

## Case Study: Hemofarm optimises cleaning processes with quick-change parts and second identical die table

An extensive product portfolio and frequent product changes coupled with diverse production requirements make quick and easy cleaning of its tablet presses a vital necessity for Hemofarm, the Serbian pharma manufacturer. The generics producer relies on Romaco Kilian's simple-to-clean machine design for this reason. **Jan Clement**, Sales Director, Romaco Kilian explains how Hemofarm has maximally reduced the cleaning-related downtime of two KTP 420X and KTP 590X high-speed presses at its headquarters in Vršac by using quick-change parts and additional, identical die tables

**H**emofarm is market leader in the Serbian pharmaceutical sector and Serbia's largest exporter of drugs. Since 2006, Hemofarm – which produces more than 6.6 billion tablets and capsules annually – has been a part of the German STADA Group, one of the biggest generic pharmaceutical firms in the world.

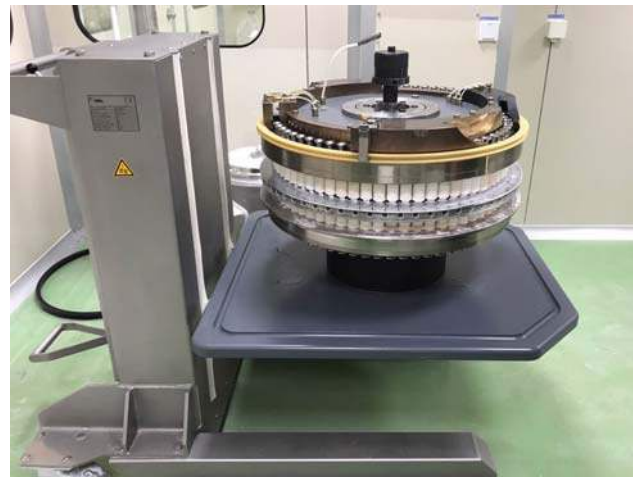
Based in Vršac, Serbia, Hemofarm manufactures both proprietary drugs and products for the STADA Group, many of them on two KTP 420X and 590X tablet presses from Romaco Kilian. The KTP 420X achieves a maximum output of 360,000 mono-layer tablets per hour. The KTP 590X, with a maximum hourly output of 511,200 tablets, was developed for fast changeover between mono- and bi-layer production as well as high-speed production of effervescent tablets.

The demands placed on the tablet presses could hardly be more diverse: all in all, more than 200 pharma products with very different formulations are manufactured in batch sizes from 100 to 2,200 kg. Compression forces from 5 to 80 kN are possible, and the ingredients can be either processed in the form of wet or dry granules or compressed directly. One or two product changes per week take place on the KTP 590X and about three or four on the KTP 420X, so that intensive cleaning of the

tablet processing areas and the product-contacted press parts is a must. On top of this, partial cleaning is carried out between batches of the same product.

### Far fewer components than other presses

Romaco Kilian's modern tablet presses have far fewer components than conventional models in the compaction area, which is decisive for cleaning – a major advantage in everyday production. “The small number of product-contacted parts, the optimised hygiene concept and various special features like the patented closed punch bellows turn cleaning a KTP series



Hemofarm reduces cleaning time by using identical die tables, which are simply exchanged at the end of a batch



Hemofarm is Serbia's largest pharmaceutical company and part of the STADA Group

press into child's play”, explains Ivan Djokic, production manager at the Hemofarm site in Vršac. “All interchangeable parts are lightweight and can be dismantled without tools, and they're just as straightforward to insert again. That's why our machine operators say it's a pleasure working with the Kilian presses.” Even the fill shoe can be removed by a single person without any problem because the gearbox is located outside of the compaction area. Apart from the die table, all of the Kilian press's interchangeable parts weigh less than 15 kg.

### Compact, hermetically sealed compaction area

The Kilian KTP 420X and 590X presses are additionally char-



acterised by strictly separated compaction and service areas, so that tablet dust is prevented from penetrating the machine cabinet. The compaction area is very small and reminiscent of a hermetically sealed, stainless steel cage. The surface to be cleaned has been reduced by about a third, resulting in significantly shorter cleaning times.

All presses in Kilian's KTP series have a very small footprint owing to their compact design and small window areas, for example 1,080 x 1,115 mm for the KTP 420X or no more than 1,230 x 1,325 mm in the case of the KTP 590X. If the windows are opened, the KTP 420X measures a mere 2,303 x 2,268 mm and the KTP 590X 2,567 x 2,472 mm. Thanks to this economical use of space, energy consumption in the cleanroom is proportionally less, leading to sustainably lower running costs.

### Interchangeable parts cleaned while working in batch mode

The two sets of interchangeable parts used by Hemofarm for both tablet presses include the fill shoe, tablet scraper, upper punch cover, suction nozzles and cover between the pressure roller blocks. These parts are kept ready in a closed transfer trolley and are installed in the tablet press's processing area in the event of a product change. The parts removed following the previous batch are cleaned while manufacturing the next batch.

### Additional die table increases availability

In order to further reduce downtime during product changes, Hemofarm uses a second identical die table for each of the two tablet presses in addition to the quick-change parts. "People often underestimate the impact of an identical die table when it comes to optimising a tablet press's OEE and TCO", comments Gerd Heinen, the Area Sales Manager responsible for Hemofarm at Romaco Kilian. "By investing in identical die tables, Hemofarm is demonstrating a pioneering approach."



A single machine operator requires just 10 to 15 minutes to install the interchangeable parts and the die table



Hemofarm currently has eight Romaco Kilian tablet presses in total

The die tables are cleaned by removing the upper cam track together with the upper and lower punches, while the lower cam track remains in the compaction area. To prevent dust from getting into the machine's "gray" area during cleaning, a blind cover is fitted after removing the die table. The punches, dies, and other interchangeable parts are cleaned in an industrial washing machine. The die table itself is manually cleaned at Hemofarm.

A single Hemofarm employee takes care of the complete product change cycle, in-

cluding cleaning the interchangeable parts and the die table, for which around six hours are needed. Only 10 to 15 minutes are required to install the exchanged parts along with the die table. Between two batches of the same product, the tablet presses are partially cleaned using a vacuum cleaner as per the cleaning validation: the die table, dies, and punches as well as all other product-contacted parts remain in the compaction area, and only the fill shoe and inlet funnel are dismantled. This partial cleaning process can be



The KTP 590X high-speed press is in use at Hemofarm 24/7 and is completely retooled and cleaned once or twice a week



The use of identical die tables helps optimise a tablet press's OEE and TCO

completed in approximately one hour.

### "Versatile, robust, and reliable"

Hemofarm has been using Romaco Kilian technologies since 2002, and currently has eight Kilian tablet presses in total operating at its five production sites. The KTP series single-sided rotary presses in Vršac run in three shifts, either five (KTP 420X) or seven (KTP 590X) days a week. "The Kilian presses have proven to be very versatile, robust and reliable in our day-to-day work", Djokic

reports. "And if any service issues arise, we also benefit from the Kilian team's short response times and competent support – with Romaco, the customer really is king, and that's something we very much appreciate."

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