

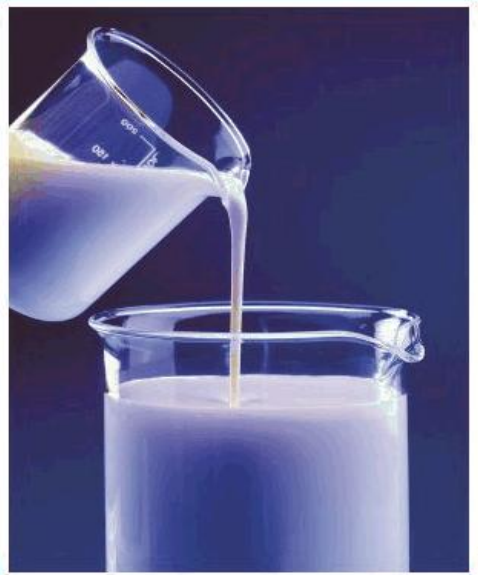
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Reducing Variability at Synthomer using MS2 Process Diagnostics

Synthomer is a world-class supplier of synthetic polymers to industries ranging from paints and adhesives to textiles, speciality papers and plastics. At its manufacturing plant at Stallingborough, it produces a wide range of synthetic latex products which are used in many types of industrial applications. The company has grown rapidly in recent years by being faster and more innovative than its competitors and quality is paramount.

Achieving this consistently high quality means understanding the variability inherent in a modern, complex manufacturing process, and Synthomer selected the MS2 Process Diagnostics System from AJM Consulting to assist in the identification of causes of variability between multiple reaction vessels.



The various computer systems on site hold extensive sets of data relating to quality parameters, batch operations and process trends within reactors. To fully visualise the manufacturing characteristics of each batch it was necessary to integrate these data sets and the MS2 system was used for this and for subsequent data analysis.

The resulting visualisations provided the Synthomer engineers and chemists with the information they needed to implement process changes which have resulted in better understanding of the causes of variability between reactors, resulting in improved manufacturing performance.

"We initially asked AJM Consulting to investigate a process issue in which two reactors had differing characteristics which we did not fully understand. We had plenty of data, but interpreting it was a problem because it was derived from several systems and could not be integrated. The MS2 system integrated the data from our commercial, process control and plant historian systems and provided both an effective visualisation of the problem and an analysis of its cause, enabling us to implement changes which have resulted in increased consistency and quality."

"We are now implementing MS2 across the plant."

Stuart Askham, Synthomer Ltd

The MS2 Process Diagnostics System

MS2 is a sophisticated, integrated system which models the production process, either batch or continuous, to help identify the causes of variability which can affect issues such as quality and yield. A wide range of analysis tools and visualisation methods have been developed to pinpoint critical process influences. The system incorporates powerful techniques such as multivariate principal component analysis, Manhattan significant change detection and parallel co-ordinate visualisation.

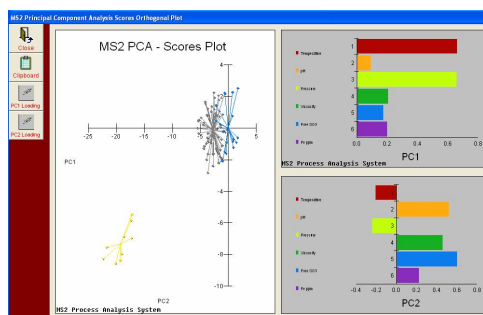
Parallel co-ordinate visualisation

This technique provides a view of relationships between many diverse process variables, for instance quality parameters such as pH and viscosity, process parameters such as maximum pressure and temperature and calculated values such as time to peak exotherm or shift identity.



Principal Component Analysis

The complex multivariate analysis and visualisation tools needed for this powerful technique were developed in conjunction with the world-renowned Centre for Process Analytics and Control Technology (CPACT) at the University of Newcastle. PCA provides a method of reducing the apparent complexity of large data sets to identify the principal causes of variability. It is proven to provide substantial bottom line benefits in major organisations and, through MS2, is now available to all sizes of company.



Ease of Use

The MS2 Process Analysis System was developed by AJM Consulting to bring advanced techniques within the reach of all companies, recognising the need for low ownership cost and limited on-site personnel involvement. Technologies developed for and applied to large organisations are often just too complex and expensive for most process manufacturers and the philosophy behind the MS2 Process Analysis System is to make advanced technologies accessible and affordable with immense potential benefits to competitiveness.

Latest Developments

AJM Consulting was selected to receive European Union funding, to enable it, in conjunction with CPACT, to design and build a unique tool, able to analyse existing data or monitor current production, by integrating to a wide range of process control or data historian systems.



AJM Consulting is working in conjunction with Newcastle University to continue development of the advanced MS2 system

This project is part-funded by the European Union Regional Development Fund

Available at several levels of cost and complexity, and easily upgradeable, MS2 is ideal for all process manufacturers who need better knowledge of their processes to achieve improved production performance and a sustainable future.

AJM Consulting is a member of:

- Institute of Measurement and Control
- Humber Chemical Focus
- Yorkshire Chemical Focus
- North East Process Industry Cluster
- Chemicals NorthWest
- CPACT



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