Efficiency

James K. Drennen III

Published online: 1 April 2011
© Springer Science+Business Media, LLC 2011

With economic and political pressures continuing to provide uncertainty for our industry, the performance-driven organization is obliged to enhance efficiency in R&D, manufacturing, and all supply chain activities. Efficiency is a theme of the March 2011 issue of the *Journal of Pharmaceutical Innovation*.

In pursuit of efficiency, the modern concepts of Quality by Design (QbD) and Operational Excellence (OE) provide significant opportunity for our industry. Further, modern technologies will provide the IT infrastructure, process automation, and novel manufacturing techniques that, with QbD, OE, and other modern philosophies for managing our business, will allow us to efficiently develop and manufacture pharmaceutical products.

In this issue, the article entitled “Analysis of the implementation of Total Productive Maintenance, Total Quality Management and Just-in-Time in Pharmaceutical Manufacturing” will review developments in the industry’s operational effectiveness and efficiency, reviewing data from pharmaceutical production sites during the period 2004 to 2009. The analysis includes evaluation of total Productive Maintenance, Total Quality Management, Just-in-Time, and the Management System, investigating key performance indicators.

In “A Framework for Efficient Process Development using Optimal Experimental Designs,” efficient process

development is demonstrated using a novel optimality criterion for experimental design. A case study demonstrates a significant reduction (21%) in the number of experiments required for process optimization.

A classical least-squares (CLS) approach to efficient calibration provides a method for relatively quick and inexpensive calibration development using reduced sample sets in the article titled “Efficient Near-Infrared Spectroscopic Calibration Methods for Pharmaceutical Blend Monitoring.” The CLS models provided process analytical technology methods with adequate sensitivity for blend monitoring, significant robustness, and the feasibility for calibration transfer.

Finally, as an example of a modern approach to process control, “On-line Monitoring of Pharmaceutical Materials Using Multiple NIR Sensors—Part I: Blend homogeneity” reviews the implementation of dual sensors in a blend homogeneity control system. Investigating the value of dual sensors, the authors highlight the impact of sensor and calibration model differences. Calibration transfer issues were also addressed, with the authors recommending an approach for successful blending control using a single calibration on the two sensors.

I thank our readers for their continued support and invite each of you to consider submitting your work for publication in the *Journal of Pharmaceutical Innovation*.

J. K. Drennen III (✉)
Duquesne University,
Pittsburgh, PA, USA
e-mail: drennen@duq.edu