PCMM Continuous Film Coater - Soft Sensor Model for Tablet Weight Gain

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Purpose

The purpose of this research project is to develop a soft sensor model to predict the weight gain achieved by tablets in the continuous film coaters which are part of Pfizer's PCMM (Portable Continuous Miniature Modular) manufacturing platform. Tablet weight gain is an important metric and it needs to be effectively monitored and controlled to ensure that an appropriate coating amount is applied to all tablets in a batch, based on the acceptable coating weight gain criteria.

Methods

A few batches of tablets processed using the PCMM platform were selected and the raw data for certain tablet press parameters for those batches was analyzed. Both placebo and active formulation batches were analyzed. The specific tablet press parameters analyzed were the pre-compression displacement and the fill depth. A relationship was established between these parameters and the weight of tablet cores going into the continuous film coater. In the soft sensor model, this relationship was then used to predict the total coating amount applied to the tablets for each given batch.

Results

The basis of this soft sensor model is to use data for the aforementioned parameters to predict the coating amount applied to tablets. There was general agreement between measured weight gain values and the predicted weight gain values obtained using the soft sensor model (predicted results were within ~3.8% of measured results for a representative batch). These results will be highlighted in more detail for some PCMM batches.

Conclusion

Directly measurable tablet press parameters can be used to help predict the weight gain achieved by tablets in the coater. This ultimately provides the ability to measure weight gain values for tablets in a batch with reasonable accuracy, allowing optimization of the coating process.

Keywords: PCMM, Batches, Tablet Press, Coater, Parameters, Tablet Weight Gain, Soft Sensor Model, Predictive Modelling, Optimization