

CHALLENGES PROCESS EFFICIENCY • MANUFACTURING INTEGRITY • TIME TO MARKET

Pharmaceutical manufacturers are now embracing technologies that will provide greater insight into their processes, as well as speeding up the time to bring new medicines to market. The key challenges being overcome are:

- How exploit the opportunities presented by advances in process design
- How to ensure integrity of both instrumentation and data
- How to meet the specific needs of both batch and continuous manufacturing processes
- How to satisfy the traceability requirements of CFR 21 Part 11

Perceptive Engineering provides a fully integrated development environment and robust real-time process platform, which includes comprehensive PAT functionality and industry-standard connectivity. PharmaMV is a powerful, flexible toolset that delivers fault-tolerant Monitoring, Control and Optimisation of the widest possible range of manufacturing assets.

PLATFORM

DESIGN • SCALE UP • FULL PRODUCTION

Embedding the principles of Quality by Design from design all the way through to manufacturing, will reduce costs and shorten scale-up, while also helping reduce the burden of final product release-testing.

PharmaMV combines real-time quality measurement and leading-edge predictive control capabilities, including powerful Statistical Process Control (SPC) and Multivariate Analysis (MVA) tools, all within one intuitive software suite. **PharmaMV** also provides real-time connectivity to leading mechanistic modeling software.

This platform enables predictive diagnostics and continuous improvement of batch and continuous manufacturing processes in the pharmaceutical sector.

QBD AND PAT

ANALYSE • MODEL • IMPROVE

A feature-rich development environment provides everything required by process control and process improvement engineers. The user is guided from initial data mining, into multivariate data analysis, then onto process monitoring, model-based process control and manufacturing optimisation. **PharmaMV Development** helps the user to not only build and test process models, but perform post-production analysis.

PharmaMV RealTime is a robust platform enabling the developed models to be deployed directly and securely into the manufacturing plant. A single, powerful package that combines multivariate monitoring, PAT device integration, and model-based predictive control, ensures that your production objectives are met every time.



"Perceptive Engineering delivered a comprehensive data integration and multivariable control platform for the centre, serving some of the most innovative global pharmaceutical companies."

Craig Johnston & Clive Badman, CMAC



ADVANCED FUNCTIONALITY

PREDICTIVE ASSET
MONITORING

NON-LINEAR
MPC

STATISTICAL PROCESS
CONTROL

MULTIVARIATE
ANALYSIS

CONTINUOUS MANUFACTURING

CRYSTALLISATION

SOLID DOSE
FORM

HOT MELT
EXTRUSION

CONTINUOUS
FLOW REACTOR

Forward-thinking Pharma and Specialty Chemical companies have started transitioning from Batch to Continuous manufacturing processes. This promises to revolutionise the industry, offering lower production costs, significant reductions in waste and far greater manufacturing agility.

BATCH MANUFACTURING

CRYSTALLISATION

SPRAY
DRYING

COATING

BATCH
REACTOR

Perceptive has developed the next generation of batch optimisation tools, that are transforming this type of process. New techniques for 'golden batch' identification, trajectory control and end-point prediction deliver more consistent quality, faster turnaround and less waste.



perceptiveAPC
YOUR PROCESS, IMPROVED

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