


Detection of Dark Pellets after Extrusion and Pelletizing of Natural-colored Recyclate

Immediately after the extrusion and pelletizing process, the presence of dark pellets should be checked on a vibrating feeder for natural-colored recycled material.

Dark pellets can be caused by deposits in the extruder, for example on the filters.

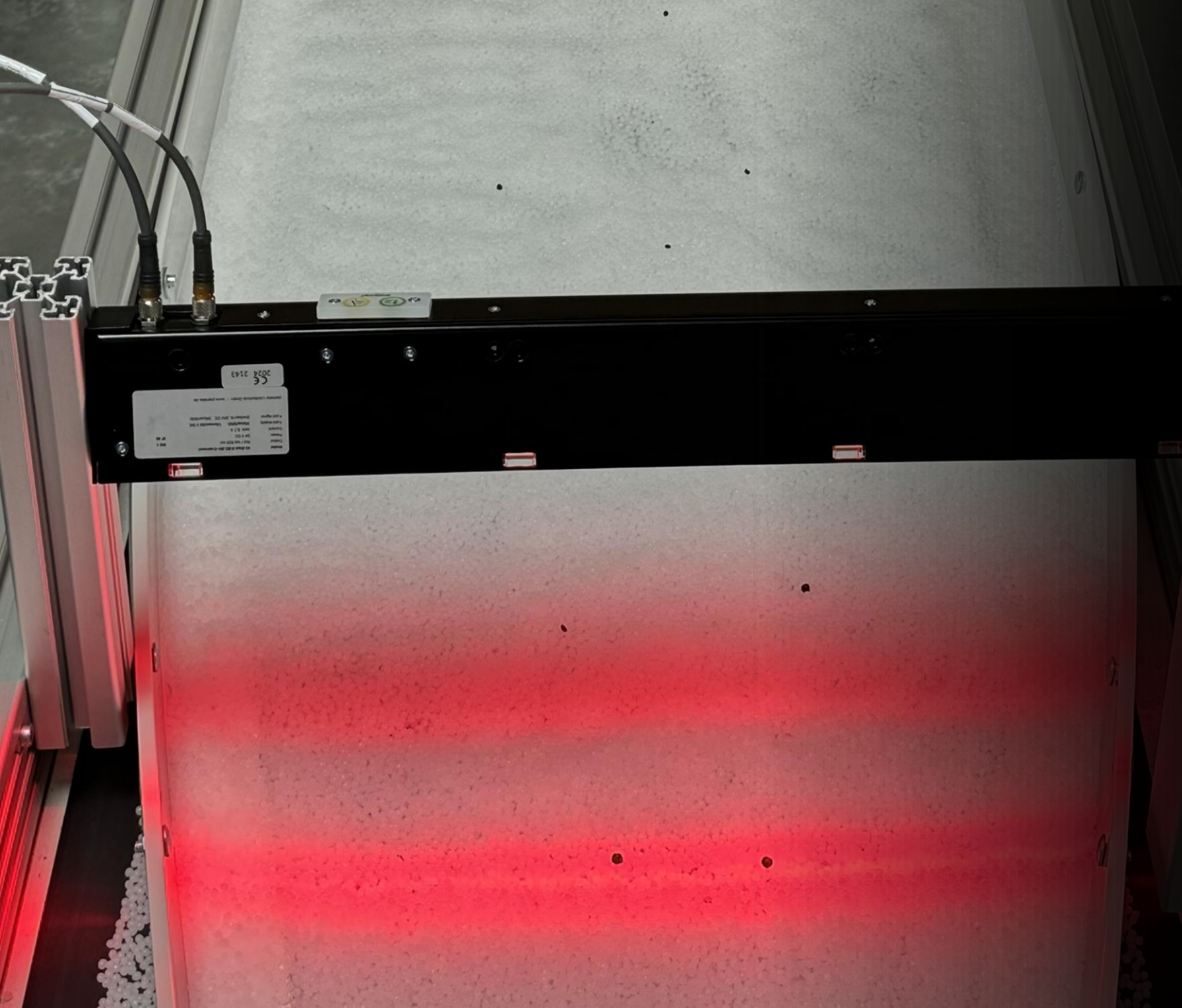




The recycle is checked using a line scan camera and a corresponding line lightning across the entire width of the vibrating chute.

If dark granulate is detected, a digital output is set by the sensor system (+24V pulse). The number of digital signals per time unit can then be determined using a PLC, for example. If a certain limit value is exceeded, the contaminated recycle is ejected from the pellet flow.



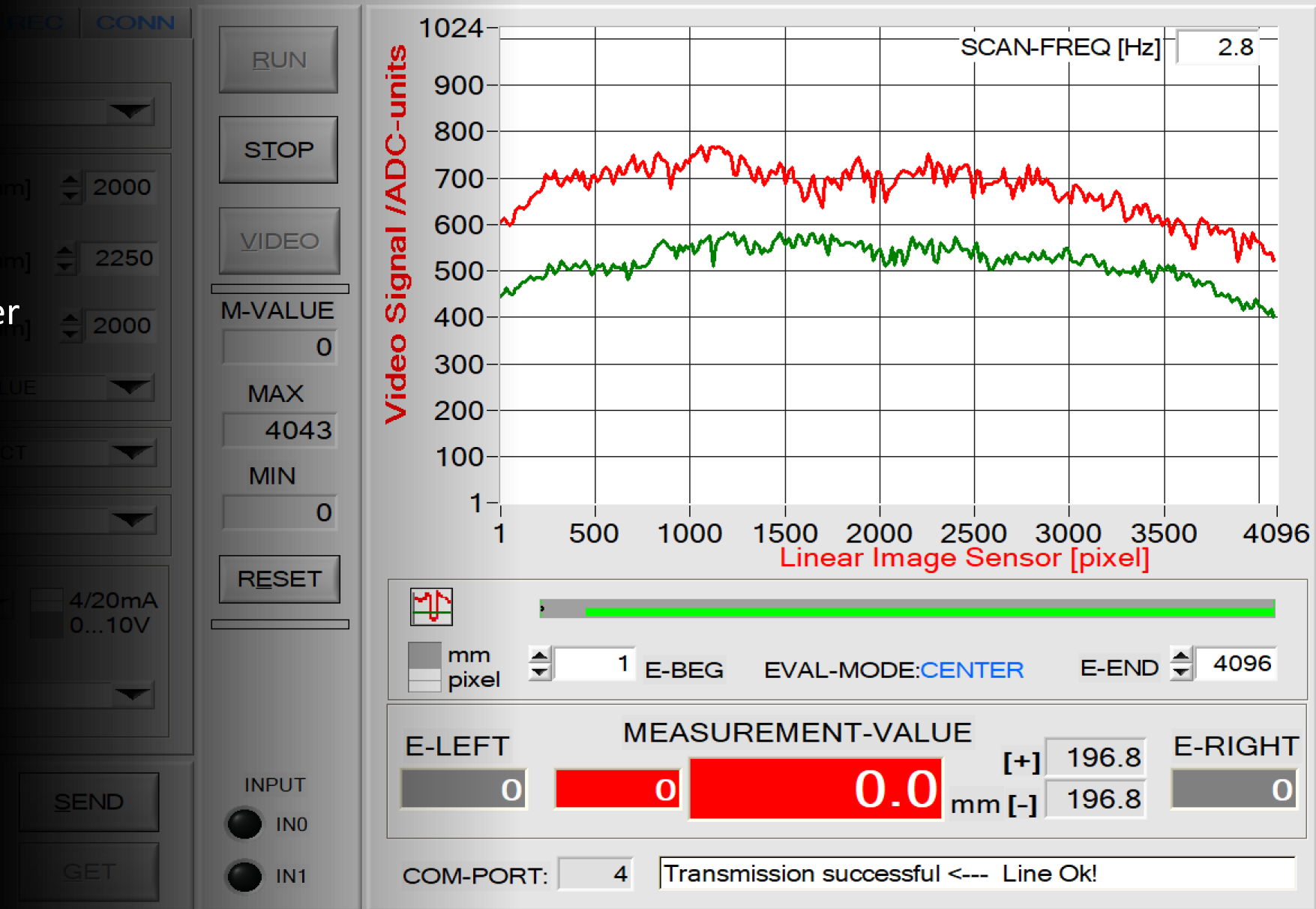


A line scan camera type L-LAS-CAM-512-CL including wide-angle lens MO-G-1.6/16 and lighting unit type LU-LED-430-RED were used for this application. Thus, a width of around 450 mm can be monitored.

The system delivers a resolution of approx. 0.2 mm in the transverse direction. With a scanning frequency of 1 kHz and a product speed of 0.2 m/s, a resolution of 0.2 mm is also achieved in the longitudinal direction.

The Windows® software L-LAS-CAM-Scope V4.0 can be used to specify a comparator threshold profile that is derived from the current video profile. This ensures that the sensor sensitivity remains constant over the entire measurement range.

Parameterization of the camera system, such as setting the scan frequency, exposure time and video threshold, is also carried out via the GUI.



PA3 CAL REC CONN

PARAMETER

EXP-TIME[ms] V-THD[%]

10.0 100

8.0 75

6.0 50

4.0 25

1.4 1

1.4 75

MODE STATIC

COMP-MODE OFF

SOURCE NO USE

VIDEO-SIGNAL OFF

MODE AUTO

V-THD

RAM

EE

SEND

GET

RUN

STOP

VIDEO

M-VALUE

866

MAX

4043

MIN

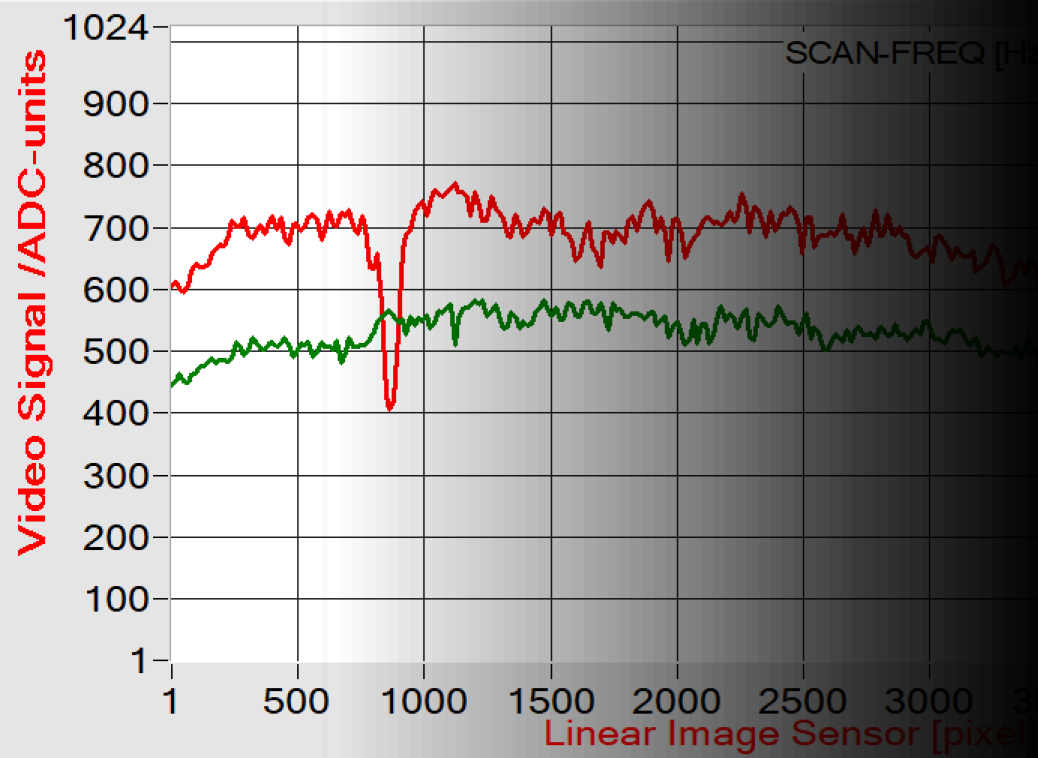
0

RESET

INPUT

IN0

IN1



mm pixel 1

E-BEG EVAL-MODE: CENTER E-END

E-LEFT MEASUREMENT-VALUE

847 866 85.2 mm

[+] 196.8

[-] 196.8

COM-PORT: 4 Transmission successful ---> Line Ok!

If a dark granule now appears in the detecting range of the sensor, this is shown as a negative peak in the video signal of the line scan camera. The digital output is set when the video signal falls below the set video threshold (+24V pulse).


The automatic adaption of the video threshold profile to the current video profile ensures long-term stable product monitoring.


Detection of unwanted color deviations of individual pellets in the natural-colored recyclate flow


Immediately after the extrusion and granulation process

Recyclate inspection using a line scan camera system and line lighting

Our specialists are happy to tell you more about it

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