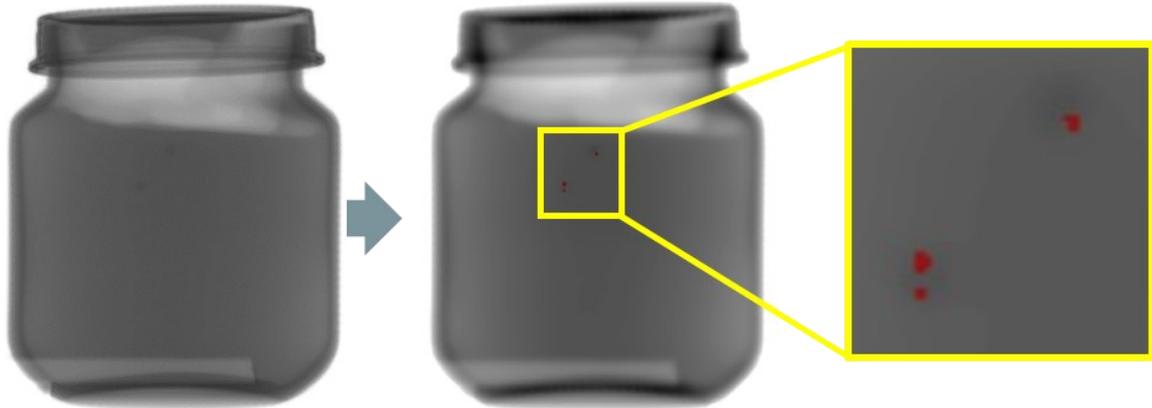




CASE STUDY:

GLASS CONTAMINANTS IN JARS OF BABY FOOD



Conventional X-ray absorption image

IBEX technology reveals glass contamination

Revealing clear differences

Conventional X-ray inspection methods struggle with low-contrast cases such as glass contaminants in glass jars of product. The glass beads placed in this jar of baby food are barely visible in the X-ray absorption image (above left). Their grey-level is also the same as other grey-levels in the image, so discrimination on grey-level in order to detect this contaminant is not possible.

IBEX MAP technology recovers energy-dependent materials information normally lost in conventional X-ray absorption imaging. Contaminants can thus be detected on the basis of their material differences, not relying on absorption contrast (above middle and right).

More than before

IBEX technology is compatible with high volume inspection systems. This enhances their performance, giving you more insight into the products than before.

A quantitative measure

IBEX analysis delivers a quantitative measure of the level of contamination – allowing robust Pass/Fail criteria to be set.

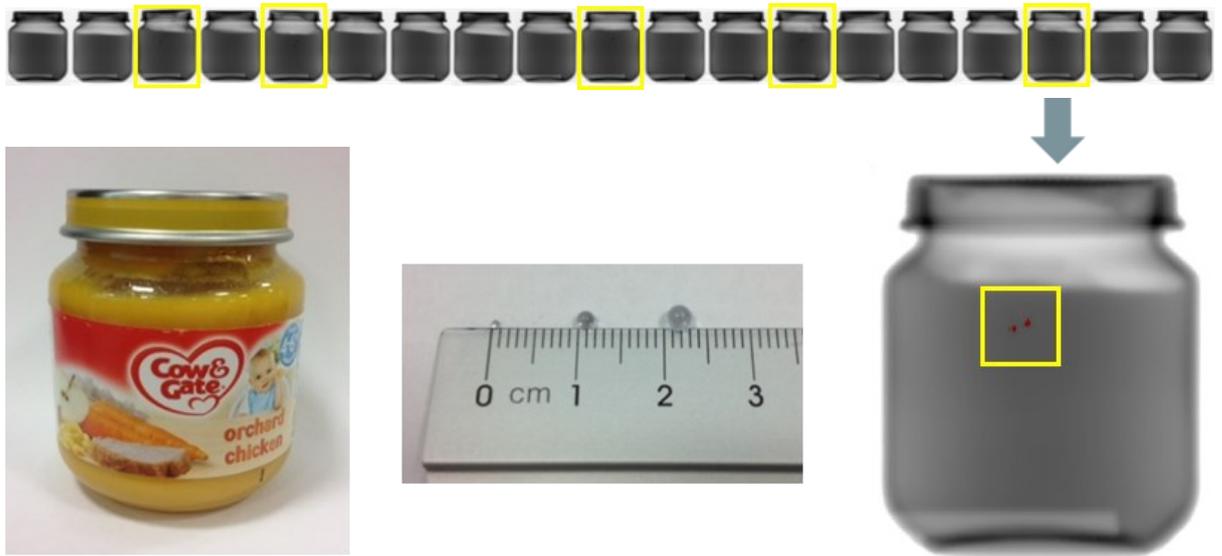
See more...

-  Glass contaminants detected in glass jars of baby food
-  Glass contaminants down to 1 mm diameter
-  Quantitative Pass/Fail threshold criteria

...with IBEX

-  IBEX technology reveals contrast between materials
-  Retrofittable to existing flat-panel and line scan detectors
-  Si, CdTe and other detector technologies supported

DETECTION OF SMALL, LOW-CONTRAST CONTAMINANTS



Top: the jars tested with contaminated jars highlighted in yellow. Above left: one of the jars in the test. Above centre: example glass bead contaminants. Above right: IBEX materials output image showing the contaminants in red.

Making the invisible visible

Experiment

Five jars of puréed baby food were deliberately contaminated with glass beads 1mm, 2 mm and 3 mm in diameter.

Twenty uncontaminated jars were first measured in order to train the analysis system. Then, 19 jars, including the five which had been deliberately contaminated, were measured in the test run. The jars were measured using a conventional X-ray source and detector equipped with IBEX MAP technology.

All five contaminated jars were correctly identified, with a clear, quantitative distinction between contaminated and uncontaminated jars (see plot, right).

Conclusions

IBEX technology applied in conventional X-ray equipment has successfully detected small glass contaminants in

glass jars of baby food – a problem with which current X-ray inspection methods struggle.

Quantitative materials discrimination enables robust Pass/Fail thresholds to be set.

