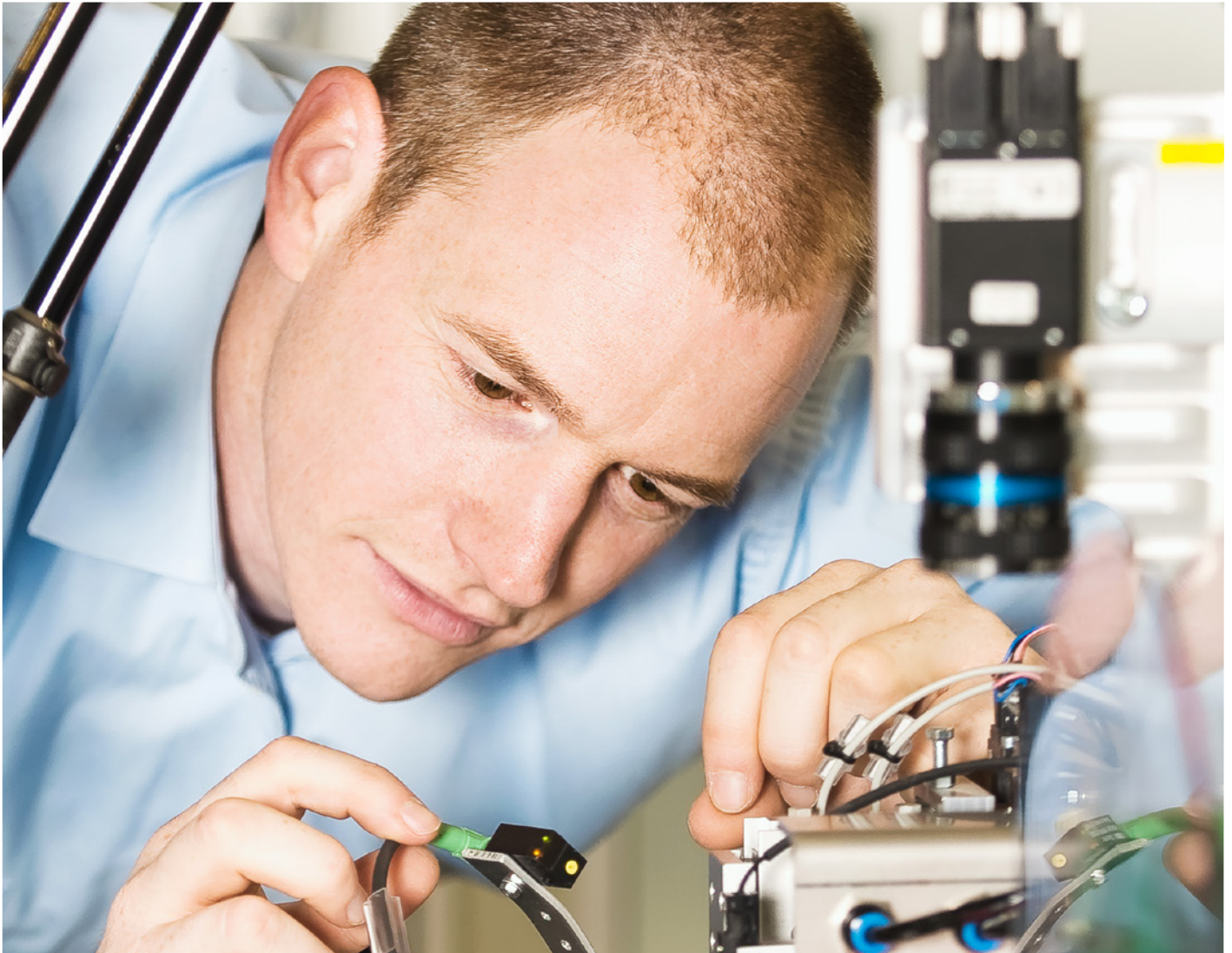


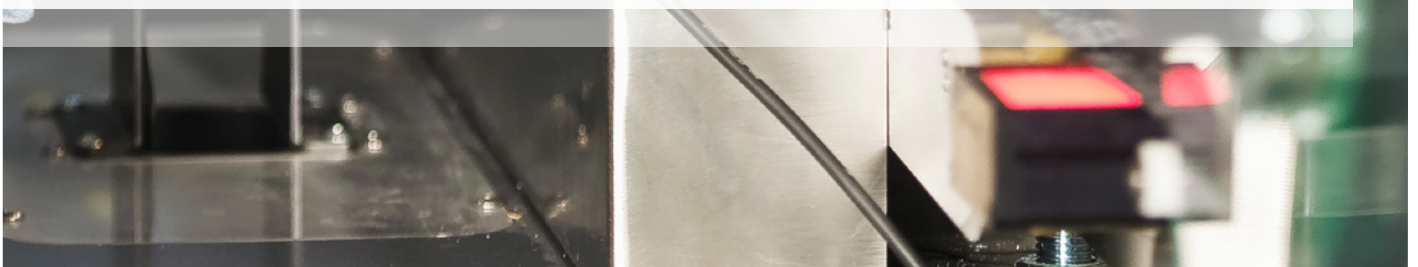


ADDITIVE MANUFACTURING



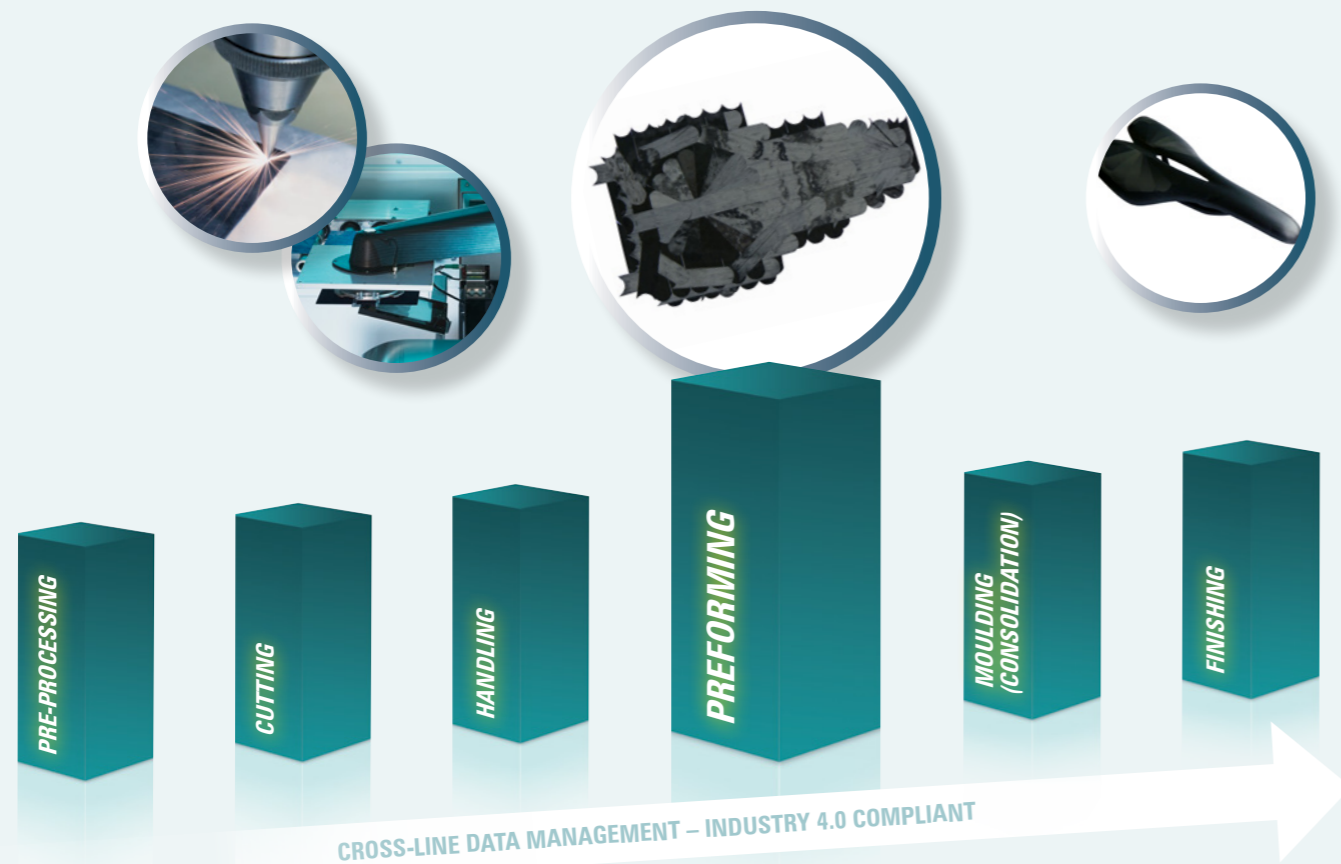
Additive Manufacturing

Processing flexible materials





Additive Manufacturing – HIGHLY FLEXIBLE AND AUTOMATED



CAD dataprocessing
Transfer to production data
Automated teaching of image processing
Transfer of production data to production modules

Laser cutting
Water cutting
Mechanical cutting
Ultrasonic cutting

High-Speed Pick & Place
Controlled, highly precise depositing
In-line quality control
Press loading

3D draping of fabrics
Roving
UD tapes

Preconsolidation

Demolding
Quality control
Cutting
Polishing

Additive manufacturing solutions

AUTOMATION AND PROCESSING SYSTEMS FROM MANZ FOR PROCESSING FLEXIBLE MATERIALS

Flexible manufacturing technologies are increasingly gaining in importance. The **additive manufacturing processes** are receiving special attention, because these have several advantages over conventional subtractive production methods.

With subtractive methods, such as milling, boring and lathing, material is removed to shape the component. With additive methods, by contrast, geometries are created by joining materials. However, conventional additive manufacturing processes generally have low material throughput and therefore cause high process costs.

With our expertise in processing flexible materials, our many years of experience in automation and process technology, as well as metrology, we have developed a **highly flexible additive manufacturing process**. Using the so-called **patch placement method**, solid components can be manufactured from flexible material cuts. The patch placement method connects the material efficiency of additive processes with high material throughput.

Patch placement

In this process, materials are fed from a roll, cut into contours – the so-called patches – using lasers and additively bound together into a component.

The patches are normally combined using a surface weld. Thus it is possible, similar to the 3D printing process, to generate a wide variety of component geometries from different materials.

However, compared to 3D printing, the patch placement method has significantly higher material throughput and shorter production cycle times.

With the patch placement method, modified or even new products can be produced on the same machine, without the need for costly retooling or even replacements.

The technology thus facilitates simple, fast product development as well as a highly flexible, automated production process. This allows complex components to be economically produced – from one-off to series production.



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In production, flexible carbon patches become stable, lightweight components, such as bicycle, aircraft and vehicle components or prosthetics/local reinforcement structures

ADDITIVE MANUFACTURING PROCESSES FROM MANZ ARE WELL SUITED FOR

Rapid prototyping

Small quantities and/or customer-specific adapted products

Customized mass production

Shorter iteration cycles in product development

Manufacture of spare parts

On-demand and/or on site manufacturing

Lightweight design

Functional integration

Monolithic assemblies

Founded in 1987, Manz AG is a global high-tech equipment manufacturing company.

In addition to the CIGS*fab* turnkey production line in the Solar segment, the company focuses specifically on the automotive industry in the Electronics and Energy Storage segments.

The company, listed on the stock exchange in Germany since 2006, currently develops and manufactures in eight countries with around 1,700 employees.



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