Maintaining the Edge

I Holland July, 2014

The User

Thompson & Capper is a contract manufacturer of pharmaceutical and nutritional tablets, based in the UK. They produce over 2.5 billion tablets every year, mainly for clients in Europe.

Thompson & Capper claims to have been involved in the history of tablet making, and its partnership with I Holland has been longstanding. Over the years, medicines, food stuffs and chemicals have formed the bulk of its work but its processes have also included novelties such as tea tablets and tablets used to inflate tennis balls!

The Challenge

I Holland have recently helped Thompson & Capper to make major cost savings on the manufacture of one of its siliceous earth products. The tablets compressed well during the development phase, but it was not until the tablet hit full-scale production that it became clear the formulation was extremely abrasive. The first batch produced only 1.5 million tablets on the Manesty D4, a 20 station machine and wear on the punch tips was visible when de-tooling the press. Only 4.5 million tablets were produced per tool set which is far below output levels expected for typical formulations, where tablet output per set would be in the region of 50-60 million tablets.

The initial tools supplied were on I Holland's standard steel HPG-S (Holland PharmaGrade® Standard). After Thompson & Capper ran three sets, it was obvious to I Holland that a more sophisticated, wear resistant solution was required. Working with the I Holland customer support group it was agreed to run a set of punches with I Holland's PharmaCote® RS coating, applied to HPG-P (Holland PharmaGrade® premium) steel. A full set was supplied and after producing 35

million tablets, they were still in a useable condition. Operators in Thompson & Capper's production team inspected the condition of the tool set daily, and it was finally agreed to remove the coated tools at 45 million tablets.

The Results

According to Kevin Fairhurst, production manager at Thompson & Capper, they were surprised by the results: "We were completely astounded by the increase in tablet output on just one set of tooling. Despite an increase in the cost of the tooling for the coated set, we were able to increase output per set by 10 times. Even then, the decision to stop production at that point was based on wear to the compression rollers, rather than tip wear. More significantly, we were able to save on nine tool changes per set. One tool change taking a whole production shift."

Thompson and Capper has now purchased further sets of PharmaCote® RS coated tooling and is looking to roll it out to other abrasive products as their portfolio expands. It is also considering other solutions from I Holland's PharmaCote® range for its sticky formulations and will be using the TSAR Predict service to facilitate selection of the right coating for these.

The Business Case

Total increase in cost of tooling = **78%**

Total increase in tablet output = **900%**

Tablet Tooling Maintenance

Maintaining tablet tooling should be a priority if you are to produce the best tablet possible. There are many problems that can contribute to tablet manufacturing problems, such as sticking caused by old product adhering to the surface of the punch tip due to inadequate tablet press maintenance and poor condition of tablet tooling.

To ensure tooling is maintained to the highest standard, I Holland has designed a system to ensure complete tablet tool maintenance.

The PharmaCare 7 Step process was developed following years of research and experience in tablet tooling manufacture. Each of the seven steps; clean, assess, repair, measure, polish, lubricate and store has been designed to help users extract the maximum life from tablet tooling. It aims to provide a consistent approach to tooling maintenance and aids production by sitting alongside tablet production processes. Having a coordinated tooling SOP ensures punches and dies are ready for production, with the assurance that they are clean, un-damaged and within specification.

The following steps should be followed:

1. CLEAN: Tooling should be cleaned and dried to remove any oil or product residue.

2. ASSESS: Visually inspect tooling for signs of obvious damage and establish if maintenance is required.

3. REPAIR: Light surface corrosion and damage can be polished out and repaired.

4. MEASURE: Measuring is essential after repair to ensure that critical tooling dimensions have stayed within tolerance and also ensures that tablet weight variation is controlled.

5. POLISH: Polishing should result in a smooth mirror finish.

6. LUBRICATE: Lubrication is important to protect, preserve and aid the smooth operation of tooling.

7. STORE: Storage cabinets should be specially designed to maximise security, safety and minimise damage of tooling during transportation.