



# Capsule filling machines – perfectly integrated!

Pfizer in Freiburg, Germany, operates with  
GKF machines from Bosch for over 30 years

Sustainable, efficient and fully automated is the best way to describe the production of Pfizer Manufacturing GmbH in Freiburg, Germany. The site, currently employing 950 staff, has built up a reputation for environmental protection and sustainability. It is also known beyond the Pfizer group for its high competence in lean manufacturing. Every year, six billion tablets and capsules, as well as more than

200 million drug packages in more than 3000 layouts for the global market are produced.

#### **Fully automated on three levels**

To achieve these high quantities, all production and transportation processes are highly automated. Capsule filling operations are performed on three building levels.

The second floor accommodates the powder containers and the empty capsules. On this level, the base material is conveyed in containers via remote-controlled automated guided vehicles (AGVs). The powder is directed through the ceiling straight into the capsule filling machine situated on the first floor, where it is processed into filled capsules. On the ground floor, a container collects the weighed capsules, which are then transferred to the subsequent packaging process.

“There is one operator working on the first floor,” Eric Fisch, production engineer at Pfizer in Freiburg, explains. “The two other floors are frequented by specialist personnel for cleaning and maintenance.” The capsule filling machines also set standards in terms of energy efficiency. “Right from the beginning, we planned the factory so that the powder flow can take place without energy input,” Eric Fisch says. “And the concept has stood the test until this very day.”

#### Several generations beneath the same roof

What Pfizer needs for three-shift operations is high-performing, efficient and flexible equipment. The pharmaceutical producer has been working with Bosch Packaging Technology for more than 30 years. Several generations of GKF capsule filling machines have already carried out their

duty in Freiburg since the beginning of the 1980s. From 2001 onwards, five machines of the GKF 2000 series are in consistent operation. “All of them contribute to a good production,” Fisch underlines. After two GKF 2000 ASB 100%, two further GKF 2500 ASB 100% were added. The latest addition is a GKF 2500 S featuring the proven and patented slide-gate system in 2015.

The GKF 2500 capsule filling machines with outputs of up to 150 000 capsules belong to the high-performance range. The GKF 2500 ASB 100% is additionally equipped with an integrated checkweigher that weighs each capsule individually. Only capsules with weights within the tolerance limit are accepted. The low amount of format parts enables fast and easy format and product changeovers. In addition, the machine is easy to adapt; it requires only a few facts to adjust the weight and start production.

#### Less product loss thanks to slide-gate

“When investing in new machines, we always consider the product first,” says Eric Fisch. “For this reason we define the required filling technology for each drug, before we determine the parameters the machine must fulfil.” The latest capsule filling machine acquired in 2015 ideally needed to run at higher speeds and be particularly easy to maintain. Moreover, cleaning times, output and synergies with the existing machinery park played an important role in this decision – all of them criteria, which the GKF 2500 from Bosch fulfils.

In particular, the slide-gate system adds further advantages: the slide-gate is especially gentle on the product and achieves lower powder loss in terms of dust in the suction. Eric Fisch confirms, “thanks to the slide-gate, we were able to reduce product loss to two percent, or rather halve it. Although the result was already very good before, every percent makes itself felt with our products. All in all, the Bosch machines are very efficient regarding spare parts and general maintenance.”

#### Continuous optimization

The production engineer is also convinced of the underlying technology and machine operation. “New operators can be trained quickly and understand the machine without extensive instructions.” This statement is especially true for Bosch’s KKE. Thanks to its gravimetric weighing technology, the checkweigher is a lot easier to



operate than alternative measuring systems. As for the GKF capsule filling machines, Eric Fisch points out their easy trouble shooting. “You do not have to be a qualified specialist, and you do not need to dismantle the entire machine to find a small defect.”

Over the years Pfizer has accumulated remarkable knowledge, which is continuously used to optimize processes and machine details. For instance, Pfizer and Bosch synchronized the GKF and KKE so that individually regulated speeds ensure consistent filling. According to the lean manufacturing strategy, the company is constantly looking for further optimization potential. This includes regular software updates, as well as the ideal adaptation of all machines to the existing room layout. For example, Pfizer was one of the first customers Bosch supplied with a separate control cabinet.

### **The same language**

Despite space constraints, production capabilities in Freiburg are far from reaching their limits. An entirely new manufacturing plant is planned for 2017, and the

fully automated three-floor factory will also be expanded. Thus, capsule production and filling operations will be reinforced by two further machines from the GKF series in the near future. Main prerequisite for the selection of a suitable supplier is the technology. However, geographical proximity also plays an important role for Eric Fisch. “Our contacts at Bosch are on site really fast. What’s more, we speak the same language,” he says. And he not only means the local language, but also the technical expertise and the trustful cooperation between both companies.

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