Case study: Natures Care

Overview

Health food supplement manufacturer Nature's Care engaged Cleanrooms Australia to improve the efficiency of their existing capsule drying process. The brief was to increase moisture rejection capacity to reduce drying time from 48 hours to 16 hours. This represented a revenue gain of up to approximately $1 million per month.

Background

Nature's Care produces high quality health food supplements and natural skin care products, and is a trusted brand known around the world. All their products are manufactured in Australia at the company's Belrose plant – about 30kms north of Sydney – and distributed through major retailers in Australia and around the world.

Nature's Care is certified by the Therapeutic Goods Administration (TGA) in Australia and the by Food and Drug Administration (FDA) in the US, and as such, all their products must be manufactured to the strictest standards.

Cleanrooms Australia was commissioned to assist Nature's Care to improve the drying efficiency of their gelatin capsules. This is a process that must be precisely managed for the best results.

Prior to working with Cleanrooms Australia, Nature's Care was using a system of dehumidifiers to laterally blow dry air across the capsules that were laid out in trays. As only part of the surface area of each capsule was exposed to the air, Cleanrooms Australia identified that significant efficiency gains could be achieved by allowing better airflow across each product by modifying air flow patterns bringing this process up to best practice standards.

The solution

Following an extensive study that revealed inefficiencies in the existing drying system, Cleanrooms Australia investigated multiple new drying techniques including forced air, isolated air flow patterns and continual movement scenarios that could be applied to the Nature's Care operation.

We determined that the capacity of the current dehumidification and air movement systems would require upgrading or replacement to make the system operate at potential to achieve much higher throughput and significantly cut down drying time.

We proposed replacing the existing tray drying system with a continual movement system that would keep the capsules in constant motion in order to increase the efficiency of moisture removal and decrease drying time.

This would require further investment from the client in existing production lines or new equipment purchase of tumblers that would allow dry air to pass around the entire external surface area of each capsule.

The client subsequently committed to applying the project solution to new manufacturing equipment and a new room.

The critical factors

The extended drying time required under the tray drying system often meant the entire production line needed to be shut down while the capsules dried. Efficiency gains under the proposed system significantly reduced the drying time required, which in turn eliminated the need for production shutdowns.

Nature's Care also wanted to maintain in-house control over the design and installation of the system, and needed the system to be delivered on a very tight budget. To achieve this, they chose to forgo the more expensive equipment that would deliver on their capacity goals immediately in favour of cheaper equipment that could be expanded over time.

Nature's Care had also purchased a neighbouring warehouse and planned to replicate the tumbler design in five identical equipment runs in their new facility. That meant the Cleanrooms Australia design had to be flexible and easy to replicate and expand over time.

The process

Before Cleanrooms Australia could propose a solution, there was significant investigation required to establish exactly how much dehumidification was required.

As such, our engineers had several questions that needed to be addressed in the planning phase. We needed to know how much moisture was being produced and how much moisture was being removed under their existing tray drying system.

An on-site study of Nature's Care manufacturing and drying facilities was subsequently undertaken to establish the current performance of multiple pieces of equipment.

Data points were taken simultaneously over eight different critical points in the system to measure the temperature, relative humidity, air volumes/velocity and air patterns (proposed and actual).

The results of this study gave Cleanrooms Australia key insights into the effectiveness of the current system in order to identify aspects that required upgrading.

The results

Prior to engaging Cleanroom's Australia, Nature's Care was forfeiting around $1 million per month in lost income due to production bottlenecks caused by long drying times.

Our solution achieved a significant reduction in drying time from 48 hours per run to 16 hours per run. This meant that Nature's Care could now run their production line at full capacity without downtime caused by drying delays.

With approximately 4.8 million capsules per run at an estimated worth of $1 million, this represented a significant financial gain for Nature's Care.

Conclusion

After engaging in a thorough investigation of the existing capsule drying process, Cleanrooms Australia was able to engineer and install a solution that significantly reduced drying time in order to enable Nature's Care Gelatin capsule production lines to operate at full capacity.

The solution was delivered on a tight budget, with Nature's Care maintaining control over the design and installation. As required, our solution is also able to be replicated by Nature's Care in a neighbouring facility in order to expand their production capacity to accommodate the future growth of the company.