

On-line Pinhole Detection

CPD



**Inspection
Monitoring
Data processing**

**Defect counting
Defect marking
Alarm setting**

**Engineering
Design
Set-up**

DC high-voltage porosity testing for films, sheets, webs and more flat materials

- pharmaceutical and medical packaging materials
- composite materials
- food packaging
- roofing material, dump foils, etc.

Special feature:

- also on transparent films
- nearly 100 % detection across the total material width
- reproducibility better than 98 %

Continuous Pinhole Detection CPD

Field of application

Designed for real time inspection on the production floor, the CPD continuous pinhole detection system detects material flaws such as pinholes, cracks and fissures in non conductive or weakly conductive materials.

Based on the principle of DC high-voltage testing, the CPD porosity detector is suitable for virtually any type of material from 30 microns to approximately 8 mm thickness. A sufficient dielectric strength of the material is the only requirement regarding material property and feasibility. The following materials can be tested:

- plastic films and sheets (PP, PE, PU, PVC, etc.)
- transparent foils
- laminated materials
- cured or uncured rubber
- composite fabrics on carrier foils
- dump foils
- roofing material

A typical application from the automotive industry is soft trim testing. For testing of composite fabrics or foam material of more than 5 mm thickness, pressure rollers can be used for compressing the material to the requested thickness suitable for testing. In case of multi-layer materials, only the complete system can be tested for porosity.

Testing principle

Porosity testing is performed by an electrical field generated by DC high-voltage electrodes. For detecting porosity, an appropriate test voltage exceeding the ionization potential of

the air is applied in order to provoke a spark discharge, which indicates the presence of a material flaw. For non-contact type measurement, rod electrodes are used. For contacting measurement, roll electrodes are used.

As long as flaw-free material passes between electrode and roller, there will be no spark discharge. As soon as material flaws such as fissures, holes or pores occur, the electrical field strength reaches the necessary potential for causing a spark discharge. Due to this simple and reliable method nearly 100% flaw detection across the total width at a minimum of 98% repeatability can be ensured.

Size of detectable pores

The size of detectable pores depends on the material type and thickness. According to material type, line speed, type of test method and other conditions, pores of a minimum diameter of 10 microns can be detected.

Material speed

Generally, the system can cope with process speed up to 50 m/min. Depending on type of material, higher speeds are possible.

High voltage generators

For the standard equipment, high voltage generators with output voltages of up to 30 kV are available. Test voltage can be adjusted continuously from 200 V to the maximum and viewed from a digital display located at the high voltage generators.

Test electrodes

For non-contact type measurement, rod electrodes of 440 mm width are provided. To cover larger widths, several electrodes can be set up. The outer electrodes are movable so that the system can be adapted to the required production width. The system supports web widths of approx. 3 m.

Reference roller

The reference roller is part of the CPD system and provides an anti-pole to the high voltage electrodes. It may be made of steel or aluminium. For testing, the material is wrapped around the roller in an appropriate arc of wrap (approx. 180°). Eccentricities of the roller around ± 50 microns are admissible.

Error counting and marking

For counting materials flaws various devices are available for total counting our counting flaws over a certain material section. For flaw marking, marking systems can be supplied such as labelling devices.

Customer tailored applications

We offer a variety of custom tailored options. Please contact our staff of application engineers to work out a complete turnkey inspection system designed for affordability according to your special requirements.

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