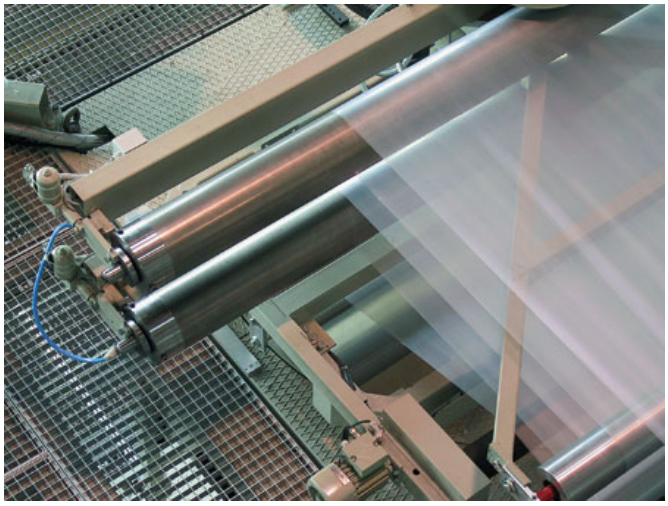
SUCCESS STORY 68
WEB MONITORING OF SEMI-PERMEABLE FILMS



Q How can a semi-permeable film manufacturer know if their film has the correct permeability?

A

Situation and background

Inside a NiCd or lithium ion battery is a semi-permeable film, which acts as a membrane that allows certain molecules or ions to pass through it by diffusion. These batteries can be used in cell phones and other portable devices, as well as in automobiles. Semi-permeable films are made as a web. During the manufacturing process, the web, which is not larger than 1.7m (67“) wide and is moving at 20m (66 feet) per minute, is stretched to help establish the amount of permeation. The temperature of the web during this process determines how much stretching takes place on the web. This process is similar to how a tenter frame is used to stretch fabric in the cross machine direction.

The winning solution

- The customer is using an ES150 system, including an MP150 linescanner with cooling accessories and software to monitor the process. The system is mounted inside the oven which blows hot air over the film to stretch it. It is not possible or necessary to see the microscopic holes in the film with the linescanner – only the temperature profile of the film is critical. Ultimately, the customer will use the linescanner in a closed loop control system using OPC or direct analog outputs from the ES150 system to control the amount of material stretching.

Savings made

- The ES150 system is used as a setup tool to get the right temperature profile and insure correct film permeability. The customer performs 3 setups/day on a single machine. With the ES150, the customer can save approximately 25% of the setup time. By looking at the cross-web temperature profile, the amount of stretch needed to achieve a pre-set permeability can be determined.

KEY FACTS

Industry
Consumer electronics batteries and automotive electric cars

Customer’s End Product
Semi-permeable film

Process Temperatures
120-130°C/248-266°F

PRODUCT AND BENEFITS

ES150-P30 and related water-cooling accessories

- 25% reduction in setup time
- Improved product quality