

Early preform quality inspection avoids waste

Exact colour match



The ColorWatcher Integrated is implemented directly into the production machine, inspecting preforms immediately after they are produced.

When it comes to preforms, even the smallest defects and deviations might have a fatal outcome when the preform is processed into its final product. To avoid this from the start, a thorough inspection is essential. Among the most obvious product characteristics to be inspected is the colour. A newly developed inspection system by German company Intravis detects colour deviations immediately after the preform production.

Due to colour deviations in preform production, large amounts of waste can be produced as the quality inspection is done mostly at the end of the production line and deviations are detected at this late stage. As a result, entire batches can turn out to be unusable or are substandard when delivered. In the worst case, a product recall can happen, causing substantial costs and seriously damaging a company's image.

An exact and objective inspection of preforms is necessary, ideally immediately after the production of the product. The space in the production line is however very limited and for an additional inspection system there is little or no floor space. A manual inspection is not possible either as the usual gauges are not suitable for use in the production environment.

An option to meet inspection requirements at this stage however is the use of the ColorWatcher Integrated. The newly developed inspection system of the German company Intravis is made to detect and display exact and reliable data about the colour deviations of the preforms immediately after their production.

The ColorWatcher Integrated is a measuring and warning system that inspects transparent and translucent preforms. It does not require its own floor space but instead is integrated into the injection moulding machine, inspecting every shot. Its camera is located above the tooling plate where the preforms are cooled down directly after the injection process. Here, it takes images of the top row of preforms. The steady position of the inspection objects ensures an exact and reproducible measuring condition

and accordingly exact measurement. The L*a*b* values of the images are calculated and immediately compared to the existing reference data indicating if they deviate from that reference colour. The values are indicated before the next shot is produced. This is a clear benefit for users: they can intervene in the production process before more shots with defective preforms are produced.

With many vision based quality inspection systems, the user has to program the software to adjust it to their own requirements. This, in turn, requires a deep understanding of the system, resulting in an undesirable interruption to daily production. This step is unnecessary with the ColorWatcher Integrated through its user-friendly and self-explanatory software.

Preventing defects

For years, the goal of quality inspection in the plastic packaging industry was to sort good parts from bad parts and eject the latter. Delivering flawless quality meant setting the sorting loop in a way that all defective objects were ejected. But the more inaccurate a sorting system works, the wider the setpoint has to be chosen. Consequently, more and more objects are sorted out that would still be defined as good by the human eye and definitely could be sold. Especially when good-bad-decisions are made upon a small amount of data resulting from insufficient camera resolution, the ejection might reach a high rate.

Today's inspection systems go a step further: They create extensive statistics and display them. The collected data is not displayed in pure numbers but visualised in clear diagrams. Deviations and the most frequent defect types of the specific production lines are apparent at a glance. This reveals a lot about how defects develop and where they most occur. But a basic problem remains: Defects still occur and flawless batches are only possible if bad parts are ejected.

To avoid this, the ColorWatcher Integrated has the goal of preventing product defects from occurring in the first place. Its software gives a warning signal as soon as a predefined limit in the colour range is reached or

