# Gel Counting and surface inspection of plastic films

Gel counting is a common requirement for plastic film web and sheet producers. This article details the different applications that Maxcess Vision Systems offer for Gel counting.

Gel Counting - understand how it works

It's a key feature for any surface inspection system that operates on plastic film. If included as part of a machine vision system for plastic inspection, it will allow an extruder determine quality .
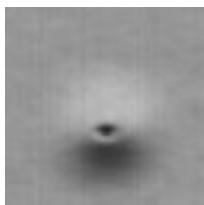
Three key features enable gel counting.

- Structured lighting
- Defect classification
- Density analysis

Structured lighting

Why do you need it? Gels are transparent and plastic film is also transparent. It's key to direct the light so that a gel can be seen. The trade-off is that common defects can be difficult to distinguish from very large gels.

Defect classification

The next task is to break the gels down into different sizes and classes. These classes will then be used by the vision system to analyze the quality. The following classifications are common on a vision system being used for surface inspection.

- Gels - small
- Gels - medium
- Gels - large
- Carbon specks
- Contamination
- Fracture melts
- Holes

Density Analysis
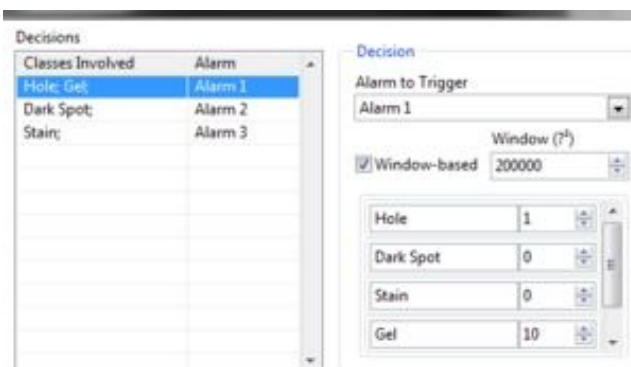
The next task is to be able to classify defects and have the bandwidth to process particle heavy images as there can be many gels in a square meter. It's almost impossible to produce gel free plastic. The system must keep a moving average of how many gels of each class are within a given area. The user will have set limits on how many different types of gels are allowed. It may be OK to have 10 medium gels if alone, but if you add 100 small gels then the alarm may need to be triggered. A well-presented gel counting solution will allow the user to set alarm decisions on as many of these scenarios that the user deems necessary. If the limit is exceeded, an application alarm can be triggered. Application alarms can then be connected to physical I/0 outputs to drive field devices.

Summary

Gel counting is a desirable capability but it is important to understand that often the role of defect detection and monitoring process variations can become blurred. Vision systems used for surface inspection must have a system that allows alarms to be triggered only on key parameters. To learn more about gel counting contact Maxcess Vision Systems now.

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