

WHITEPAPER

INCREASE TABLET QUALITY BY CHECKING THESE 7 INSPECTION POINTS



Inspecting tooling and press components for wear or defects could be the most important step in improving tablet quality. Certain inspection points are easy to overlook yet can cause significant tablet quality issues and limit tool life. Spend a little time checking the following items for wear or defects to quickly increase tablet quality and reduce tooling cost.

1. WORKING LENGTH

Working length is the most critical punch dimension when using a rotary press as it is responsible for consistency in tablet weight, hardness, and thickness. This should be measured directly and shouldn't exceed a variation of 0.002 inches (0.051 mm) across a set of upper or lower punches. Working length should be spot-checked on new tools when received and thoroughly inspected on in-process tooling.

2. DIE BORE WEAR

Inspecting for die bore wear is often overlooked during in-process tool inspection because, until recently, a lack of effective and affordable technology prevented wear measurement. New machines such as a tooling condition monitor allow tooling wear to be measured and tracked. Die bore wear can cause capping, laminating, and excessive tablet flashing.



3. PUNCH TIP AND CUP WEAR

Punch cups should be checked for a condition called “J-hook.” J-hook is characterized by the edge of the punch tip curling inward toward the punch face. This type of wear can cause capping during tablet production. Punch tips also should be inspected for excessive clearance as they correspond to die bore wear. Just as with die bore wears, this can be measured using a tooling condition monitor or by using an optical comparator. A traditional micrometer cannot properly check tip wear.



TOOLING CONDITION MONITOR

4. PUNCH RETAINERS

A part of the tablet press, punch retainers can play an important role in tablet quality. Check the punch retainer tips for excessive wear. If they are worn out, they should be replaced, as wear can cause variances in tablet weight. Punch retainers are properly adjusted when they can hold the lower punch up against its own weight.

A dial indicator is used to check concentricity on a pressure roll.



5. PRESSURE ROLLS

Another inspection point on the tablet press, pressure rolls, should be checked for “run-out” or concentricity. It is recommended that run-out be measured on the pressure roller as it can cause inconsistencies in tablet hardness and weight. Check by using a dial indicator affixed to a metal pole and magnetic base. Manually spin the roller while the indicator is slightly pressed on the roller. The measurement is taken and averaged to determine whether pressure roll wear is within the tolerance range.

6. CAM WEAR AND DEPTH OF FILL

Cams should be inspected for wear either visually on the machine, or more thoroughly after removal. Cams also should be inspected and selected for proper depth of fill. Too much fill depth can lead to excessive product loss and weight variance in tablets.

7. EJECTION CAMS

Ejection cams should be checked with a straight edge on the die table. The edge should just meet the lower punch tip to ensure there is adequate clearance during tablet takeoff. Setting ejection cams to a proper height will reduce tablet chipping.

Checking the suggested inspection areas and correcting any wear issues or defects is a step that is well worth its time, as it will improve product quality and reduce tooling cost due to wear and breakage.

It's also important for written inspection procedures to be developed to ensure that best practices are followed. It is crucial for staff to thoroughly check that press parts and tooling are within their respective tolerances and in good condition.

Whatever your tableting needs, Natoli Engineering can provide a product or solution to meet them. We're the best in the tablet compression industry at what we do. Contact one of our tablet tooling and press experts to receive a customized solution.

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