

# Inhale easy ...

Since 2004, the Respimat® has been ensuring easy inhalation for patients with diseases such as asthma and COPD. In 2019, Boehringer Ingelheim launched the new generation of this inhaler: Now that multiple filling is possible with up to six active agent cartridges, this Respimat® re-usable is disposed of less frequently. In an interview, Markus Kirchner (Head of Engineering Assembly, Boehringer Ingelheim microParts GmbH) and Stefan Gais (Senior Sales Director, Harro Höfliger) report about the collaboration related to the environmentally friendly device.

**Mr. Kirchner, what is the link between you and the Respimat®?**

When I joined Boehringer Ingelheim microParts in 2007, the Respimat® with its high complexity, combined with the propellant-free drive and the active long lasting soft mist, fascinated me right from the start. In addition, the high demands placed on production and verification processes, make an engineer's tasks challenging and interesting. From 2007 to the present, I have been able to

work in the three manufacturing technology areas in various positions, actively contributing to and shaping the increase in capacity and the refinement of the manufacturing and testing processes.

**Since 2019, there is a re-usable version. Can you give us more details?**

The active agent cartridge can be replaced up to six times per device – patients need only two instead of twelve

inhalers per year. Besides an improved environmental footprint, another advantage is simplified usage, which we optimized based on patient feedback. For example, the housing is now longer, facilitating turning and thus loading of the Respimat®. The numeric dose indicator has large numbers and is color coded, making it easy to see the leftover doses before locking. The highlight, however, is the automatic detachment of the transparent case bottom part the moment the cartridge is locked and has to be replaced. Despite these optimizations, only the dose indicator and the case assembly are new. This enabled us to keep changes in production relatively small.

**For the production of the re-usable Respimat® you rely, among other things, on machines from Harro Höfliger. Why?**

We have already used technology from Harro Höfliger for the production of the established Respimat®. Because of the good partnership in the past, it was an obvious choice to cooperate with Harro Höfliger again regarding the production of the Respimat® re-usable. Our collective experience has resulted in many synergies. For example, we jointly developed special exchange sets to enable flexible production. ■

Markus Kirchner explains how the environment and the patients benefit from the new Respimat®.



*"Our collective experience has resulted in many synergies."*

Markus Kirchner, Head of Engineering Assembly at Boehringer Ingelheim microParts GmbH

**Mr. Gais, what features make the assembly technology in the machines for Boehringer Ingelheim microParts stand out?**

A special challenge was to adapt the machine's assembly technology for the established Respimat® version in such a way that the re-usable inhaler version can be produced with it too. It helped that the core components of the Respimat® and the cartridge itself are identical in both versions. As a result, changes in the assembly technology were only necessary at a late stage in the process – when the inner subassemblies are inserted into the new housing. In close cooperation, we have succeeded in making the necessary adjustments by developing new exchange sets. Depending on the order situation, Boehringer Ingelheim microParts can now flexibly switch from one Respimat® version to the other.

**Apart from the assembly technology, Harro Höfliger has also designed two new lines for the re-usable Respimat®. What are their tasks?**

In the Respimat® re-usable, cartridge and dose indicator are connected with each other. Both machines have the core task to weld these components with each other. It sounds easy, but the technology behind it is sophisticated. First, various camera controls verify the flawless quality of all dose indicators and cartridges. Then a robot gripper system joins the parts together and welds them at 16 ultrasonic stations working in parallel. A test mechanism makes sure that every dose-indicator-cartridge-combination works as intended.

**The control cabinets are located on top of these lines. How did that come about?**

Ultrasonic welding is time consuming. In order to still achieve maximum output, we use the aforementioned entire 16 welding stations which need a lot of space. At the same time, there were clear specifications regarding the size of the lines: They should not exceed four

meters, which is two and a half meters less than initially planned. For this reason, we arranged, for example, the welding stations in opposite directions on our assembly platform MOT, thus saving a lot of space. In addition, we positioned the control cabinets not next to but directly on top of the machines. They are easily accessible for operators via a staircase. ■

*"To achieve maximum output, we use 16 welding stations."*

Stefan Gais, Senior Sales Director at Harro Höfliger



Maximum output in a small space: It was not easy to meet the requirements of Boehringer Ingelheim for the lines. Stefan Gais explains how it succeeded.

**... and minimize plastic**