MEASUREMENT OF SURFACE PARTICLES ON COMPOUNDS

Compound Test »PCR 20/40«

PIXARGUS
AUTOMATION BY VISION

PARTICLE SCAN ON COMPOUND TEST STRIPS WITH MICROSCOPE RESOLUTIONS
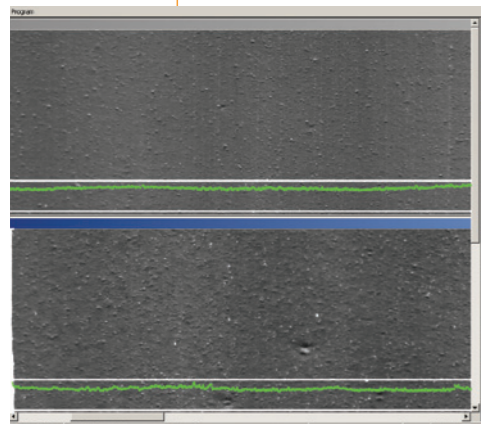
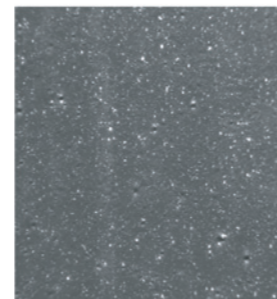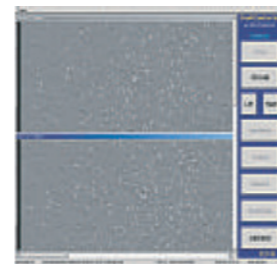### Inspection of surface particles requires resolutions beyond the capabilities of human eyes

The ProfilControl PCR is a high-resolution camera system that measures captures and measures surface roughness particles on flat material strips. Rubber mixing plants use PCR for quality documentation of processed batches. A typical application is the scanning of rubber compound strips, produced by a laboratory-extruder and conveyed on a belt through the PCR system. The digital camera in PCR takes pictures of the strip surface similar to microscopicphotographs. A resolution of 20 Ìm is required for for detecting even the smallest roughness particles and providing the reliable evaluation of the compound mixing quality.

CONTINUOUS PARTICLE ANALYSES

Advanced measurement of mixing quality

The roughness particle sizes are taken as a basis for the determination of the mixing quality.
The system automatically evaluates the statistical distribution of all particle diameters and shows the results in an online graph on the operator screen. Warning signals for decreasing material quality can be defined by setting thresholds for each frequency of particle size. E.g. if the material contains too many particles of a certain size, an alarm can be triggered. The statistics graph on the screen shows the particle distribution of the current scan. Also average-, minimum- and maximum results of a series of previous measurements of the same material can be visualized.
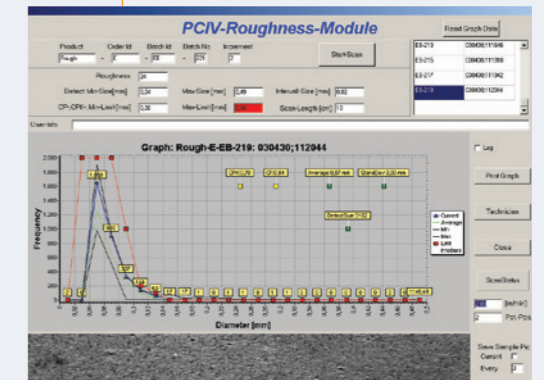
ANALYSIS & CONTROL OF PRODUCT QUALITY

For Process Analysis and Documentation

Advanced algorithms ensure the automatic and continuous evaluation of all micro-particles from the scanned picture data at a rate of more than 100.000 particles per minute.
This allows the accurate determination of key-values which quantitatively describe the particles on the material surface. The result is a reliable characterization of the material quality. A continuous detection, measurement and counting of every single particle on a test strip is possible for the first time.

QUALITY DOCUMENTATION

Batch specific quality assurance

Comfortable data handling allows the storage and organization of the data on the system hard-disk or on any network quality server.
The upload of product and order specific parameters ensures an easy system setup by the machine operators in case of changing materials. The results of each completed measurement cycle are linked to their order-identification number and a batch ID. Thus a precise comparison between measurements can be conducted, which is the basis for an analysis of quality trends between old and new batches. Data exportation to Microsoft Excel® for further statistical processing can be easily performed. For inline batch documentation a report can be printed automatically. A picture as a visual impression of the surface is added to the report to allow a post evaluation by human eyes.

»PCR-20/40«

- Encapsulated housing for camera, computer and monitor
- Conveyor belt for strip transportation
- Touch-Screen for easy operation
- Compact installation after a laboratory extruder
- Special LED-lighting to meet camera requirements and visual surface characteristics

BENEFITS AND PAYBACK WITH PCR 20/40

- Reduces customer complaints
- High repeatability allows the comparison of old and current product quality
- Objective automatic measurement eliminates subjective evaluation
- Product improvement based on reliable quality data
- Factors of process control according to ISO 9001 and TS 16949

TECHNICAL DATA

System Performance

PCR-20 20 mm inspection width, starting at 20 µm minimum particle diameter (typically at 1-2 m/min conveyer speed, at a length of a 1 m strip)

PCR-40 40 mm scanning width, starting at 40 µm minimum particle diameter (higher speed, continuous scanning)

Other configurations on request

System Software
Pixargus PCR Software
Operating System Microsoft Windows®

System Hardware
Industrial PC
15" TFT-Touchscreen
Aluminium Housing, IP54

System Dimensions
approx. 700 x 900 x 1900 mm
27" x 35" x 75"

Additional Features
Conveyor Belt
IO-Signal module

Options
Speed Sensor
Printer

Power Supply
110 / 230 V
50 Hz
900 W max.

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