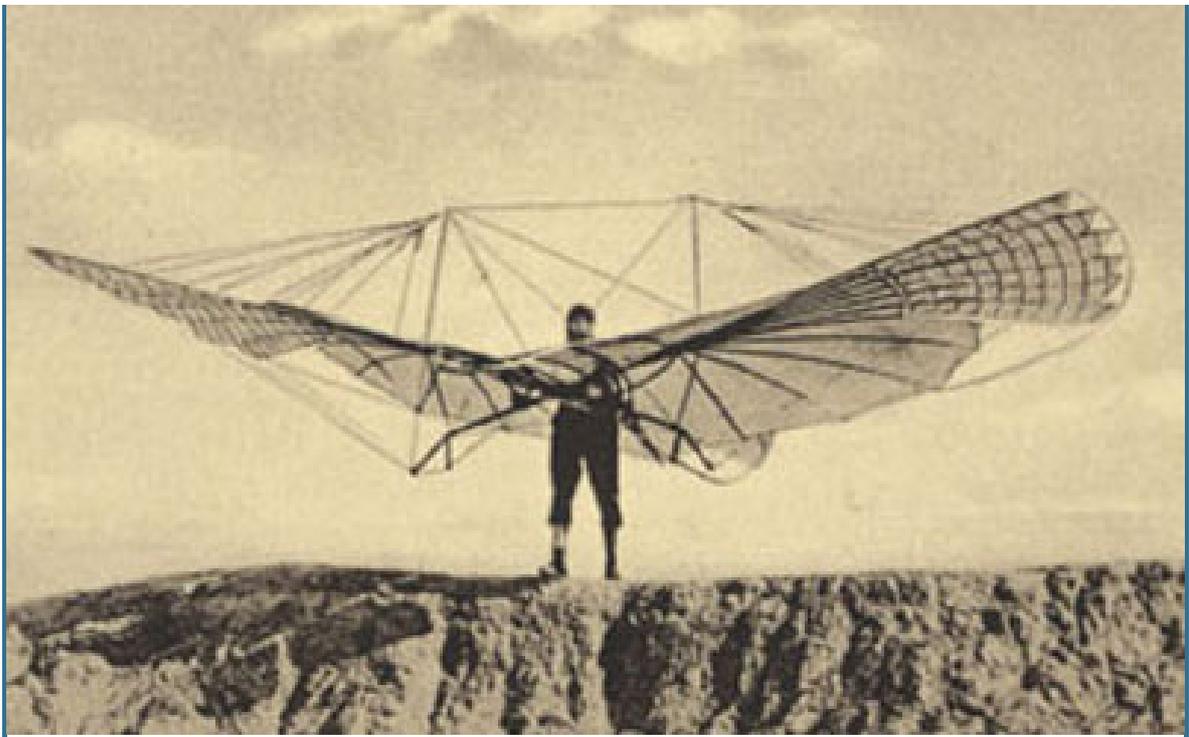
i.e. products in the fields of environmental and climate protection. In the burgeoning sector of renewable energy, which includes photovoltaics, wind power and highly efficient power plant technology, the German economy has a high share of the global market.

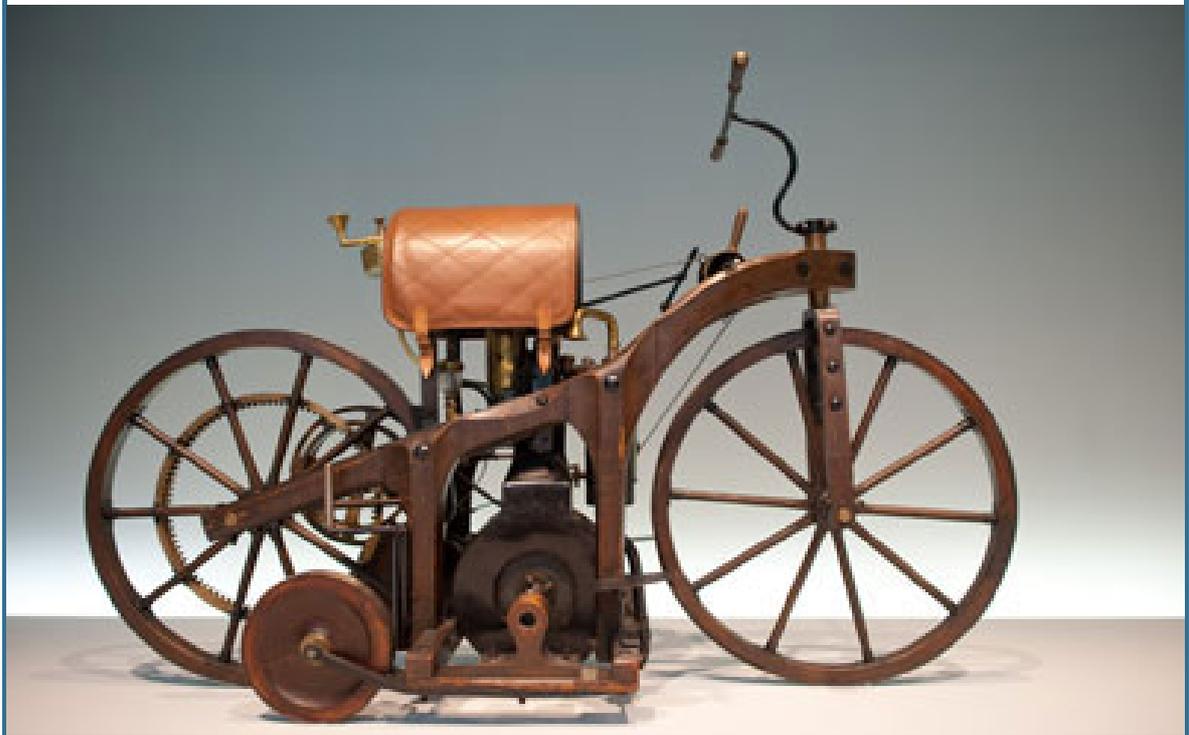
**German innovations**













			V = 51	Nb = 94	Ta = 182.
			Cr = 52	Mo = 96	W = 186.
			Mn = 55	Rh = 104,4	Pt = 197,4
			Fe = 56	Ru = 104,4	Ir = 198.
		Ni = Co = 59		Pl = 106,5	Os = 199.
			Cu = 63,4	Ag = 108	Hg = 200.
H = 1	Be = 9,4	Mg = 24	Zn = 65,2	Cd = 112	
	B = 11	Al = 27,4	? = 68	Ur = 116	Au = 197?
	C = 12	Si = 28	? = 70	Su = 118	
	N = 14	P = 31	As = 75	Sb = 122	Bi = 210
	O = 16	S = 32	Se = 79,4	Te = 128?	
	F = 19	Cl = 35,5	Br = 80	I = 127	
Li = 7	Na = 23	K = 39	Rb = 85,4	Cs = 133	Tl = 204
		Ca = 40	Sr = 87,6	Ba = 137	Pb = 207.
		? = 45	Ce = 92		
		?Er = 56	La = 94		
		?Yt = 60	Di = 95		
		?In = 75,5	Th = 118?		





### **Airbag (1971)**

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Synthetic sack which unfolds in case of an accident within 20 to 50 milliseconds between the car passengers and the inner room of the vehicle. The first airbag patent was granted to Walter Linderer in 1951. Daimler-Benz developed the idea to make it practicable.

### **Aspirin (1897)**

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Popular medicine which helps against pain and inflammation and has an anticoagulant effect. The active substance is acetylsalicylic acid.

### **Book printing (1440)**

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Mechanical process for reproducing texts on paper with coloured stamps for every letter and every punctuation mark in one printing press.

### **Dowel (1958)**

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The dowel serves to attach a screw or an object to a wall. It consists of polyamide and is inserted into the wall through a borehole. Through turning in the screw, the dowel stretches in the wall and enables a safe grip.

### **Dynamo (1866)**

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Electrical generator which converts mechanical energy to electrical energy.

### **Liquid wood (1998)**

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Thermoplastic biomaterial which is mainly produced from the wood components lignin and cellulose. It is traded under the name "Arboform".

### **Glider (1894)**

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Aircraft which moves along solely by using air stream and does not need a fuel-driven motor. The glider is a very light sailplane.

### **Light bulb (1854)**

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Artificial light source in which electric power heats up an electric conductor. The conductor gets heated so much that it starts to glow.

### **Helicopter (1936)**

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Aircraft which takes off vertically and not horizontally. The wings turn at the motor-driven rotor and make the helicopter rise up in the air.

### **Motorbike (1885)**

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Motorcycle with two wheels and one to two seats.

### **Harmonika (1821)**

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Hand sized wind instrument with metal body. By blowing air into the air ducts which are arranged in parallel, the instrument produces sounds.

### **MP3 (1995)**

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Process to compress audio data which has been developed at the Fraunhofer Institut für Integrierte Schaltungen in the city of Erlangen in the south of Germany.

### **Periodic table (1864)**

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The periodic table organises all chemical elements with increasing atomic number after their chemical property into periods and groups.

### **Scanner (1951)**

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Device for data collection which gathers data from a template (e.g. a document) with sensors and transforms them into digital data.

### **Thermos (1903)**

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Insulating storage vessel which lengthens the time before the exchange of temperature between the bottle's content and the surroundings through a vacuum. It is mostly used to keep drinks like coffee and tea hot but can also be used for cooling purposes.

## Toothpaste (1902)

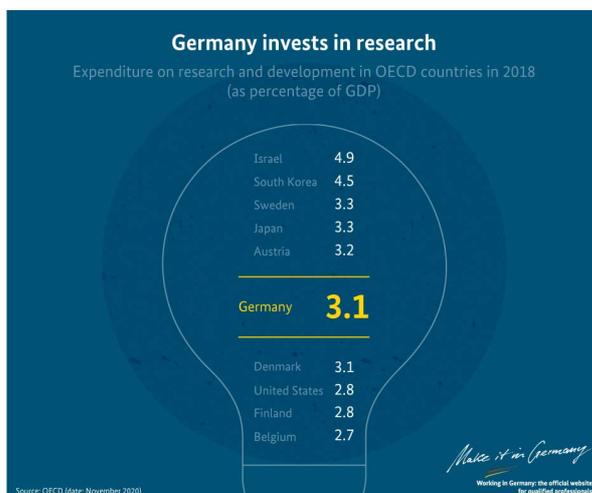
Increases the effect of teeth cleaning with a brush. Toothpaste contains abrasive particles and active substances to combat dental diseases like caries and periodontitis.

Germany is not only regarded as the country of great innovations in green technologies – groundbreaking inventions include the motorbike, the tram and the car. In a globalised world, a country's innovative strength is crucial if it is to remain one of the global players. In 2018, Germany topped the European rankings, with 67,898 patent applications. To achieve this capacity for innovation, Germany's researchers and engineers have to be creative in developing and bold in implementing ideas. But the lack of up-and-coming qualified workers is an obstacle. In order to further strengthen its ability to innovate, Germany is therefore partly dependent on the immigration of highly qualified professionals. In short: smart people are important now and will continue to be so in the future, regardless of whether they come from Germany or from far away.



Europe's largest economy scores highest with its excellent infrastructure, its highly developed corporate and services sector, its system of higher education, its first-rate vocational training, especially in the skilled crafts and trades, and, last but not least, its capacity to deliver technological innovations.

Expenditure on research and development is an important indicator of a country's prosperity and competitiveness. In 2020, Germany spent around 3 per cent of GDP (BIP) on research and development. Compared with other European countries, that is a considerable proportion.



## Introducing the German Mittelstand

More than 99% of all German businesses are small to medium-sized companies and therefore fall into the "Mittelstand" category. This is not so much the case in other countries and in some, the German

word has even been taken up into the local language because there is no exact equivalent for it. They range from small, innovative software-smiths to globally operating mechanical engineering firms right through to venerable old artisan businesses, and beyond. In purely statistical terms, any business with fewer than 500 employees is a small and medium-sized enterprise, or SME. But the term "Mittelstand" is often used to include much larger companies too if they are run in the same spirit as a small or medium-sized enterprise. In that case, it means that the owner or owners take the business decisions largely on their own - and assume the risks and liability. Most SMEs are working to secure the company's long-term existence and place great value on lasting relationships with customers, suppliers and other businesses. As an employee too, you are more than just "one of the crowd". Moreover, many SMEs take an active role in their regions by sponsoring education, culture and sport.

Many German SMEs are - in line with the traditional German taste for inventing and "tinkering" - technology driven. The principal sales argument for their products and services is not usually one of price, but the quality and the large number of innovations that have found practical implementation. A large number of these companies are the European or worldwide market leaders in their sector. Within the usually fairly small, internal structures of these companies, numerous employees working in various disciplines, such as development, production, sales and service, are involved in the innovation processes and so play their part in innovation too.

In fact, truly innovative products are often the work of so-called hidden champions. These companies are, in the main, largely anonymous members of Germany's Mittelstand, yet belong to the top three in their sector worldwide.

As many as 1,500 of these hidden champions help power Germany's economy. Since many are tucked away in the provinces, their contribution is sometimes overlooked. Quite a number of them employ a workforce of several thousand people. As employers, they are prized, since they tend to take a long-term view and generally provide secure and well-paid jobs.

## **Information on the web**

### **Federal Ministry for Economic Affairs and Energy**

Main focus of the economic policy

### **Research in Germany - Land of ideas**

Diverse research opportunities

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<https://www.make-it-in-germany.com/en/living-in-germany/discover-germany/economy>

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