

## Molded packs for diagnostic tubes

**Sensitive products securely packaged.**



**Alcohol test tubes are used mainly by the police. They can be used quickly, are easy to handle and provide reliable measuring results.**

As the tubes are made of glass, a manufacturing line is required that will satisfy the diverse product-specific handling problems and production processes:

- Deep-drawing and thermoforming of the outer packaging
- Loading
- Banding of the sealed pack
- Transport and handling of the fragile glass tubes and closure of the outer packaging
- Filling with granulated medium

**The process for pack manufacture and product loading is as follows:**

A molded pack is thermoformed inline for packaging of the test tubes. After having been loaded with the sensitive glass tubes the two pack halves are placed congruently one over the other and sealed at the edges. The flexible flap is closed with adhesive tape.

### Technical data

**Output:** 17 – 20 packs / minute

**Pack dimensions:** 47 x 21,5 x 138 mm



*Molding of the base elements for test tube packs*



*Sealing of the base and cover elements*

# Manufacture of lithium-ion polymer batteries

The package density is necessarily to ensure the product safety.



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).

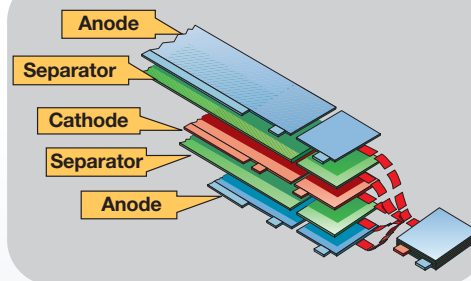
In our capacity as a system supplier for the entire production process we have extensive know-how:

- 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

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



## Technical data

**Output** up to 100 batteries / minute

**i** You will find further informations in our brochure "Customized Solutions"



Loading of batterie stacks into the formed backing foil



Dosing of electrolytic liquid in a nitrogen atmosphere



Form cut for sealed package sheet

## Packaging of round cell batteries

Deep-drawing technology and product handling to very high precision.



The rationalization of the packaging process to date and reduction of the unit costs were paramount factors in the development of this line. Furthermore, a protection label had to be applied inline, the intention of this being to protect against the premature discharging of the round cells.

The special features in the processing of round cell batteries are as follows:

- Packaging of zinc/air cells and standard round cells of different sizes on one line
- Optional packaging of 2, 4 or 6 round cells per individual pack

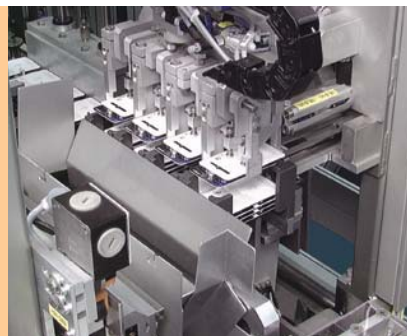
- Exact interpositional precision of the individual blister cavities
- Application of a protection label on the zinc/air cells to prevent premature discharging
- End packing of 10 pairs of nested blisters
- Level control of the stations for compensation of the foil stretching



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



Transfer of round cell batteries into the thermoformed film web



Nesting and stacking of completed packs via a gripper system



Feed of the carrier cardboard and insertion into the product chain