Online measurement of contaminants on polymer pellets

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Pellets pass through the PS-25C and are analysed with a 3-CCD chip colour camera. The defects are divided into colour classes and size classes. A contaminant is defined as a moving defect which is detected at least three times whilst passing through the viewing field of the camera. All detected contaminants are shown as mosaics (see fig. 1) to which size and spectrum are linked (see fig. 2).

Using the spectral information shown in fig. 2 a user defined colour class can be made from any detected contaminant.

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Online equipment (OCS GmbH) installed at line A and B:

- PA-66, consisting of PS-25C (pellet contamination) and PSSD (pellet shape and size)
- FSA-100, CR8, ME20/26V2, gel and contamination on film
- Aplains, FTIR density and additive analysis on film
- PTS, pellet transport system

Fig. 3 shows the level of contaminants during a production campaign with a shower of contaminants. Due to this high amount of contaminants only for a short period of time it is necessary to down-grade the whole lot. By means of a fast online detection of contaminants it is possible to cut out the poor quality product by changing the production silo.

Online detection of contaminants is also useful to optimise the way of running the plant. It is possible to visualise the impact of different plant operations on the level of contaminants. Fig. 4 and fig. 5 show the developing of the level of contaminants during an extruder cleaning procedure before shut down and after start up of the production extruder. Fig. 6 shows the effect of extruder cleaning during a transition.