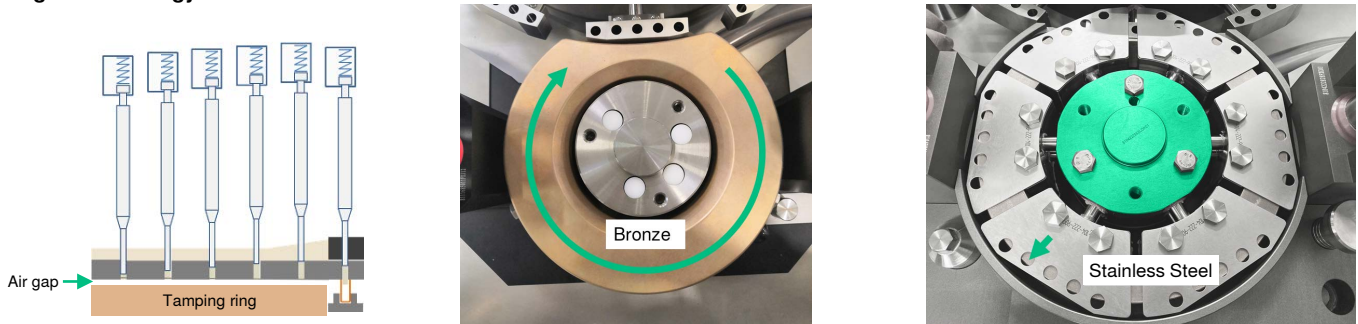


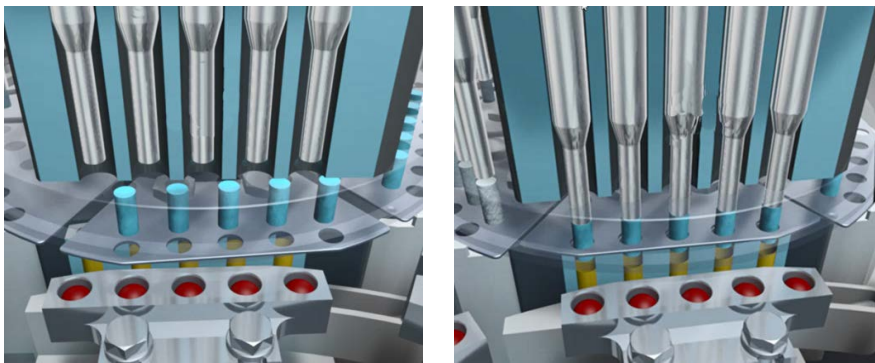
Slide-gate technology in GKF capsule filling machines

The Slide-gate technology was developed for the dosage of products, which could not be tamped and did not form a compact slug. With these stainless steel plates, the air gap between the dosing disc and the tamping ring is eliminated. Furthermore the contact time as well as the friction path on the tamping ring are reduced by 98%+; in case of the friction path down to approx. 7.5 mm. In consequence the product loss is significantly reduced (no air gap) and dosing process effects, like product melting and adhesion, are improved. The use of Slide-gates assures a gentle filling process for sensitive materials, e.g. products for lower dissolution times by reduced compression force.

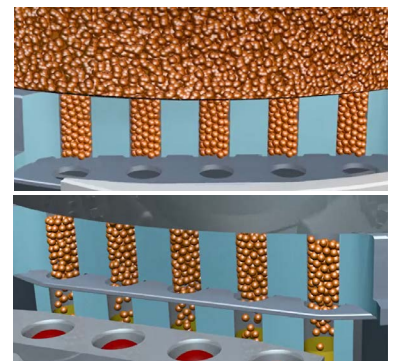
Slide-gate technology



Slide-gate – Powder Dosing



Slide-gate – Pellet Dosing



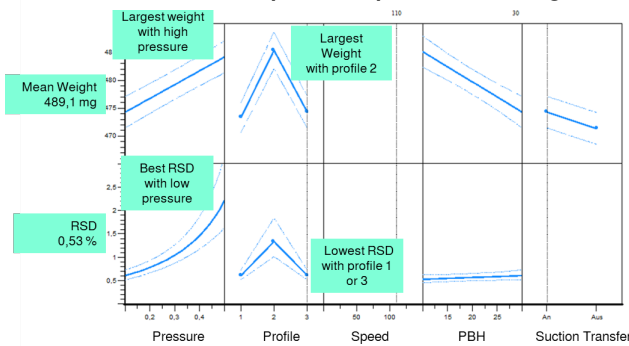
Experimental Studies with/without Slide-gate

- DoE-based APD tests (Automated Process Development) on a GKF 702, to identify optimal setting points of critical process parameters
- Weight inspection of all filled capsules

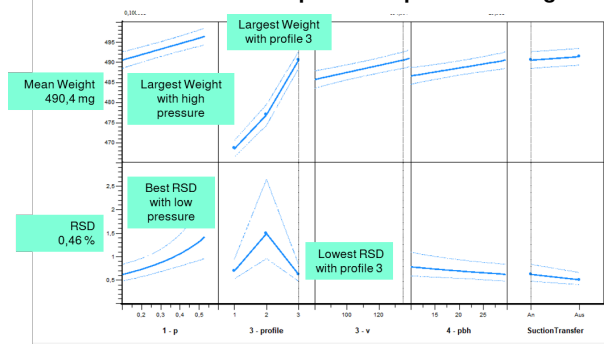
1st Study: Test Material Corn Starch

- Natural product, fine particles ~10 – 280 μm
- Easy to handle, very good slug formation
- Product loss with Slide-gates ~ 0.2 % - Without Slide-gate ~ 0.5 %

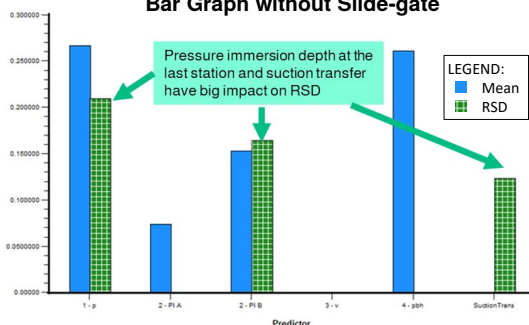
Predicted Response Graph without Slide-gate



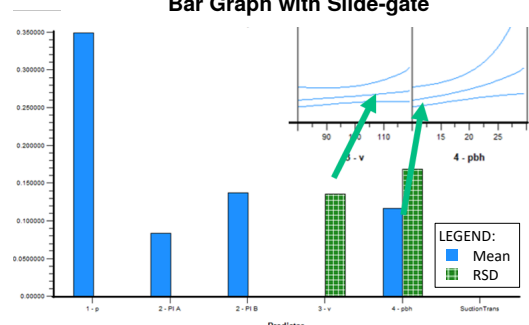
Predicted Response Graph with Slide-gate



Bar Graph without Slide-gate



Bar Graph with Slide-gate



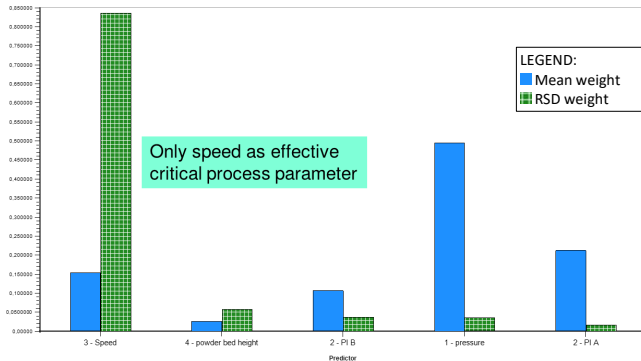
Slide-gate technology at GKF capsule filling machine

2nd Study: Test Material Activated Charcoal Granules

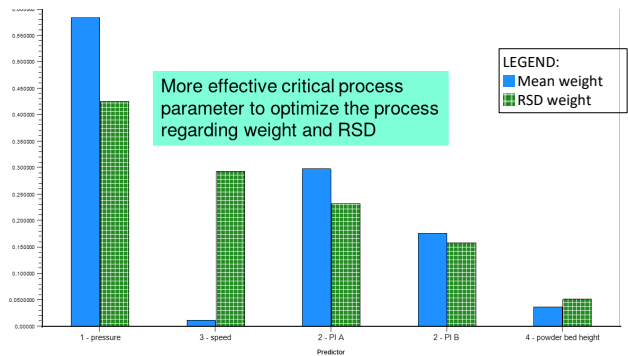
- Hard and coarse granules 0.35 – 1.6 mm
- Not compressible, no slug forming

- Product loss with Slide-gates ~ 2.88 %
- Without Slide-gates ~5.43 %

Analysis of Tests without Slide-gate

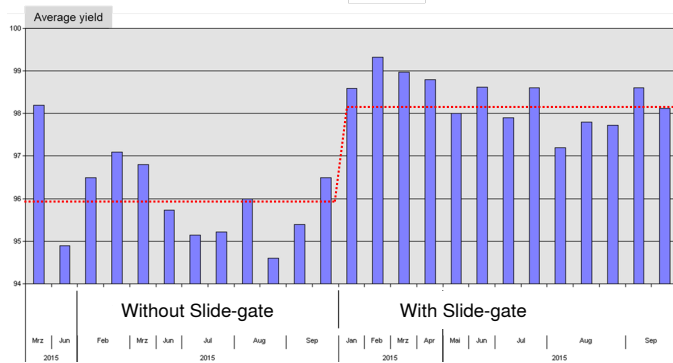


Analysis of Tests with Slide-gate

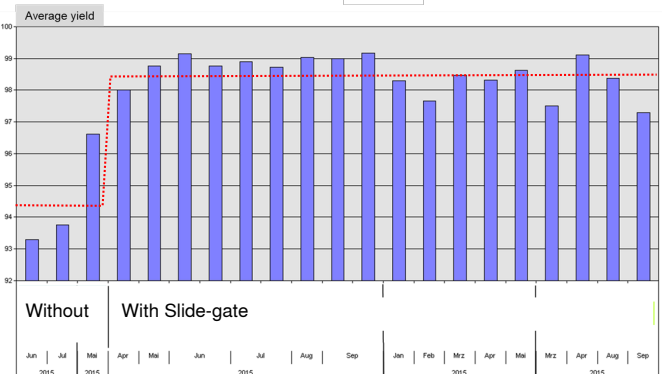


Efficiency Study with GKF in a Pharmaceutical Production

Product A



Product B



Conclusion

- Slide-gate eliminates the air gap between the dosing disc and tamping ring
- Slide-gate allows to run a wider range of products, e.g.:
 - Non-compressible products & granules
 - Sensitive products (dissolution, melting, etc.)
- Dosing of pellets possible
- Slide-gate leads to a significantly reduced product loss and, in consequence, a higher yield
Side effect: less cleaning, longer process times between cleaning, in consequence, a higher OEE
- Slide-gate leads to a higher dosing accuracy
- Slide-gate leads to a higher operation speed, in consequence, a higher OEE
- Almost 1,000 GKF machines in operation worldwide with Slide-gate technology!

Your need is our passion!

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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