



Inhale – and breathe freely again

For about 20 years, the number of people with asthma and COPD disorders has been increasing continuously. Inhalable drugs provide relief to those affected. With NEXThaler®, Chiesi offers patients a simple and safe inhalation device. For the filling and final assembly of the inhalers, the Italian enterprise trusts in Harro Höfliger.

The World Health Organization (WHO) currently estimates that up to 600 million people are affected by asthma and COPD worldwide. Many patients use inhalable drugs for therapy purposes. However, in many cases they do not use the inhalers correctly which reduces the therapy success or can potentially lead to a health deterioration.

The pharmaceutical company Chiesi with headquarters in Parma has recognized this problem and has developed the NEXThaler®, a powder inhaler which is both easy to handle and safe to use. Its intuitive operation ensures that the intended dose reliably reaches the lungs. Furthermore, a highly effective combination of proven active ingredients assures a well-tolerated treatment in case of difficulty breathing and dyspnea. After every successful inhalation process, a counter indicates to the user the number of medication doses remaining.

When planning to expand their production capacity in 2013, the Italian enterprise banked on the assembly and filling expertise of Harro Höfliger. The turnkey system which was put into operation in the French Blois in 2015, fills and assembles up to 70 units per minute.

Filled with high precision

At the start of the filling process, the empty inhaler housings are taken from trays and conveyed to the intermittent oval turret on a puck belt. Gripper units push the housings into the production machine. This is followed by a performance test: After opening the inhaler, a compressed air impulse opens a small flap in the air intake shaft, called the Breath Actuation Mechanism (BAM). This mechanism ensures that the patient inhales deeply enough and, at the same time, serves to activate the counting unit when the inhaler is closed.

Next the empty weight of the inhaler is determined as the basis for the subsequent fill quantity control. A high-precision auger doser fills the powder reservoir of the NEXThaler®, which is then weighed again. The system immediately detects deviations from the defined fill quantity and sorts out inhalers exceeding or falling below the fill weight limit. The appropriate adjustment of the fill system is performed by means of a trend control. The active ventilation of the containment system for operator protection constitutes a major challenge during weighing. It must not compromise the machine's very sensitive weighing units.

Perfect closure

In the next step the caps of the powder reservoirs are fed to the line from a conveyor unit. A high-speed robot arm picks up the individual caps with the correct orientation and places them properly positioned into a transport system for assembly. In order to avoid downtimes of the assembly line at this position, the robot arm works over ten percent faster than required. The subsequent product accumulation controls the buffer quantity. A measuring system detects any improperly mounted caps and rejects the respective devices. Following the detection process, the mouthpieces, which are fed transversely in order to save space, are brought into the lengthwise position for assembly. The mouthpieces are mounted and checked for correct fastening in an assembly station. Closing the NEXThaler® triggers the counting mechanism and a camera checks the counter for correct functionality based on the displayed counter position. An additional control station ensures that only the good products advance and, ultimately, reach the hands of the patients. ■

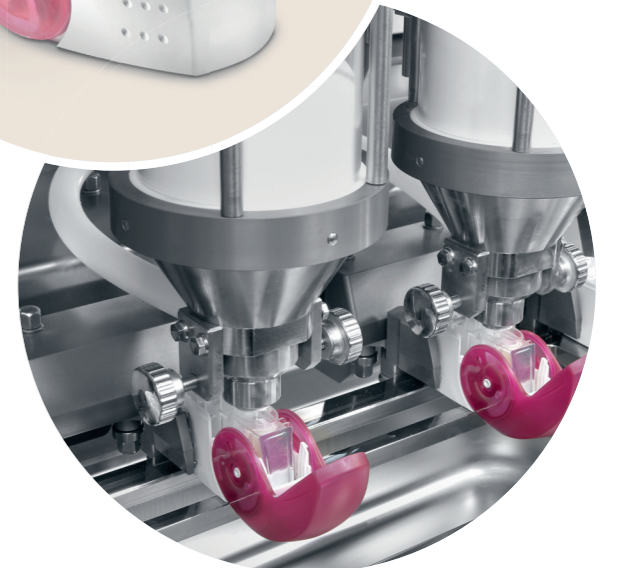
About Chiesi

Chiesi is an international research-focused health-care group headquartered in Parma (Italy), with over 80 years of experience in the pharmaceutical industry. Chiesi researches, develops and markets innovative drugs in the respiratory therapeutics, specialized medicine and rare diseases areas. Besides Parma, Chiesi has Research & Development groups in France, USA, UK, Sweden and Denmark.

shutterstock.com/Dennis Tabler, Helmar Länig



Closing the inhaler triggers the counting mechanism.



The powder reservoir of the NEXThaler® is filled by means of a high-precision auger doser.

“The wealth of ideas and innovative solutions which the Harro Höfliger team showed during the various project phases really impressed us.”

Roberto Bugarin,
Engineering Director at Chiesi