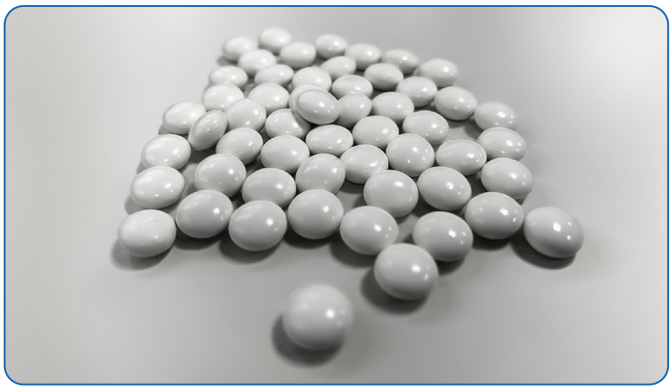
Next-Generation Sugar Coating: Romaco Tecpharm Technology Makes the Difference

INTRODUCTION

Sugar coating is a pharmaceutical technique with a long history. Ancient alchemists and pharmacists already sought ways to mask unpleasant tastes and protect the active ingredients of medicines. The first coatings were made manually, using substances such as wax, honey, or plant-based materials.

Over time, the process evolved and became standardized, giving rise to the sugar coating we know today. Traditionally, this process consisted of applying multiple layers of sugar syrup to the tablet cores, using large rotating pans or drums. Each layer was carefully dried before applying the next, which was a slow and laborious process.

To optimize this process, **Romaco Tecpharm** has developed direct dosing systems, replacing traditional spraying systems. In addition, they use an automatic system for dosing talc, ensuring uniform distribution over the tablet bed.



Final result of the tablet coating process

In this article, we analyze the coating process using one of **Romaco Tecpharm's** coating machines, exploring how the precision and control of these machines allow for consistently high-quality coatings.

A NEW APPROACH: THE INNOVATION OF ROMACO TECPHARM

Traditionally, the sugar coating process has consisted of applying multiple layers of sugar solution to the tablet cores. This method, while effective, has certain limitations. Conventional spraying, for example, can result in uneven distribution of the coating, affecting the quality and uniformity of the final product. In addition, the long drying times required for heat-sensitive products limit the efficiency of the process and can cause product degradation.

Romaco Tecpharm has developed an innovative solution that addresses these challenges. In a standard sugar coating process, two main phases can be distinguished:

1. Initial Bulking Phase: In this stage, a diluted mother solution is applied to create a solid base on which to build the final coating.

2. Finishing Phase: A more concentrated mother solution is used to achieve the desired thickness and shine. During this phase, talc is added to improve the flowability of the dragees and facilitate drying.

To optimize these phases, **Romaco Tecpharm** has implemented a direct and automated dosing system. This system replaces conventional spraying with a single liquid tube that distributes the coating more evenly and accurately.

In addition, an automatic talc dosing system has been incorporated, ensuring that the powder is applied homogeneously to the dragees.

COATING PROCESS

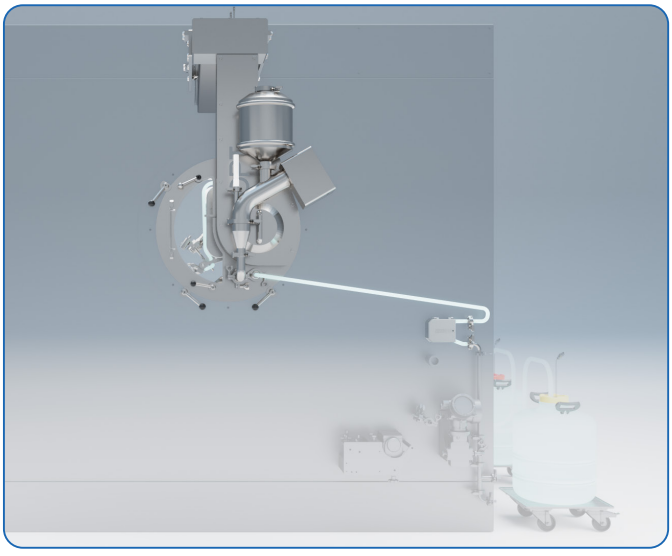
Process Phases Step by Step

1. Preheating: In this phase, the tablets are preheated to the desired temperature for the subsequent application of the solution. This phase is carried out by applying an airflow with controlled humidity and an automatically regulated temperature. Once the desired product temperature is reached, dosing begins.

2. Dosing: In this phase, the diluted mother solution is applied. The dosing is carried out through a collector with different outlets that apply the solution directly to the tablet bed.

During this period, it is important to eliminate the airflow so that the solution is applied uniformly over the entire bed without drying immediately after application. To eliminate the airflow inside the drum, the airflow is diverted through the equipment bypass, keeping the PIDs fixed in order to recover the desired airflow and vacuum for the process as quickly as possible. The controlled dosing of the solution is done through a peristaltic pump connected to the solution reactor. A balance is used to control the amount of dosed solution.

3. Homogenization Phase: After product dosing, the airflow is returned to the equipment, and in this phase, talc is added to reduce friction between tablets, helping the homogeneity of the dosing and the optimal movement of the tablets.



Romaco Tecpharm has implemented a direct and automated dosing system

4. Drying Phase: After the addition of talc, a drying phase is necessary to completely dry the dragee in order to remove the residual moisture that remains in the tablet.

After achieving the desired weight gain for the dragee, phases 2, 3, and 4 are repeated, applying a mother solution to finish achieving the desired bulking of the dragee, giving it the final shiny appearance and the correct shape. The addition of a more diluted solution at the beginning is done to achieve greater adhesion at the beginning and to aid in the drying of the final layers. This bulking phase can occur depending on the product, adding talc or not.

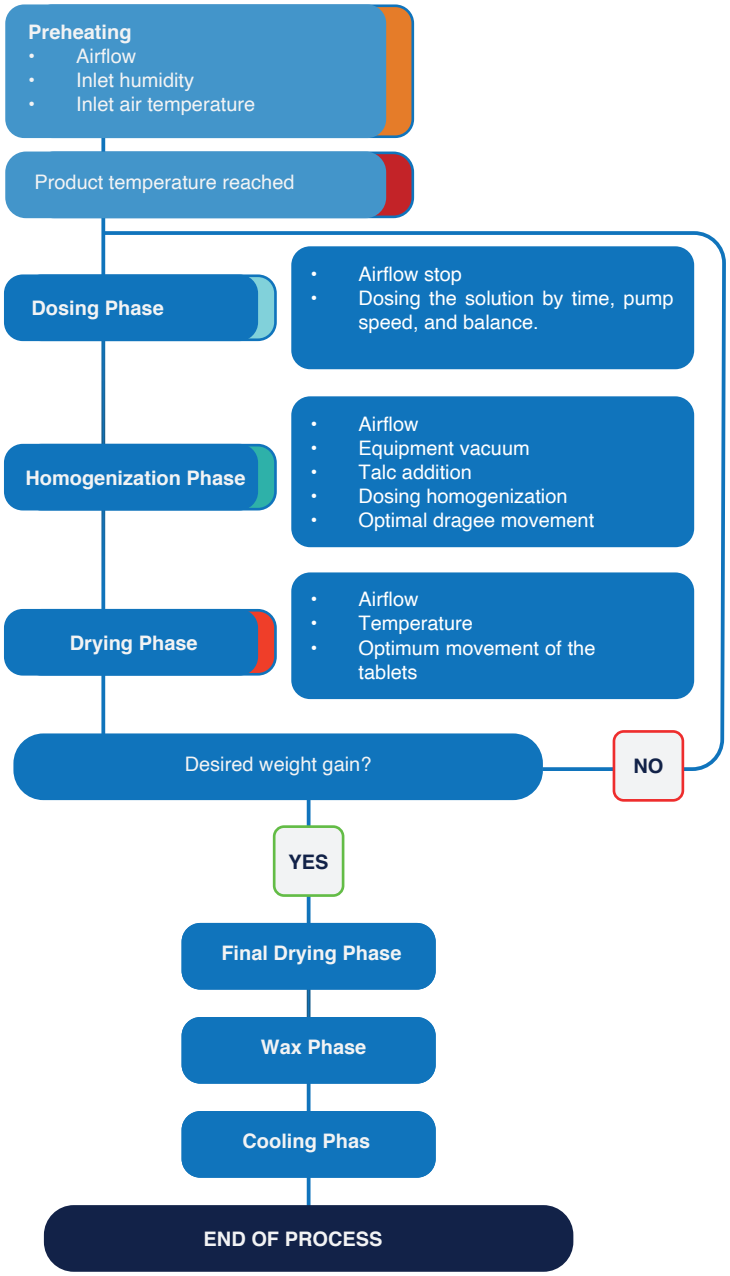
Final Drying Phase: During this phase, the inlet temperature is reduced to the temperature of the tablets and maintained for a time in order to remove the residual moisture that remains in the dragees. This phase is important at a microbiological level since by eliminating the water we help control microbial growth.

Wax Phase: In this phase, a layer of wax is applied in order to protect the sugar coating, provide a shiny and attractive finish to the dragee, and act as an additional barrier to moisture. In this phase, carnauba wax or beeswax is usually used, both safe for pharmaceutical and food use.

Cooling Phase: During this phase, the inlet temperature is decreased in order to bring the dragee to room temperature. During this phase, a curing of the coating is carried out, and we ensure that there is no thermal breakage when unloading the tablet.

Thanks to the high efficiency of our technology, we have drastically reduced processing times, achieving a reduction of up to 70%. In addition, we have fully automated all process adjustments, which guarantees the repeatability and consistency of results, eliminating the variability associated with manual adjustments. Our highly efficient drying process, which includes a desiccant rotor, allows us to achieve a performance greater than 90%, minimizing product loss and optimizing the use of materials.

The incorporation of an automatic device for the addition of solids, such as talc, ensures a uniform and precise distribution of these components in the coating. This is essential to achieve the desired properties in the final product.



CONCLUSIONS

The results obtained in this study conclusively demonstrate the superiority of **Romaco Tecpharm's** coating equipment for **sugar coating processes**. The quality of the final coating far exceeded our expectations, showing a uniform, precise, and resistant finish. The high efficiency of the drying system, combined with a solution application greater than 90%, has significantly reduced production times, thereby optimizing our processes.

Our equipment has proven to be highly efficient in each phase of the process, from the bulking of the dragee and the dosing of the talc to its final finishing. Thanks to an advanced direct dosing system and an automatic talc dosing system, together with precise control of the process parameters, coatings of the highest quality are guaranteed. The complete automation of the processes, which includes adjustments and dosages, eliminates the need for stops and ensures exceptional repeatability.

The flexibility of these systems allows to adapt to a wide variety of formulations and tablet sizes, ensuring efficient and consistent production for both pharmaceutical and nutraceutical products.

In summary, Romaco Tecpharm equipment represents an innovative and reliable solution for the pharmaceutical industry, allowing manufacturers to reach new quality standards in their sugar-coated products. The combination of advanced technology, complete automation, and high efficiency positions Romaco Tecpharm as a benchmark in the sector, offering a comprehensive solution for current and future production needs.

The initial phase of the tablets prior to coating the dragees