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Improving Quality at Holliday Pigments using MS2 Process Diagnostics

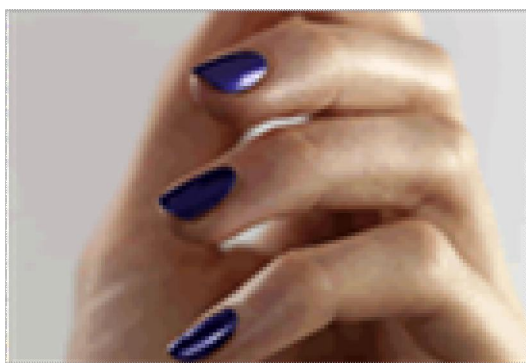
Holliday Pigments Ltd is the world's largest manufacturer of ultramarine blue pigments, exporting to over 80 countries. With over 50% of worldwide sales, the company is committed to maintaining its market leader position by continuously improving performance. The unique colour properties of ultramarine blue are exploited in many applications, such as plastics, inks, packaging, paints, cosmetics, and many more. An ever-increasing range of new uses drives the company's continual goal of product diversity and quality improvement.



The manufacturing process is highly complex; part batch, part continuous. As with all such processes, consistency is the key to maximised quality. This can only be achieved by an in-depth knowledge of the causes of process variability, often in areas where the relevant values cannot be measured directly, for instance in high temperature kilns, or where the interaction of variables is complex.

In 2004, a study undertaken by AJM Consulting and funded by DTI's e4C (e-Technology for Chemicals) programme concluded that multi-variate analysis of a wide range of process data could be used to identify the causes of perturbation and therefore to enable improved quality and yield.

To assist in developing their process knowledge to new levels of sophistication, Holliday Pigments has now invested in the MS2 Process Diagnostics System from AJM Consulting to analyse its production and quality data. Developed by AJM Consulting, this system uses innovative algorithms and visualisation tools to identify the consequences of the interaction of process variables and to pinpoint areas in which performance can be improved still further.



Looking to the future, Holliday Pigments is also planning to develop the system further, in conjunction with AJM Consulting, to increase the depth of data analysed and to enable current production to be analysed to enable informed decisions to be made in real time - decisions which could provide major benefits in quality, environmental, cost and throughput performance.

' The project has yielded some very promising early results, confirming a number of firmly held views on the process whilst also challenging a few of our perceptions. The principal component analysis has been of particular interest and has given us some valuable insights into options to explore in process control strategies and planned preventative maintenance activities. We look forward to applying the MS2 Process Diagnostics System to a wider set of data in the expectation there will be a few more hidden gems yet to be revealed'

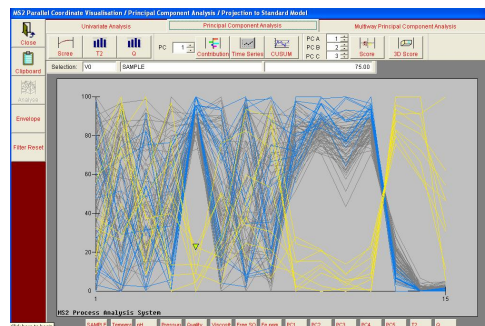
Glyn Jagger, Operations Director, Holliday Pigments Ltd

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.

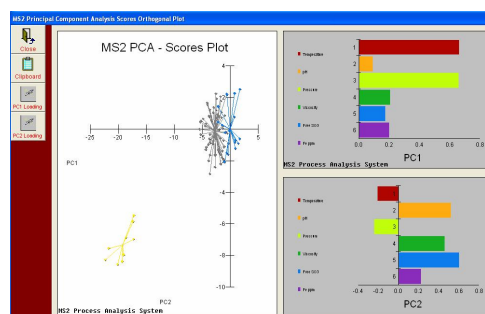
Parallel co-ordinate visualisation

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.



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 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

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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