



## Product offensive from Manz for CNIBF, trade show for battery technology, in Shanghai

- **With flexibly configurable standardized systems, Manz covers all process steps for the production of lithium-ion battery cells, modules and packs**
- **Modular *Highspeed Notching Platform*: highest throughput and degree of material utilization in the industry**
- **Modular *Stacking Machine*: from reel to completely assembled and tested cell stacks, with consistently high product quality**

**Reutlingen, 22. August 2017.** At this year's China Shanghai International Battery Industry Fair (CNIBF) from August 23-25, 2017, the high-tech equipment manufacturer Manz AG is presenting two new product solutions for the manufacturing of lithium-ion battery cells: the *Highspeed Notching Platform*, for notching electrodes and electrode webs for hard case and pouch geometries, and the *Modular Stacking Machine*, which covers all process steps for manufacturing stacked cells – from the reel material to the completely assembled and tested cell stack.

"In the Manz Group, we combine more than 30 years of experience in the manufacturing of production systems for lithium-ion batteries. Manz Italy, formerly Arcotronics, developed the notching process in 1995. This process prevailed as the standard in the years that followed and is used today by all battery manufacturers. Our concentrated knowledge has flowed into the development of our new machine generation for notching and for manufacturing stacked cells. And we have been able to achieve the highest degree of material utilization, in addition to the highest throughput in the industry. With Manz systems, our customers can raise their productivity and profitability and simultaneously increase the quality and safety of their battery cells," says Eckhard Hörner-Marass, the new Chairman of the Manz AG Management Board.



**The features of the modular *Highspeed Notching Platform*:**

The *Highspeed Notching Platform* is suitable for a variety of different notching processes: from constant pitch to progressive pitch to double progressive pitch, by means of mechanical or laser cutting. This makes the *Highspeed Notching Platform* the ideal choice for the production of high quality hard case batteries or pouch cells.

The *Highspeed Notching Platform* from Manz offers the best price-performance ratio and operates at the highest material speed currently on the market. Thanks to integrated inline measurement systems, users of the Manz system can rely on 100 percent error-free raw material. Vacuum transport rollers and nearly judder-free accelerations provide for a protective and low-stress production process. Defects due to delamination or cracks of the electrodes are minimized. Consistently high quality can thus be guaranteed, even when using cheaper reel material.

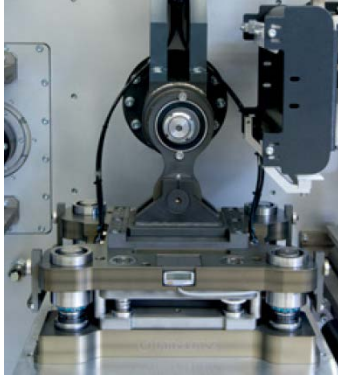
**Highlights of the *Modular Stacking Machine*:**

The single sheet stacking of electrodes and separators is an alternative to winding, particularly when producing powerful hard case or pouch cells used in plug-in hybrid drive solutions or stationary energy storage, for example. As a fully automated production line, the *Modular Stacking Machine* covers all production steps, from the reel material to the completely assembled and tested cell stack. The optimally coordinated processes enable direct interlinking of all critical processes. After every important process step, integrated inspection systems recognize any rejects that may have been created, which are directly ejected. This prevents the further processing of faulty material, with correspondingly positive effects on earnings and consistently high product quality in the cell.

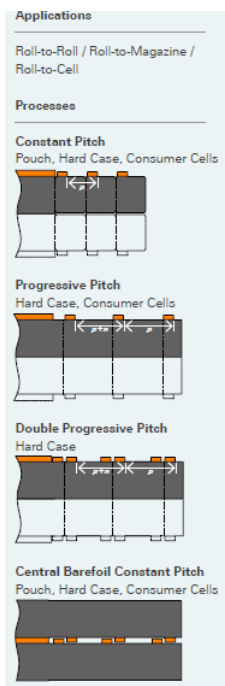
The system guarantees one hundred percent traceability for all materials installed in the cell. This ensures that the *Modular Stacking Machine* meets all specifications of European and North American OEMs.

**With the new *Highspeed Notching Platform* and the *Modular Stacking Machine*, Manz offers its customers highly efficient, standardized systems that can be custom-configured, thanks to their modular design, and easily integrated in production lines for lithium-ion cells around the world.**

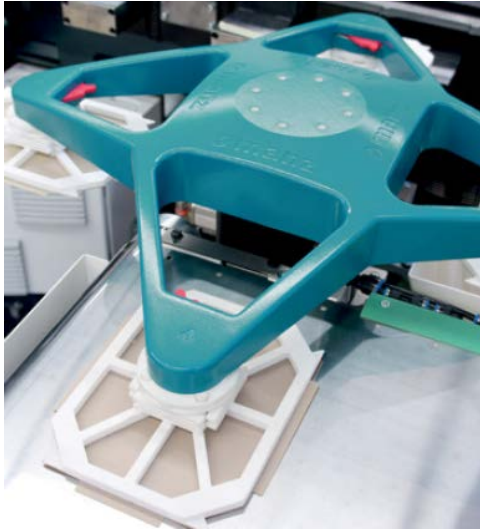
**Images:**



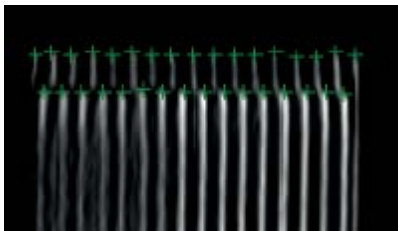
**Image 1: the processing module of the *Highspeed Notching Platform* from Manz is a master of a variety of notching processes – by means of mechanical or laser cutting.**



**Image 2: an overview of various notching processes: they are used for hard case and pouch geometries of lithium-ion batteries.**



**Image 3: the *Modular Stacking Machine* from Manz provides consistently high availability thanks to redundantly designed material feeds and enables a variety of cell geometries.**



**Image 4: cross-section through a stacked battery cell, being produced by the *Modular Stacking Machine* from Manz, in the single sheet stacking method.**

We are happy to send print resolution photos upon request.

### **Company profile:**

#### **Manz AG – passion for efficiency**

As one of the world's leading high-tech equipment manufacturers, Manz AG, based in Reutlingen, Germany, is a pioneer in innovative products for fast-growing markets. Founded in 1987, the company has expertise in six technology sectors: automation, laser processing, screen printing, measurement technology, wet chemical and roll-to-roll processing. Manz deploys and continuously develops these technologies in three strategic business segments: Electronics, Solar and Energy Storage.



The company has been listed on the stock exchange in Germany since 2006. It currently develops and produces in Germany, China, Taiwan, Slovakia, Hungary and Italy. It also has sales and service branches in the United States and India. Manz AG currently employs around 1,700 people, about half of which are in Asia. Manz's claim "passion for efficiency" offers the promise of production systems of the highest efficiency and innovation to its customers in dynamic, future-oriented industries. With its comprehensive expertise in developing new production technologies and related machines, the company contributes substantially to reducing production costs for end products and making them accessible to large groups of buyers the world over.

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