Case Study: Powder Recovery Cyclones

Introduction

A major pharmaceutical company was losing powder from tablet presses and capsule filling machines. This caused a dangerous cocktail of powders to form in the central dust extraction system and was also blocking the expensive HEPA filter at the heart of this system.

Having heard of the cyclone, they approached Hanningfield to learn if the innovative dust containment system could benefit them – it could.

Our Solution

The cyclone was initially trialled by attaching it to a capsule filling machine, to analyse the effectiveness of the cyclone in capturing a standard pharmaceutical powder – the results were staggering. The filterless cyclone was able to capture over 95% of all excess powder, which is collected in a 'catch-pot' at the bottom of the cyclone. This allows the contents to be weighed for batch loss reconciliation, which is excellent for FDA compliance.

The real monetary saving, however, was in protecting the central HEPA filter. Each cyclone has an individual "police" HEPA filter which increases system efficiency to 99.99%, allowing the clean air to flow to the normal dust extraction unit.

As the equipment is designed to be retrofitted to any dust generating plant, process validation is not affected, making it ideal for both new and existing processes.

Results and Conclusions

The cyclone was an undoubted success and helped protect the main filter from continual blockage. This was very expensive to replace but required changing every 6 months due to the extreme wear and tear.

The cyclone system has saved the central filter to make replacement much more infrequent, saving vast amounts of money and offering an incredible return on investment. The system also helps protects operators by capturing excess dust in the process room, preventing the formation of a dangerous mix of powders.

The customer was extremely pleased with the cyclone and now has more than 40 units installed worldwide.

Installation Photograph

Key Facts

Capture Over 95% of Excess Dust: The Hanningfield cyclone is capable of capturing most of the dust lost during processing. For this case study, the customer was able to capture and collect over 95% of all powder. In-house trials have achieved results of up to 99.99% efficiency on a pharmaceutical powder.

Protect Central Dust Extraction: By protecting the central dust extraction system, the customer made vast savings in time, money and improved hygiene, simply by installing the cyclone to their capsule filling machines and tablet presses. This ensured an excellent return on investment (ROI) by protecting the expensive filters in the central dust extraction system.

Keep Operators Safe: By preventing a dangerous cocktail of powders from forming in the central dust extraction system, operators are kept safe. Instead, dangerous powders are captured in a 'catch-pot'.

Comply with FDA Guidelines: Comply with FDA Guidelines; By capturing excess dust in a 'catch-pot' the customer was able to undertake batch loss reconciliation, to account for the losses in processing. This is excellent practice and ensures compliance with FDA guidleines.