

Small bottles with great empty bottle inspection

| Empty Bottle Inspection | miho David 2 | Production Data Acquisition | Rabenhorst | Shot Bottle |

Haus Rabenhorst is a traditional, family-owned company in Rhineland-Palatinate and has been producing fruit and vegetable juices under the Rabenhorst and Rotbäckchen brands for many generations. The company combines holistic principles in its premium juices: from cultivation and processing to storage and transport, quality and ecological action are top priority. This principle is constantly being extended to new product innovations, so that modern juice creations are developed on the basis of the company's traditional close-to-nature and sustainable orientation. One of the current trends in the field of fruit and vegetable juice drinks: fruit and vegetable shots. Trends come and go or they have the potential to establish themselves in the long term. This chance exists whenever existing or new consumer needs are not or only insufficiently satisfied by existing product categories.



The shot bottle with a height of just 94.0 mm in the inlet of the miho David 2. © all miho Inspektionssysteme GmbH

Haus Rabenhorst believes in the sustainable establishment of the Shots category. Since important category attributes such as “quality”, “naturalness” and “functionality” correspond very well with the core of the Rabenhorst and Rotbäckchen brands, Haus Rabenhorst has decided to launch it. The material glass in the typical brown branded bottle was never an open question, but the production had to be adapted for the small shots size.

The challenge for miho

Due to its small format, the new shot bottle could not be inspected with the inspection technology previously available at Rabenhorst like all the other bottle sizes used. Therefore, a different solution had to be found for the particularly small Shot bottles. Premium juice manufacturer Rabenhorst hired miho to take care of this special requirement:

The task given to miho was, on the one hand, to ensure that the new empty bottle inspector reliably detects all bottle faults relevant for Rabenhorst before filling. Due to its height of just 94.0 mm and a diameter of 40.5 mm (with a nominal volume of 60 mL), this was no easy task and certainly on the limit. So it quickly became clear that the miho inspection machine in its standard configuration could not be used here. An empty bottle inspector like this usually processes bottle material in the range of 200–1,000 mL nominal volume.

Due to miho's more than 40 years of experience in image processing and in the area of control and inspection technology, these areas were a standard task. Of course, all of this was combined with the excellent test bottle management via transponder, the proven self-monitoring of each inspection and rejection unit as well as the extensive miho AWeS production data acquisition with data buffering for up to 7 days in case of network failure. There were also no hurdles in terms of camera technology or recognition algorithms. It was rather a matter of constructional, mechanical hurdles: the height of the transport belts, suitable safety covers, the adjustment range of the inspection head, etc.

The requirements for the inspection itself, such as defect size or detection accuracy, were not allowed to fall behind. Because with shot bottles, one speaks of direct consumption from the container.

In order to ensure clean bottle guidance, a special drive and transport concept was designed for the empty bottle inspector, the XS variant, which on the one hand makes it possible to transport the shot bottle safely within the machine and on the other hand guarantees perfect inspection of the sealing surface and the bottle base.

And finally, there were other challenges to be solved: For space reasons, installation between the rinser and filler was not possible. Therefore, a new position had to be found that would allow the machine to be used without any problems and without the need for conversions. The position was finally found, the inspection machine now finds its place between the new glass placer/new glass depalletiser and the rinser.

The best solution was a bypass. This means that the shot bottle can be inspected perfectly by the miho inspection machine via the bypass during production. If a different bottle size is produced, these bottles do not run over the bypass but directly to the filler and are inspected at a later point in time. Mechanical changes had to be made to the conveyors for this, but thanks to the miho Conveyance conveyor construction program, these were carried out without any problems and could be integrated perfectly into the existing system. The integration of the bypass into the existing belt control system was carried out by another Rabenhorst partner.

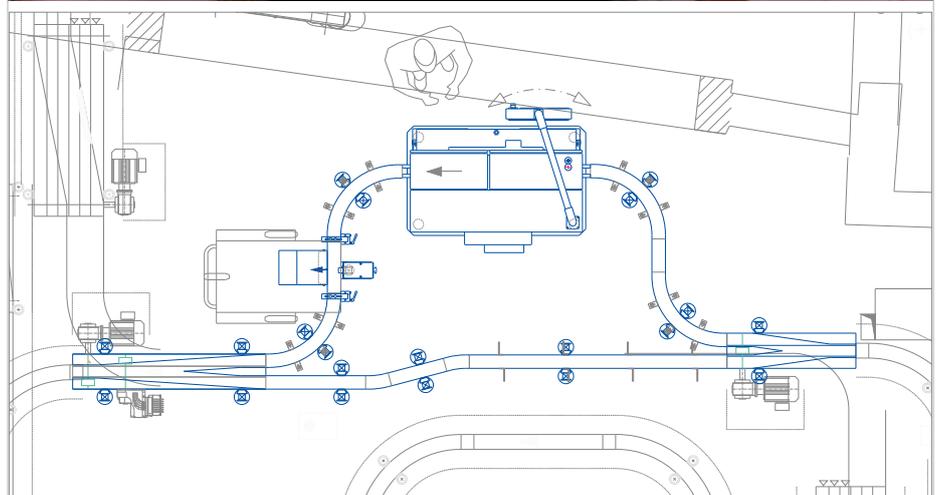
Dr. Markus Grumann, Managing Director at miho is highly satisfied: "The project at Rabenhorst challenged us as a team and the extremely tight project schedule would not have allowed any disruption. It took just 11 weeks from the first contact to the commissioning of the empty bottle inspection system. We are all glad that everything went so well, also thanks to such a professional client as our partner.

From the very beginning we wanted to design the miho David 2 in the new constructive version for the smallest containers as flexibly as possible. Circular, oval or square container shapes can be inspected as well as containers made of glass or plastic. We have thus further developed our modular miho David 2 for bottlers of shots, smoothies and spirits. But also for the food sector (baby food, jam, ...) ...

... which miho customers all over the world who fill into the smallest containers can confirm.



Author:
Herbert Liebich
miho Inspektionssysteme GmbH
www.miho.de



The miho David 2 inspecting the empty shots bottle at Rabenhorst. Using a mechanical diverter (see layout), the shots bottles travel from the right side of the depalletiser via the bypass through the empty bottle inspector and further to the right towards the rinser.