

Impulses

TECHNOLOGIES & MARKETS

With our trend-setting ideas,
we help bring today's key technologies
to light. We are trailblazers for
innovative products in the fast-growing
markets of the future.

» We are a global high-tech equipment manufacturer of electronic components and devices, lithium-ion batteries, and solar modules. «

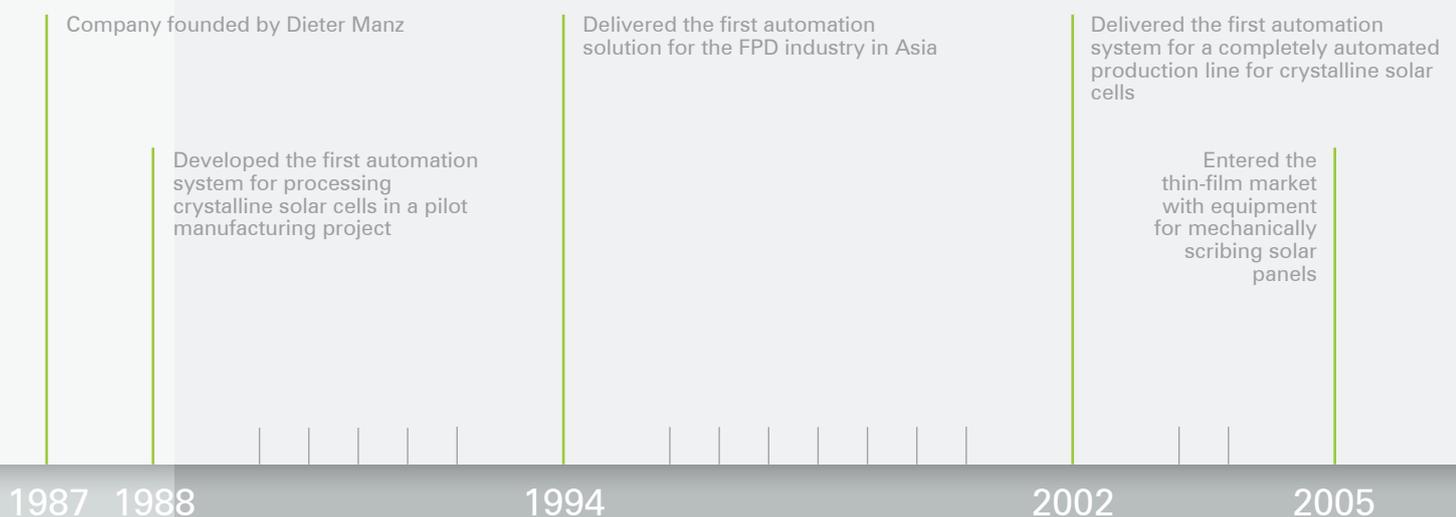
The Company

German-based Manz AG is a global technology provider for the production of electronic components and devices like smartphones and tablet PCs, li-ion batteries, and solar modules.

The presence of the Manz Group with production facilities in Germany, Slovakia, Hungary, Italy, China and Taiwan, as well as worldwide service centers, guarantees short response and delivery times.

With its slogan "passion for efficiency", Manz is making a promise to offer its customers – all companies active in important future markets – increasingly efficient production equipment.

This makes the Manz Group an important driver of innovation in sustainable energy production, displays for global communication requirements, and e-mobility.



» We are present in all major markets with our own subsidiaries. «



IPO on the Entry Standard market of the Frankfurt Stock Exchange

Became leading supplier of systems for wet-chemical processes by acquiring Intech, Taiwan

Entered the market for lithium-ion batteries

Manz Coating GmbH founded – development center for vacuum-coating technology

Acquired the CIGS innovation line from Würth Solar
Opened facility for solar and display production systems in Suzhou, China

Manz becomes global leading equipment supplier for the touch panel production
First order from AMOLED display industry

Acquired mechanical engineering division of Kemet Electronics Italy for enlargement of technology portfolio in Battery division

Acquired KLEO, a company of the ZEISS Group, for expansion of portfolio by laser direct imaging technology

2006

2008

2009

2010

2012

2013

2014

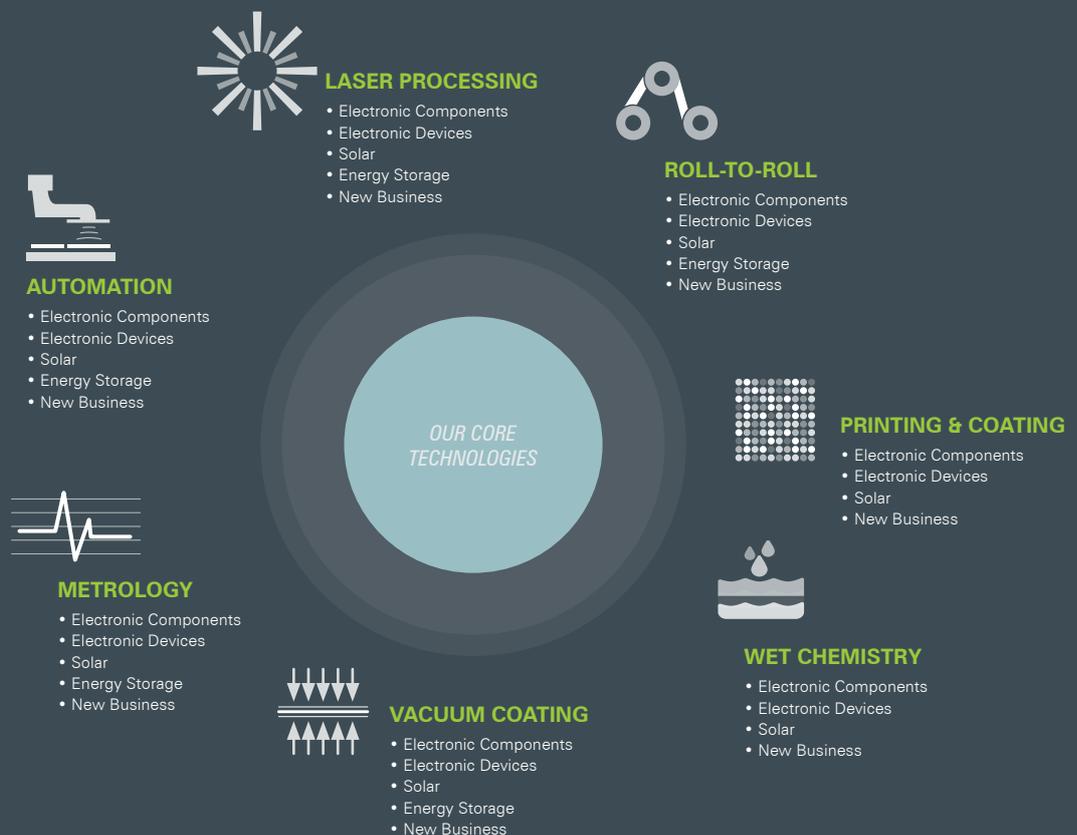
2015

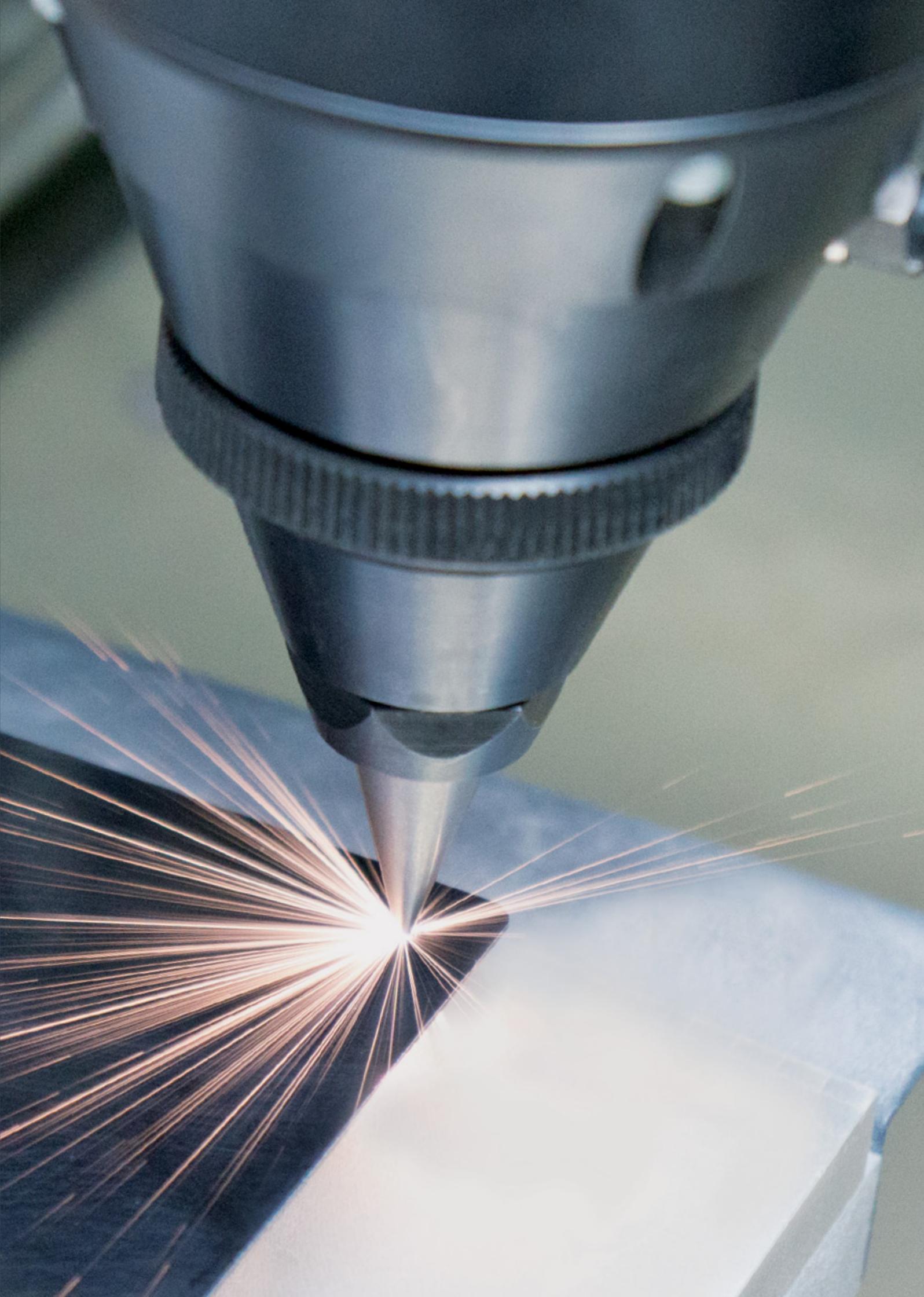
» We are a sought-after development partner and a trailblazer in introducing key technologies «

Our Technological Competence

We offer highly efficient production processes for our customers in growth sectors and future industries, which have established us as a sought-after development partner. With its innovative production solutions, Manz AG is a pioneer in

developing and introducing key technologies for today's world. Manz AG uses its extensive expertise in automation, laser processing, vacuum coating, metrology, wet chemistry, printing and coating, and roll-to-roll processes, to focus on the strategic business segments Electronics, Solar, Energy Storage and New Business.





Due to rapidly growing demand for end products, market growth of up to

+15%

is expected by 2017.





» We are making it possible to continuously increase the performance parameters of the end products. «

Displays and touch panels

Higher resolution, better color saturation, a wider viewing angle – the properties of displays are largely determined by the equipment on which they are produced. As a leading high-tech equipment manufacturer for displays and touch panels, Manz never stops bringing new technologies to the fore. Together with our customers we are already working on tomorrow's standards, and we ensure that complex production processes work more efficiently, manufacturing costs are reduced and end products become more cost-effective.

Printed circuit boards

From PCs to mobile phones – from cars to planes. There is barely an application in our daily life that does not involve a printed circuit board or PCB for short. With close to 30 years of experience in developing high-tech equipment for producing high-efficiency printed circuit boards, we have earned an outstanding reputation as a provider of wet chemical process equipment.

Our production technology provides customers with ultimate precision while ensuring significantly shorter production cycles and greatly improved flexibility.

Forecast for flat panel displays:

Annual sales of flat panel displays
(in million square meters)

Source: IHS © 2015 IHS



CAGR '15^(F)–'19^(F)
Flat panel displays
5.27%





Smartphones and tablet computers are firmly established in our everyday life. It is expected that

more than 8.5 billion new devices

will be sold over the next four years alone.

» With *simultaneous engineering*,
we detect and remove
possible error sources early on.
That saves money! «

Smartphones and tablet computers

With our comprehensive technological expertise, we can help in a variety of ways to ensure that the smartphones and tablet computers made on our equipment meet the highest quality standards.

Market trend for smartphones:

(in billions of units)

Source: IDC © Statista 2016



As an established partner of industry, we use our fully integrated and automated production systems to decrease the “human risks”, thus increasing the quality of the end products and contributing to improved work conditions. Moreover, the consistent use of new processes significantly extends the life of the end product.

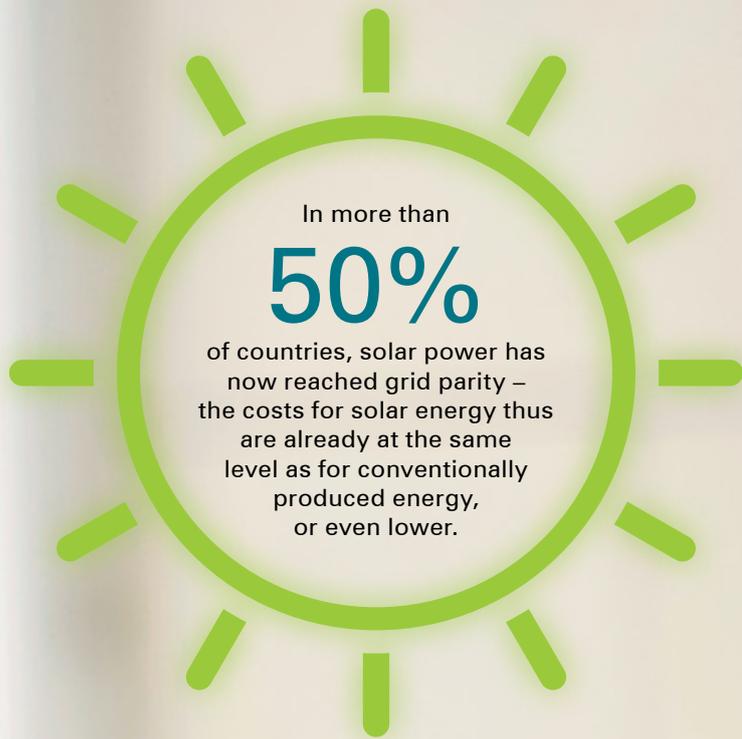
Laptops and consumer electronics

With our modular assembly systems, which are optimally tailored to industry requirements, we address the growing trend toward automated assembly brought on by rising wage costs in countries like China, demand for consistent product quality or issues such as the protection of intellectual property.

Whether they manufacture laptops, smart watches, navigation devices or digital cameras, our customers place their trust in our comprehensive technological expertise, our long-standing experience, our ideas, and our implementation of their concepts and requests.

CAGR '15–19
Smartphone
6.79%





» Today, solar companies are producing their products at a fraction of their original costs. And we are playing a part. «

Market forecast for photovoltaics:

Global annual new installations (in megawatts)

Internal representation based on: Global Market Outlook 2015–2019, Solar Power Europe, Bloomberg New Energy Finance



we bring together our entire range of services, from automation, laser equipment and wet chemical processes to vacuum coating.

CIGSfab

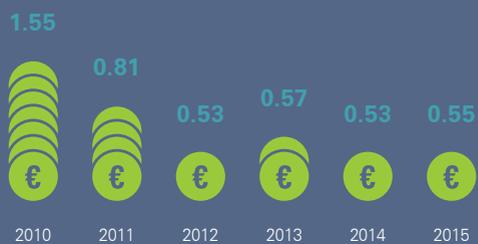
With CIGSfab, Manz is the world’s only provider of a fully integrated, turnkey production line for manufacturing CIGS thin-film solar modules. This represents an outstanding investment opportunity in today’s most profitable and most efficient solar technology.

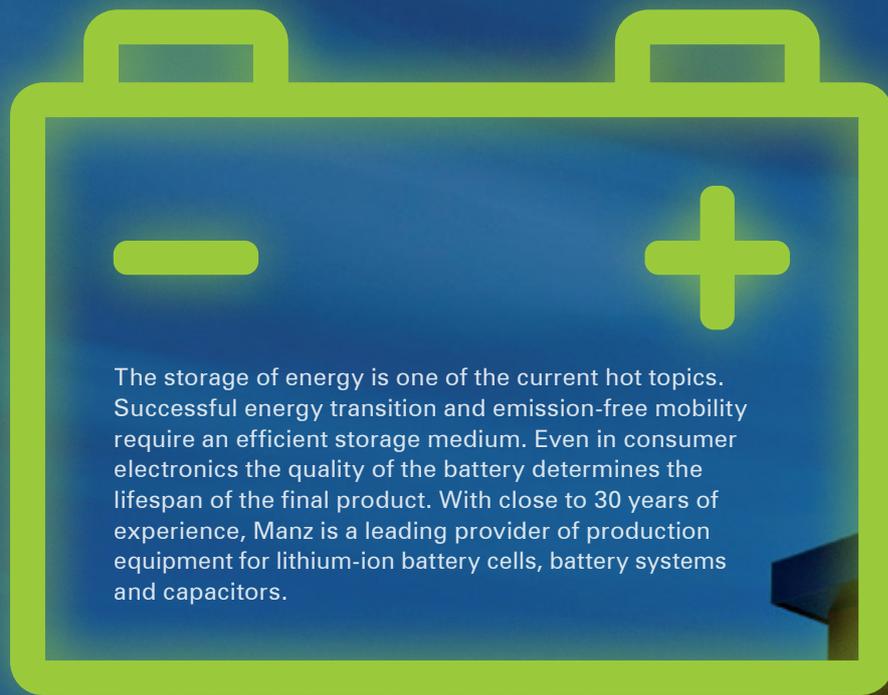
Thin-film solar modules

Solar producers can beat the constant cost pressure in their industry only by increasing solar cell efficiency while lowering manufacturing costs. In manufacturing thin-film solar modules, our comprehensive product portfolio sets international standards for increased efficiency and lower production costs. Under the concept of “Total Fab Solution”,

Trend in module prices ex works (in euros/wattpeak)

Source: pvxchange





The storage of energy is one of the current hot topics. Successful energy transition and emission-free mobility require an efficient storage medium. Even in consumer electronics the quality of the battery determines the lifespan of the final product. With close to 30 years of experience, Manz is a leading provider of production equipment for lithium-ion battery cells, battery systems and capacitors.





» Our system concepts stand out for their high production speed and optimal precision and reliability. «

E-mobility

Using efficient production processes for stacked and wound battery cells, Manz is creating cell structures that are increasingly stable and precise, with the corresponding positive effects on the performance parameters of the battery. In this way, we are making an important contribution to breakthroughs in alternative drive systems.

Market growth forecast:

E-vehicles (in GWh)

Source: p3 group 2016



Stationary energy storage

Storage technologies ensure power supply independence and flexibility. When developing and producing high-precision production systems for capacitors and battery cells, we employ our comprehensive expertise in process control, automation and laser technology. In this way, we

ensure that ever higher-performing storage systems can be produced at a lower cost.

Stationary storage (in GWh)

Source: p3 group 2016



Consumer electronics

A battery's life, size and weight are crucial factors for the lifespan and acceptance of products in the consumer electronics segment. With its innovative production equipment, Manz now gives the industry advancement possibilities previously unheard of.

Consumer electronics (in GWh)

Source: p3 group 2016





» Diversifying our customer and product portfolio strengthens the company. We therefore pursue a business idea only if it is 100 percent suited to us technologically and commercially. «

Lightweight design

Lightweight design with fiber-reinforced plastics saves raw materials and energy and is advancing in many industries. It allows faster acceleration in Formula 1 cars, longer ranges for airplanes and electric vehicles, and greater load capacities in trucks and trains.

At this time, the only factor stopping the success of lightweight design are the production costs, which are still very high. We are addressing this with our production technologies, applying our expertise in materials processing, automation and process technology to sustainably lower manufacturing costs in this important future segment.

Sports items

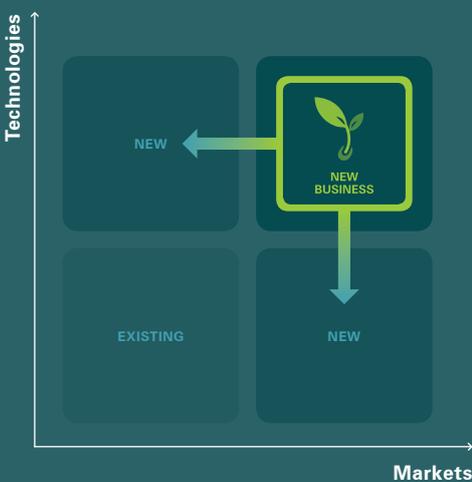
As part of an exclusive collaboration with adidas, we develop automated production technologies especially for sports shoes and sports clothing. They provide adidas with an opportunity to create customized products for customers in regional markets using a rapid, flexible and cost-effective process.

The additive manufacturing methods we have developed for this purpose can also be transferred to the manufacture of skis, surf boards, helmets and many other sports items.

Functional glass

Glass is one of the oldest materials and even today offers many possibilities for functional applications. For processing and refining glass, we develop innovative, customer-specific production equipment that covers the full spectrum of processes: Wet chemical/vacuum coating, laser annealing/cutting, cleaning, and much more.

The manufacture of architectural and automotive glass represents just a few of the possible applications.





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