BN Series—Battery Notching

For lithium-ion battery production
Manz AG is one of the leading suppliers of production equipment for lithium-ion battery cells, modules and packs, as well as for capacitors. We have been setting global standards in this field for 30 years.

Manz offers individual machines as well as integrated production lines as standard or customer-specific solutions:

- for various cell shapes, such as cylindrical cells, hard-case cells and pouch cells
- for wound cells or stacked cells
- for batteries for various applications such as portable devices, cell phones, BEV (battery-electric vehicles), PHEV (plug-in hybrid electric vehicles) or HEV (hybrid electric fuel vehicles) and stationary storage systems

Our machines are known for high production speed and a wide range of battery sizes to be produced.

Precision, reliability, durability, availability and low overall operating costs (TCO) are the main features of our high-tech production systems. The individual system or production line can be adapted uniquely upon request using our modular machine design. Our performance spectrum spans from battery cell production (cell assembly) to the assembly of individual battery cells in a battery system (pack assembly).

We accompany you from the initial idea to the final production process and are at your side during planning, projecting, construction and installation of your production line.

In addition, we support you with our comprehensive know-how through the setup and commissioning of the system, with user training, remote maintenance and after-sales service.

Notching Process Milestones

1995
Due to increasing customer requirements for throughput and efficiency in battery production, in 1995 Manz Italy (previously Arcotronics) developed the notching process. The process established itself as a standard in the following years and is now used worldwide by all battery manufacturers.

2005
Through the systematic further development and implementation of new technologies, by 2005 Manz Italy had doubled its throughput and web speed. To continue to meet the ever growing requirements for quality, the systems were expanded by integrated measurement technology systems.

since 2016
In order to manufacture a wide variety of production configurations efficiently, Manz developed the modular BN Series for battery notching. The company is able to flexibly and quickly meet customer demands through the combination of different modules.
Highspeed Notching of Lithium Ion Battery Cells

Manz provides equipment for all production steps relating to the manufacture of lithium-ion batteries. With the BN Series all mechanical or laser-based notching processes are covered.

The BN Series is suitable for a variety of different notching processes. From constant pitch to progressive pitch up to double progressive pitch, using mechanical cut or laser cutting—all notching processes and process variants can be implemented using the BN Series.

Therefore, the BN Series is the best choice for the production of high-quality hard-case batteries or pouch cells, with the best price-performance ratio of available notching systems.

Productivity, speed and throughput
With the BN Series, throughput and productivity are increased and at the same time production costs are lowered. The system has the highest material speed on the market and also offers one of the most efficient processes with simultaneous high yield.

High degree of material utilization
Material recognized as defective is detected right after the notching process, then marked or immediately sorted out. Thus, the scrap in the subsequent processes is held to a significantly low level and the manufacturing costs are substantially reduced.

The integrated measurement systems ensure that constant precision and 100% checked output material are guaranteed.

Quality and safety of the end products
Integrated and optimally matched measurement methods for inline quality inspection ensure that the electrode material is constantly cut with high precision. The high accuracy of tab pitch and angle ensures high-quality and safe battery cells.

In combination with high-quality machine components, the integrated measurement technology guarantees a maximum of product quality. Vacuum transport rollers and almost totally smooth accelerations ensure continuous material speeds and thus a very gentle and low-stress process flow. Therefore, negative influences, such as delamination of the coating or wrinkles in the web, are minimized. Thus, a consistently high quality and safety in the battery cells is guaranteed.
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Auto-splice unit
Automatic roll change for continuous operation of the equipment.

Web guiding system/EPC
Regulates the position of the web through direct recognition of the web or coating edge.

Notching unit
Highly dynamic drive unit for all types of punching tools.

Vision system (CCD)
Enables constant high CpK values for the dimensioning or the pitch of the electrode.

Auto-splice unit
Automatic roll change for continuous operation of the equipment.

Unwinding units
Highly precise, 3-point mounted, centrally clamped mandrel in 3” or 6” design. Continuous diameter detection for user warning and triggering the splicing.

Web guide rollers

Vacuum pulling unit
Minimize mechanical load and material stress. Prevent delamination of the coating and particle generation.

Cleaning system
Efficient clearing off of possible existing particles for better service life and higher quality of the batteries. Reduces scrap from short circuits (Hi-pot failure).

Winding mandrels/magazines/winding
The appropriate modules are built depending on the application and method.

Increases productivity
Increases profitability
Increases the quality and safety of the battery cells
Founded in 1987, Manz AG is a global high-tech equipment manufacturing company.

In addition to the CIGSfab 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.