

APPLICATION SOLUTIONS

Subject:

Production of fast dissolution tablets. It is not possible to compact the dry powder directly, so it is necessary to mix the powder with liquid and acacia gum. The mixed wet product is dried out very fast and has a poor flowability. The powder must be compacted with low compaction force (about 1,7kN using multiple punches) because of the fast dissolution time. The tablet is fragile and must dry out to get the correct hardness. Different product presentations from 65mg up to approx. 200mg. The product is produced on very old cyclic controlled machines which must be replaced for future production.

Goal:

Continuous production on a force feed rotary tablet press by using 13 x 5.54mm or 8 x 8.64mm multiple punches and achieving the output capacity of 4 existing machines by using actual validable technology

Challenge / conditions:

Powder characteristics:

- Powder build up lumps after a certain time
- Very poor flowability of the powder into the machine fill hopper
- Powder cannot be feed into die as it does not flow (sticky)
- Sticking issues on punch tip
- High variants in weight due to inhomogeneous filling

Desired characteristics of final product:

- Hard tablet after drying
- Fast dissolution time (a couple of seconds in mouth)

KILIAN design proposal:

Material and design adapted to product:

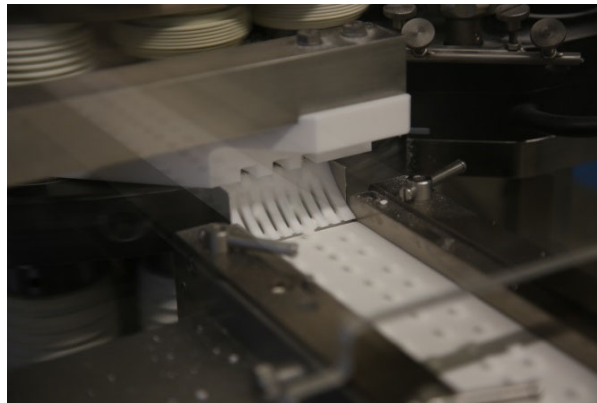
- Special material of feeding tube
- Vibrator system for feeding tube
- Special coating for fill shoe housing
- Fill shoe with 3 paddle wheels; modified study approach
- Innovative design of paddle wheels for homogeneous filling of the die
- Special punch tips to avoid the adhesion of the wet powder
- Customized takeoff system, capable in scraping of fragile tablets (slugs)
- Special design of punch for increasing output



Special material/coatings for feeder and feeding tube



Special punch tips



Innovative take-off system

Result:

Continuous production on a “state-of-the-art” validable tablet press for several hours without any product jam in the feeding system and homogeneous filling of the die. The weight deviation was reduced by 50%, output speed on our S 250 B was up to 230.000Tab/h using 13tip multiple punches.

Additional applications: Any other poor flowing and sticky products.