

# Manufacture of lithium-ion polymer batteries

Special solutions from A to Z.



The technological standards of the manufacturing processes are set very high for the manufacture of lithium-ion polymer batteries. Exact joining and sealing processes as well as the precise packaging into a film package manufactured in line are the basic prerequisites for a technically perfectly functioning of the batteries.

In addition the special requirements of the materials must be taken into consideration (e.g. isolator).

In our capacity as a system supplier for the entire production process we have extensive know-how:

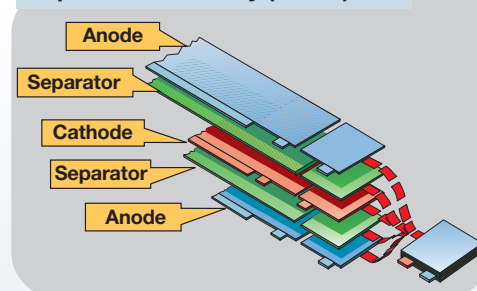
- Manufacture of bicells, consisting of anodes, cathodes and separators
- Cutting and die-cutting of sensitive electrodes and separator materials

- Laminating
- Joining together of several bicell layers into a "stack" by means of robotics
- Secure manufacturing of the bags or film packs and their further processing
- Handling of the bicell stack
- Dosing of electrolyte with the exclusion of oxygen
- Vacuum sealing
- Comprehensive quality, functional and charging tests
- Coding and labeling of the product with production specific information

## Technical data

Output up to 100 batteries / minute

From the belt to the unprocessed battery (bi-cell)

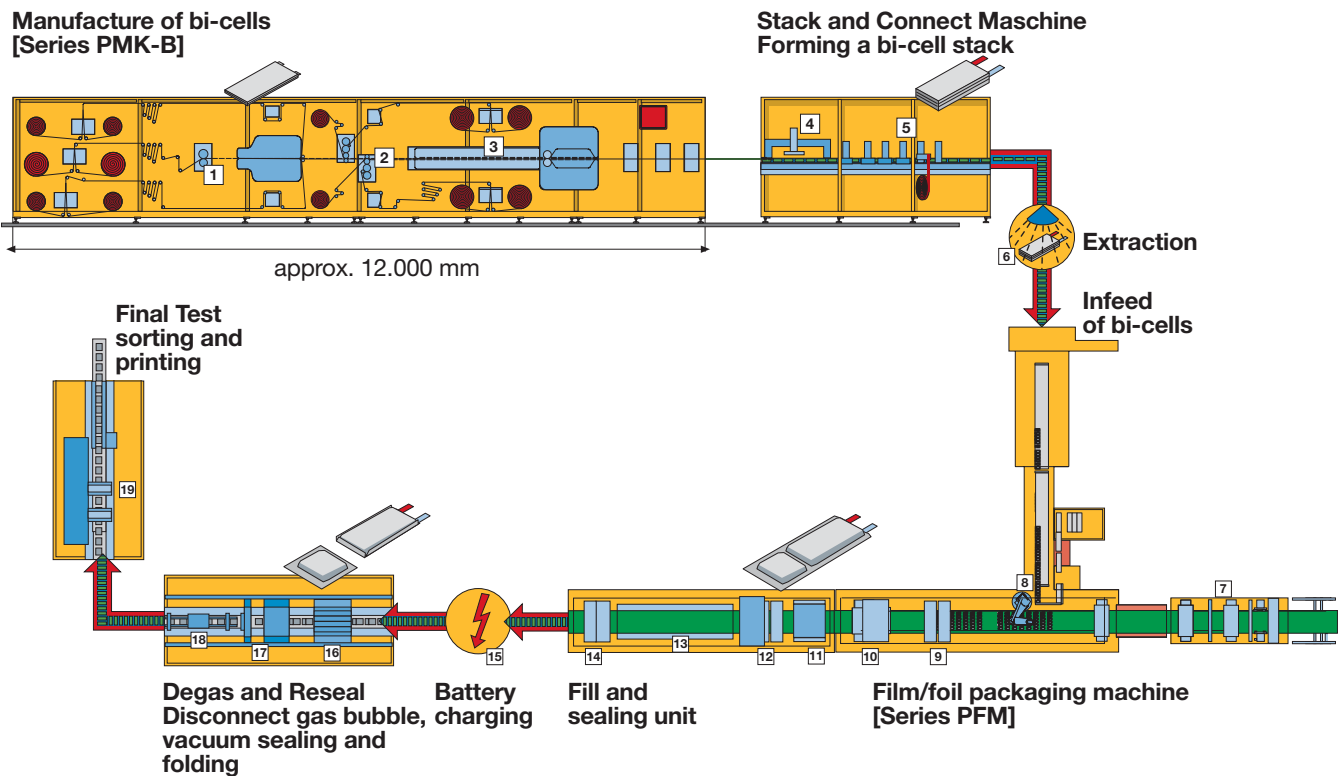




Feeding of film materials for the manufacture of bi-cells



Dosing of electrolytic liquid in a nitrogen atmosphere



You will find further informations in our brochure "Customized Solutions".

**Production sequence**

**[PMK B]:**

- 1 Manufacture of the anodes
  - 2 Positioning of the anodes
  - 3 Lamination
- Stack and connect:**
- 4 Stacking of the electrodes
  - 5 Bending and cutting to length of the cathode and anode contacts and ultrasonic sealing of the lugs
  - 6 Formation of bi-cells

**[PFM]**

- 7 Manufacture of film/foil packs Base and lidding segments
- 8 Insertion of the battery stack
- 9 3-sided sealing of the battery pack
- 10 Cutting:
- 11 Erecting and insertion into trays
- 12 Electrolyte filling of the open 4th side of the pack
- 13 Wetting of the electrodes with electrolyte/buffer segment
- 14 Vacuum sealing of the 4th side

**[Filling and sealing unit]**

- 15 Battery charging process with the formation of gas
- Degas and Reseal:**
- 16 Opening, degassing and resealing of the pack in a vacuum
  - 17 Separation of the gas bubble including short-circuit test
  - 18 Folding of the sealing edges
- Final Test:**
- 19 Final inspection barcode marking and sorting