Customer Case Study

Crystallization of API

Real-Time Monitoring Cuts Crystallization Time by **80%**, Effectively Increasing Production Capacity

Conglomerate Control	Throughput Increase	Impurity Reduction	Recipe Optimization

The Challenge

In an anti-solvent crystallization of a pharmaceutical API, the desired needle-like crystals often formed unwanted snowball-like conglomerates, trapping impurities and liquid, which caused challenges in filtering & drying. The standard 5-hour recipe resulted in inconsistent quality and batch variability due to uncontrolled agglomeration and crystal breakage from prolonged mixing.

The Approach

The ParticleTech Analyzer was used to monitor five batch crystallizations, measuring crystal size (width and length), crystal concentration, and distinguishing single crystals from conglomerates. Data revealed that crystal yield plateaued after just one hour, while longer processing time would increase both the fraction of conglomerates and the extent of crystal breakage.

The Implementation

Crystallization time was reduced from 5 hours to 1 hour, improving crystal quality by minimizing agglomeration and breakage. Ongoing monitoring ensured consistent batch-to-batch results and confirmed the effectiveness of the new optimized recipe.
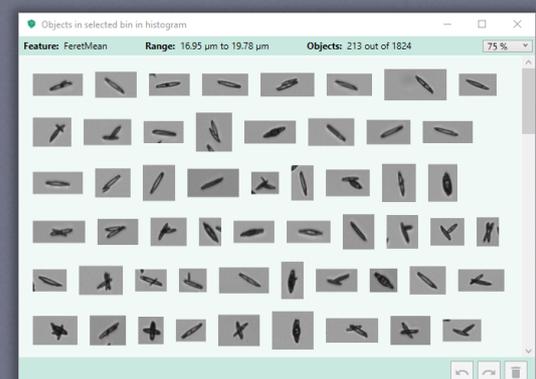
The Result

Process optimization improved product quality, reduced impurity entrapment, and increased throughput, while maintaining consistent crystal size and shape.
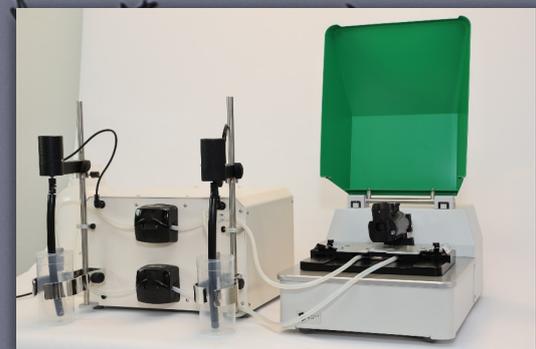
ParticleTech Analyzer
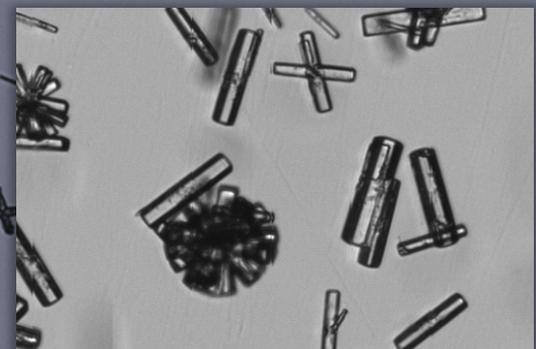
Conglomerate Detection

Interactive Results