

PHARMA SOLID KNOWLEDGE REPORT

GKF – Dosing of Mini-tablets into Capsules.

Background

There is a market trend for individual dose medications to use different counts of mini-tablets (appr. 2x2mm) in capsules. Small batches, high value products and on-line quality inspection require dosing and production solutions that ensure stable, monitored processes to achieve high dosing accuracy, high yield and gentle tablet handling – duly monitored with data storage. The GKF size part free mini-tablet dosing technology covers these needs – read more:



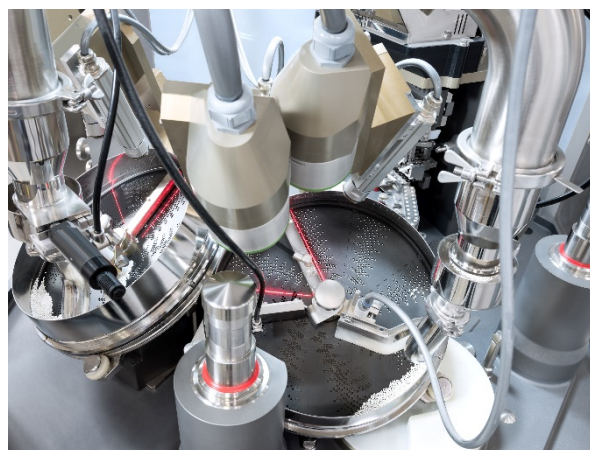
PROVEN GKF TABLET DOSING AND INSPECTION TECHNOLOGY WITH GENTLE TABLET HANDLING

The GKF tablet dosing station is well known and proven for accurate dosing of various tablet sizes and shapes into hard shell capsules. It also ensures a very gentle tablet handling with low stress for the tablet, suitable for uncoated as well as coated tablets. The tablets are guided from the integrated tablet hopper into the tablet dosing station. The tablets are sorted into the dosing bores of the rotating tablet disk. The predefined number of tablets are transferred into the capsule body. The tablet disk defines the count of tablets per capsule. The process is identical for dosing of tablets into different capsule sizes (000 to 5), as well as different capsule types (e.g. ConiSnap® Hard Gelatin Capsules, ConiSnap®Sprinkle Capsules, VCaps® Plus).

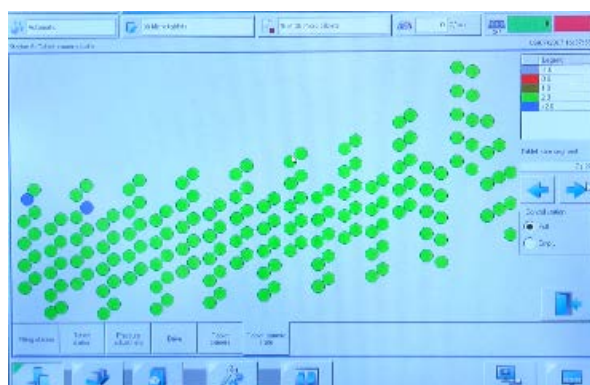
Up to 3 tablet dosing stations can be mounted on a GKF.

According to the size of the tablet, the recommended hardness is 12 N for mini-tablets and 15 N for larger tablets – or higher. The Critical Process Parameters (CPPs) such as machine speed and blowing air can be individually set and stored. If needed, an ionization bar and other customized solutions are available. The good accessibility for handling and the small amount of residual tablets are further advantages of the GKF tablet dosing technology.

In case of 100% process inspection either a KKE gravimetric checkweigher or an integrated camera system are used. The camera system ensures precise tablet dosing and reliable detection and rejection of faulty products. For this purpose, the presence of the tablets in the dosing disk are checked optically at two positions: directly before dosing and after dosing. In addition, these results are stored in the GKF batch report. During production the operator is supported by clearly designed HMI graphical HMI overviews.



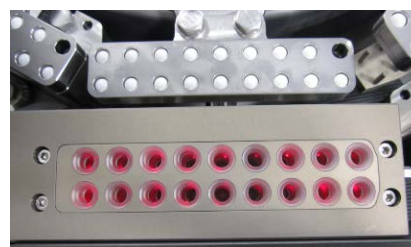
GKF with 2 tablet stations and camera control on a GKF2600



HMI with camera control result of 10 tablets

WHAT IS NEW?

Integrated 100% inspection technology for counting of tablets
For the purpose of tablet counting, a light barrier is integrated in the tablet chute between size part free tablet dosing disk and capsule body.
The light barrier ensures a reliable count of mini-tablets into each capsule body and – in case of a misfit – the rejection of the faulty capsule. All batch data is stored in the GKF report. This inspection technology convinces by its fast response time. The machine speed is subject to the number of mini-tablets per capsule.



Light barrier system GKF2500 / 2600

GKF EVOLVED FLEXIBLE MINI-TABLET DOSING TECHNOLOGY

The proven and advantageous GKF tablet dosing technology is adapted to cover the special needs for small batches and optimal counting flexibility.

The new size part free mini-tablet dosing technology allows adjusting the count of tablets with a simple HMI-input. Based on the size part free design of the dosing disk itself and in combination with the servo drive technology, any count from 1 to 125 tablets can be dosed into the capsules by only changing the count in the HMI without any changeover work and without any size parts. This leads to optimal dosing flexibility in respect to tablet count and results in time and cost savings, as well as an increase in yield and overall equipment efficiency (OEE).



Size part free dosing disk

Your product is our focus. Our solutions for all your filling needs.

TEST RESULTS: NO TABLET DAMAGE: VERY LITTLE RESIDUAL WASTE AT THE END OF THE BATCH

Extensive testing showed that the GKF mini-tablet dosing system does not damage good quality mini-tablets, whether they were coated or uncoated.

The product loss at the end of a batch is very low.

The dosing system can be run completely empty, when the tablet bed height control reaches the minimum level.

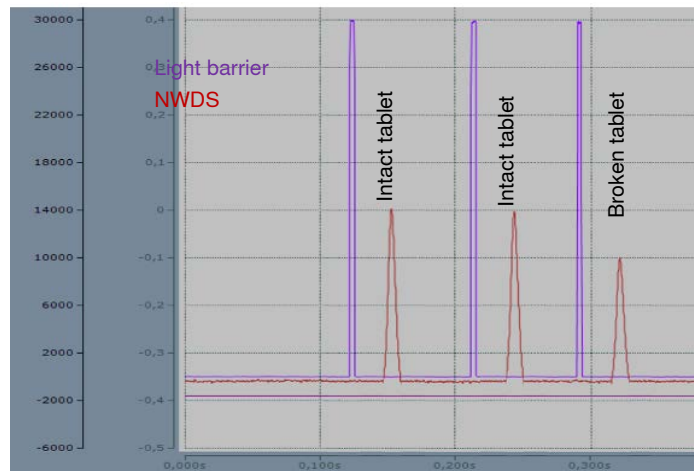
Using a GKF720 and 2x2mm mini-tablets and stopping the batch with the tablet bed minimum level control, the residual product volume result was less than 30g (0,03kg).

INTEGRATED 100% INSPECTION TECHNOLOGY FOR ADDITIONAL DETECTION OF GOOD TABLETS/PIECES OF TABLETS OR TABLET TWINS

A further improvement of 100% inspection technology is provided by using the net weight detection technology (NWDS). In addition to a tablet counting function, the NWDS is able to differentiate between pieces of tablets, good tablets and tablet twins. Due to this data acquisition and data evaluation, the use of the NWDS technology results in a reduction of the machine speed. The 100% process monitoring by the NWDS sensor ensures a reliable rejection of faulty capsules. All data are stored in the batch report of the GKF.

Double safety:

In case 2x 100% inspection is requested, the light barrier system and NWDS technologies could be combined on all 3 dosing stations individually.



Signal display for light barrier as well as NWDS

Conclusion

- The GKF tablet dosing station is optimally suited for gentle dosing of various tablet sizes and shapes into capsules. The well-established GKF tablet dosing disk technology allows a gentle tablet handling and the reliable dosing of capsules. The CPPs such as speed and blowing air can be individually set and stored. Process support and customized solutions are available.
- The newly developed flexible GKF tablet / mini-tablet dosing technology for dosing of different tablet counts works without any changeovers and without any size parts.
- The easy handling, the robust process and the time saving adjustment of tablet counts allow for an efficient production resulting in very high yields and OEE, especially for small batch sizes.
- The evaluated light barrier system is a simple, efficient and reliable technology for tablet counting and 100% process inspection.
- A further improvement is the tablet-dosing-adapted net weight detection system (NWDS). In addition to tablet counting, the NWDS is able to differ between pieces of tablets, good tablets and tablet twins.
- The optimal accessibility for handling and changeover, as well as the small amount of residual tablets are further advantages of the GKF tablet dosing technology. In combination with the 100% process control, this technology meets the current requirements of the pharmaceutical industry perfectly!

More Questions?

You also have processes for optimization?

Please contact us. Our "Engineering Pharmaceutical Service" team will be available with all our experience of over 50 years:

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