

# Brabender®



## Brabender® FQA Film Quality Analyzer



... where quality is measured.



The Brabender Film Quality Analyzer FQA optically inspects the quality of blown or flat films on a laboratory or production scale.



Brabender application laboratory

## The Brabender support

Our state of the art application laboratory is always made available to our customers.

You can choose to send material to us for testing or schedule a specific Lab Trial with our expert team. In our application laboratory, you will have access to our full product line to help come to a solution for your application.

## FQA

### Features

The system provides an automated optical in-line analysis of the extruded films. The high-resolution camera detects inhomogeneities and impurities (e.g. black specks, gels, fisheyes, holes etc.) in transparent and pigmented films. Even strongly pigmented films with very low transparencies can be checked by means of adaptive transparency and grey level evaluation.

The dedicated software allows for optical and both qualitative and quantitative statistical evaluation of the film purity. This enables quantitative in-line quality assessment on masterbatches by sizing and classification of agglomerates and pigment particles.



Enlarged image of a detected impurity

### Principle

Each type of inhomogeneity has its own transparency characteristics. A black speck shows another transparency value than a gel or fisheye. These differences in transparency are used to define typical grey levels for each type of inhomogeneity. The camera system recognizes the difference between the grey value level of the undisturbed film and that of inhomogeneities. The evaluation software defines the type of a fault on the basis of its grey value, measures its height and width, calculates the area and a circle diameter corresponding to this area, and allocates it to the corresponding size class. The pictures are marked automatically with colored rectangles corresponding to the different types of faults.

All these data as well as the time when the inhomogeneity occurred are saved in a database for further evaluation or transfer to Windows® Office applications.

### Compatibility

The FQA system can be mounted on different Brabender equipments:

- Univex flat film take-off unit
- Blown film take-off unit
- Auto-Grader

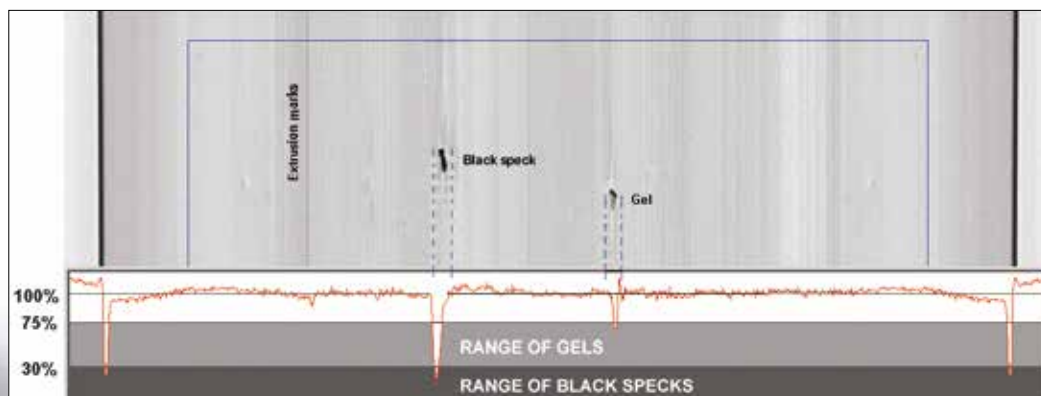
### Combined film production and quality analysis

The FQA can easily be mounted e.g. on a Brabender Univex flat film take-off unit as a downstream equipment of an extrusion line to obtain a complete laboratory-scale film production line incl. fully automatic in-line optical film quality analysis. The combined system comprises:

- 1 Winding roll
- 2 LED light source
- 3 Camera
- 4 Expander roll
- 5 Nip rolls



Film Quality Analyzer mounted on a Univex flat film take-off unit



Classification of different types of impurities by grey value level

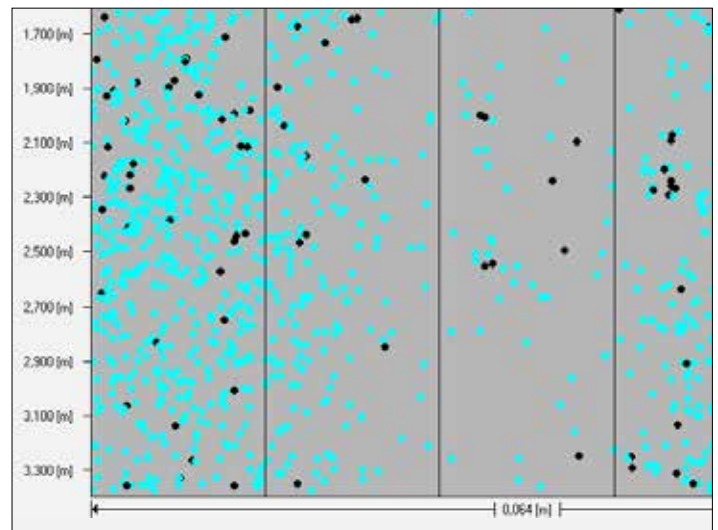
## Software

The camera system uses its own software.

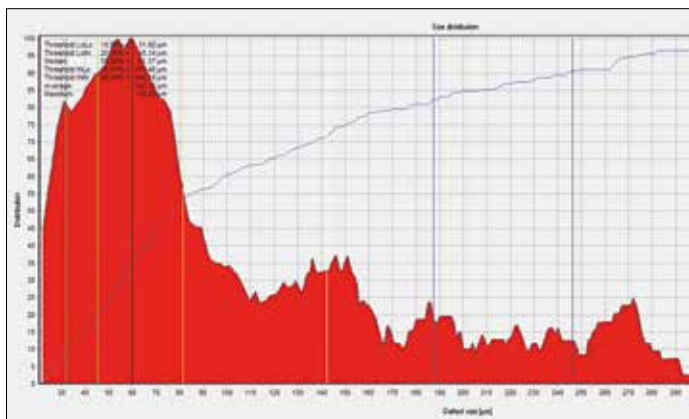
The image data are continuously sent to the PC, evaluated, and saved in a database.

The software offers versatile features and numerous statistical evaluations:

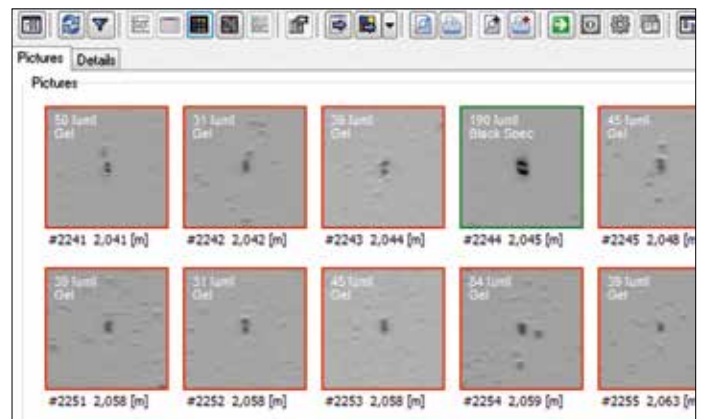
- Identification of impurities
- Classification of the detected impurities in up to 9 size classes
- Recording of inhomogeneity positions
- Histograms
- Density of impurities (e.g. gel spots/m<sup>2</sup>)
- Trend curves



Position map of impurities – the colors represent the different types



Size distribution of the detected impurities



Visualization of detected faults with indication of type, size, position, shape, and time

Film Quality Analyzer	
Camera	4096 pixel CCD line camera
Sensor dimensions	41 mm x 10 µm
Pixel dimensions	10 µm x 10 µm
Pixel frequency	80 MHz
Line frequency	approx. 20 kHz
Resolution	approx. 20 µ (optional 10 µ) (depending on take-off speed)
Width of measuring window	approx. 80 mm
Light source	White LED light
Operating temperature	10 °C to 35 °C
Housing dimensions	145 x 145 x 255 mm
Mains connection	230 V / 110 V AC, 30 VA

## Use as process control

The FQA system can also be installed as a part of the Brabender Auto-Grader. This construction

provides a compact in-line quality control system which can be fully integrated into raw material production lines. For more details see the separate brochure of the Brabender Auto-Grader.



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Made  
in Germany  
since 1923

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