

PHARMA SOLID KNOWLEDGE REPORT

TPR – Robustness, Stability and High Yield.

Different materials and processes can be implemented to achieve good powder properties for tablet compression. However, even with a good quality control of raw materials and processing parameters, undetected variability in the final blends can impact the results of the tableting process.

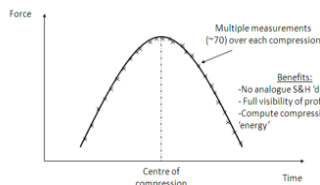
A robust mechanical construction and a stable tableting process, in combination with a fast and reliable control system, will directly correct product density deviations and contribute to good quality production - irrespective of previous manufacturing processes.

COMPACTING FORCES MONITORING X WEIGHT CONTROL FEEDBACK LOOP

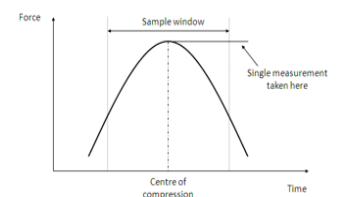


Constant force control system

TPR New 'Total Profile' Method



Traditional 'Sample & Hold' Method

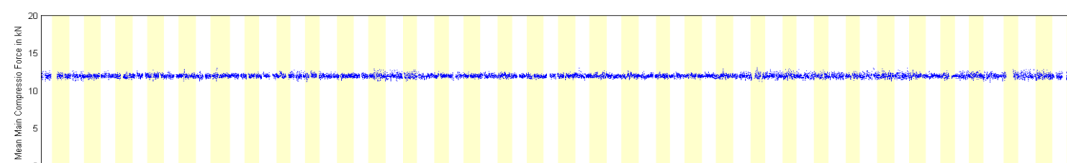


More samplings for better resolution and fast reaction

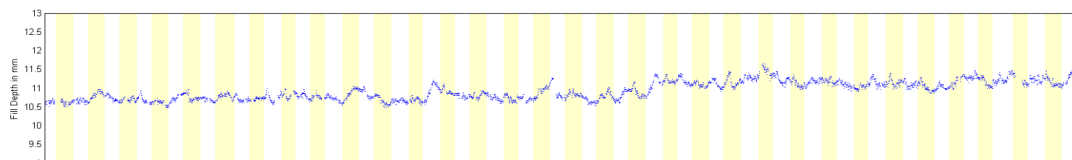
STUDY I – HIGH WEIGHT STABILITY OF TABLETS OVER 90 MINI-BATCHES PRODUCED IN ONE CONTINUOUS RUN

Test Description	
Manufacturing process	Fluid bed wet granulation
Formulation	Lactose/starch placebo
Tablet size	12 mm round
Tablet weight	500 mg (+/- 5 %)
Tablet hardness	120 N
Number of batches	90 batches (1.6 kg each – 144 kg total)

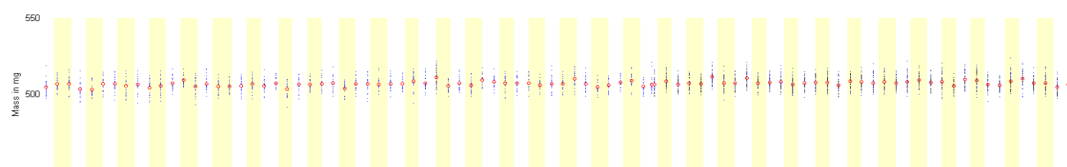
Machine Parameters	
Feeder speed	12 rpm
Turret speed	44 rpm
Results	
Average weight	502.2 mg
% RSD	1.0 %



Main compression force of 90 consecutive batches - continuous compression



Filling depth adjustment of 90 consecutive batches – continuous compression



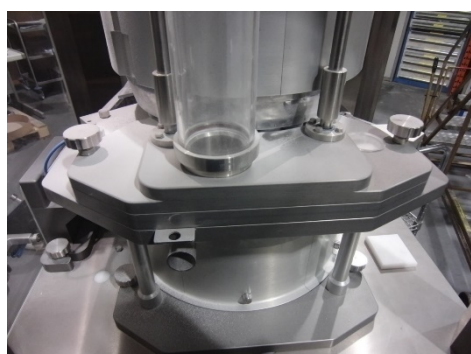
Tablet weight result of 90 consecutive batches - Continuous compression

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Study II – Yield comparison running TPR 200 tablet press with different speeds

Test Description	
Manufacturing process	Simple mixture
Product	Placebo
Tablet size	8 mm round
Tablet weight	200 mg
Batch size 1	84 kg
Batch size 2	125 kg
Total running	Approx. 8 h

Machine Parameters	
Tooling number and type	25 B
Feeder speed	20 rpm
Fill cam size	8 mm
Turret speed trial 1	60 rpm
Output trial 1	90,000 tab/h
Turret speed trial 2	90 rpm
Output trial 2	135,000 tab/h



TPR 200 after 8 hours production before cleaning

Results	Trial 1	Trial 2
Total amount	84.3 kg	125.2 kg
Good tablets	83.3 kg	123.7 kg
Samples	0.6 kg	0.7 kg
Powder in extract / reject	0.4 kg	0.8 kg
<i>Total good tablets + samples</i>	<i>83.9 kg</i>	<i>124.4 kg</i>
YIELD	99.52 %	99.36 %

Conclusion

- Significant changes on powder characteristics can be compensated fast and efficiently by the feedback loop system in the TPR machines, during single as well as multiple batches,
- Due to the robust design, fast control system and stable tableting process the TPR machines are capable of producing good quality tablets at high speed, in a very clean environment and achieving outstanding yields.

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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