

Linear inspection of DIPs -

A valid alternative to conventional inspection methods for the inspection of lyophilized products in vials

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Background

The inspection of difficult to inspect products (DIP) such as lyophilized parenterals is a challenge due to various influencing factors such as the glass quality, the composition of the material and the resulting optical properties. With these products, the conventional rotation approach does not offer any advantage and is unnecessarily complicated.

How does this multi colored illumination work?

By illuminating the container in one position using different lighting methods such as transmitted light and incident light, an inspection image with a lot of information is obtained. If you now also use different colors for the different lighting methods, the information content increases significantly once again.

With this newly acquired information, intelligent evaluation methods can then also reliably inspect these DIPs.



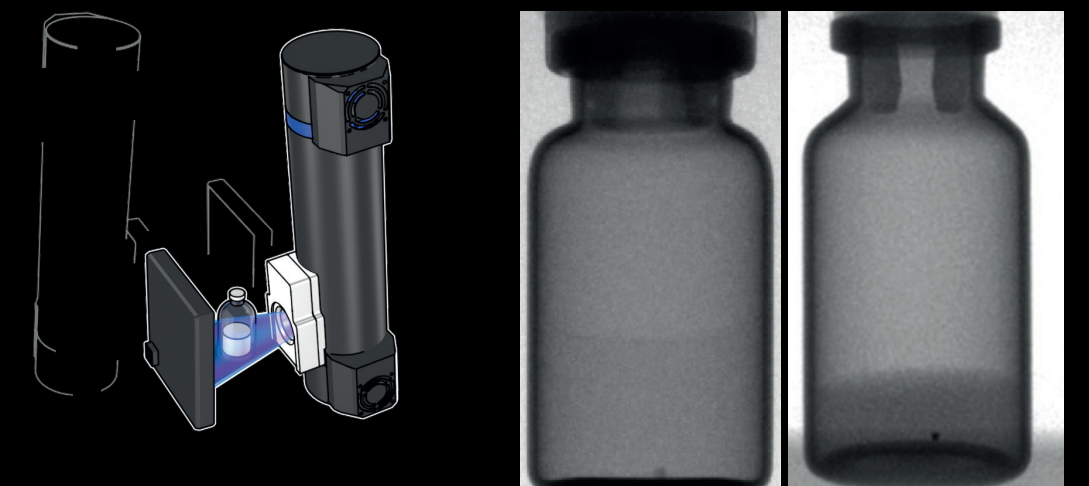
What are the challenges of inspecting lyophilized products?

In particular, very non-homogeneous lyo cakes and even broken ones can be the everyday production standard. This appearance is very challenging for visual inspection and is usually very difficult to overcome using conventional methods.



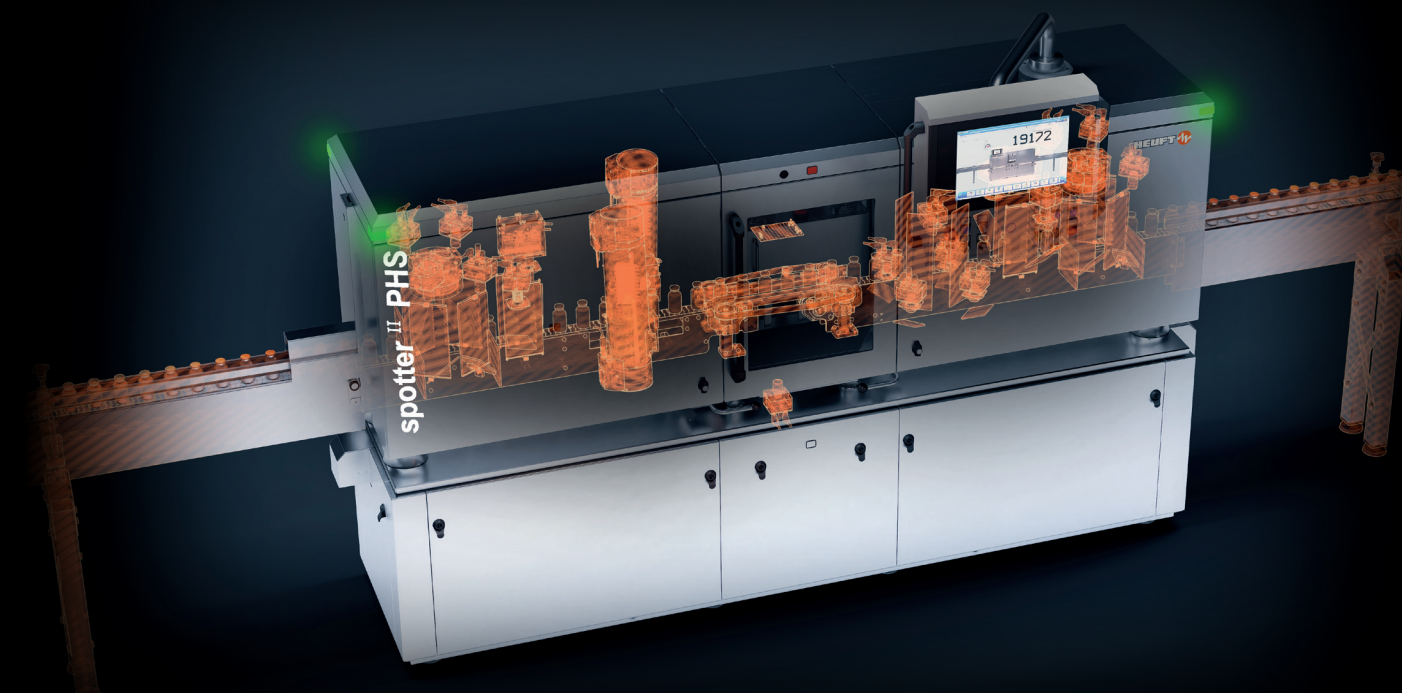
What inspection options are there beyond the camera-based inspection?

In addition to optical camera inspection, other previously invisible defects in the lyo cake, such as glass fragments or metal particles, can also be made visible using pulsed X-ray technology.



How to best deal with these challenges?

The use of novel inspection methods specifically tailored to overcome these difficult optical properties can allow for reliable detection of faults that would have previously faded into the background noise. The use of multi-colored illumination in combination with different lighting principles in one inspection image makes it possible to highlight special defects but also to neglect common container structures.



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