



INFORMATION PACK

About Curvaceous Software Ltd.



See hundreds of process variables on one graph and build process models without equations in minutes.

Successfully breaking the mould, Curvaceous uses the mathematics of n-dimensional geometry to solve previously intractable problems in Process Improvement, Process Operations, Data Mining and Multivariate Methods with substantial economic impacts.

Ground-breaking client benefits include the first ever method to calculate precise and dynamic Alarm Limits, the first real solution to the PAT requirements in Pharmaceuticals and fundamental enhancements to the Six Sigma and Lean Sigma Process Improvement methodologies.

The future is bright for Curvaceous as patent holders with an ever-increasing client base of over seventy customers including, for example, AstraZeneca, BAE Systems, BP, DSM, Huntsman Petrochemicals, INEOS Chlor, Lafarge Cement, Nestle and Pilkington Glass.

Founded in 1998, UK based Curvaceous Software Ltd is rapidly expanding worldwide leading the way in Process Control, Quality Control and Alarm Management.

Geometric

GPC is the **technology** upon which all C:Suite products are based. GPC uses geometry to represent n-dimensional objects rather than being limited to just statistical methods.

Process

Process safety is substantially enhanced through GPC, winner of the EPSC Award for 'The Biggest Contribution to Improved Process Safety.'

Control

Control is second to none with GPC technology. All C:suite products are non-mathematical and interactive. They use visual displays that can be understood by all. Process control has never been easier.



C:Suite

CVE

visualExplorer

Primary process analysis tool.
Enables and improves Data Mining, Alarm Rationalisation and Six Sigma.
Displays all variables on a single, interactive graph.

CPM

processModeller

Non-linear, equation-less process modelling.
First ever calculation method for precise Alarm Limits.
Provides dynamic online process alarms and automatic correction advice.

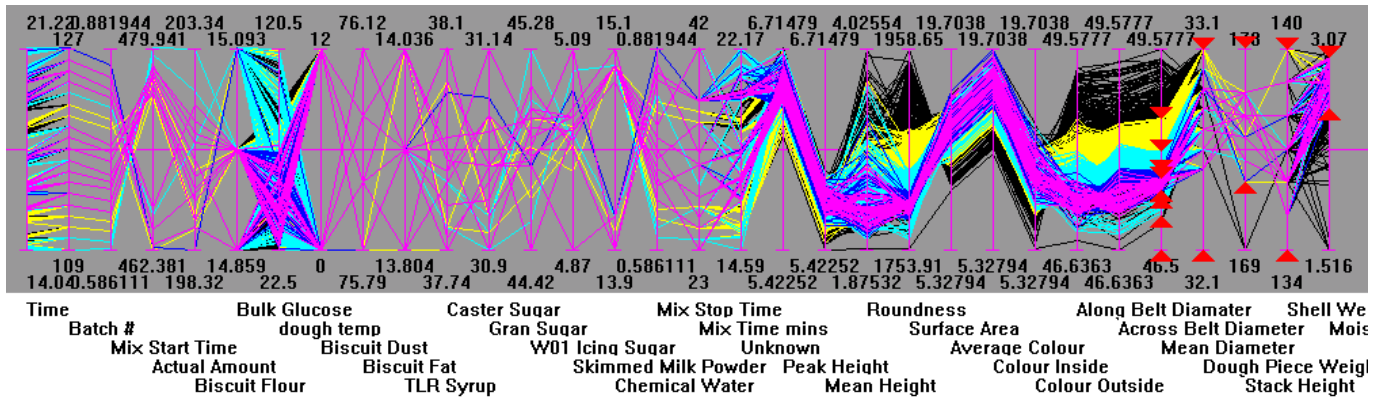
CRSV

response-surfaceVisualiser

Complex Response Surface analysis made simple.
Discover the results before implementing the process.
Specify results and see how to operate to achieve them.

An entire spreadsheet...in just one graph.

A single graph in C:Suite visualExplorer (CVE) can include thousands of variables in an easy-to-use display, helping you to gain new insight and understanding of your process problems.



Product Qualities are combined with Process History to present a comprehensive overview of process operation.

Inco

"C:Suite visualExplorer showed us the real performance difference between two identical process units in a way that everyone could understand — and then told us how to change our operations to correct it."

B.D. Production Manager

Winner of the EPSC Award for

'The Biggest Contribution to Improved Process Safety'

- ◆ **Fast multivariate geometric approach** to previously time-consuming comparisons of process analysis.
- ◆ **Remove the need to use statistics** with CVE - analysis made simple and easy for everyone to understand.
- ◆ Visually isolate cause and effect relationships under varied conditions gaining a unique insight into production...**without guesswork**
- ◆ The introduction of long variable names **saves time and heightens understanding**.
- ◆ **CVE is THE complete solution to the FDA PAT Initiative** (Process Analytical Technology) using equation-less geometric modelling.
- ◆ **See process giveaway** and the conditions under which it occurs.
- ◆ **Perform graphic queries extending across all variables** to quickly focus on problem areas.
- ◆ CVE comes **complete with Excel Add-Ins and Automated Tools** for help with data preparation.
- ◆ **Build a process model with a new interactive operator display in minutes** when you combine CVE with C:Suite's processModeller or response-surfaceVisualiser to extend or enhance your findings.
- ◆ **Strong after-sales support programme.** Subscribers receive FREE product upgrades, unlimited help-desk support, an invitation to the annual Technology Forum and a range of training classes tailored to suit individual needs.

tyco

Healthcare

Mallinckrodt

"CVE cut our process losses by 40% and de-bottlenecked part of our process—all for zero capital cost."

L.H. Senior Process Engineer

www.curvaceous.com

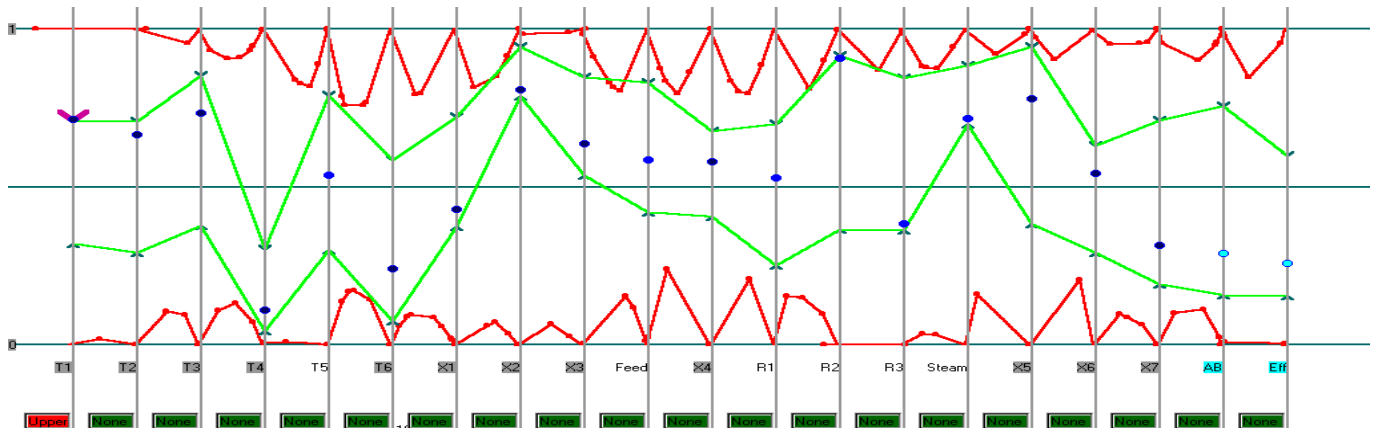
Complicated analysis and predictions made simple

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Models Without Maths...

C:Suite's processModeller provides the first-ever mathematical unification of process control, offline quality control and process alarm management. Using multi-dimensional geometry, model your entire process in minutes without ever seeing an equation.



The completely new interactive operator display is shown here with an alarm rectification example.

Join over 70 major process customers ranging from Chemicals to Food and Pharmaceuticals and start benefiting the Curvaceous way

The display is intuitive, easily understandable and provides operators with previously unavailable information, such as the currently usable ranges of all process variables and predicted ranges of all quality variables.

INEOS Chlor

"Improved Process Efficiency by 2% in the first 3 weeks of operation"

"Reduced plant start-up time by a factor of 6"

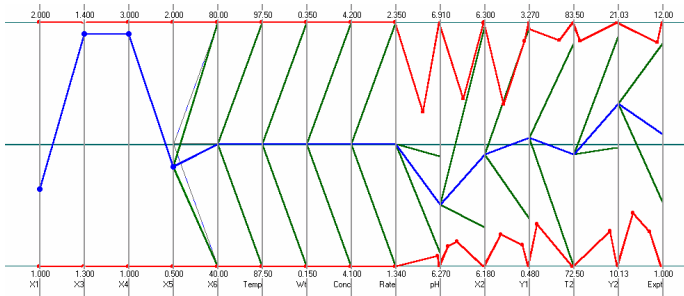
Runcorn, UK

- ◆ CPM uses a **multi-variable Best Operating Zone (BOZ)**, identified by Curvaceous Visual Explorer (CVE) from existing process history data, as its basis for distinguishing between normal and abnormal operation.
- ◆ The BOZ is converted by CPM into a **multi-variable model**.
- ◆ Capture long-term knowledge of process capability, derived from both process history and laboratory quality history.
- ◆ Models can be built and updated in minutes making it practical and affordable for small plants and equipment Condition Monitoring applications.
- ◆ CPM visually shows alarms and quality violations as they occur.
- ◆ CPM automatically generates Alarm logs and Limits files for ease of subsequent CVE analysis.
- ◆ In desktop use, CPM reads data from a file of gathered data in simulated real-time mode.
- ◆ It interfaces to a process historian or plant DCS system for real-time use in a control room.
- ◆ Strong after-sales support programme. Subscribers receive FREE product upgrades, unlimited help-desk support, an invitation to the annual Technology Forum and a range of training classes tailored to suit individual needs.

Power to the Experimenter!

C:Suite's response-surfaceVisualiser (CRSV) allows Experimenters or Formulators to perform their own Response Surface Analysis at their workbench in a fraction of the time currently required.

It replaces the numerically intensive finding of multi-variable regression equations to describe the Response Surface with a simple visual method that anyone can use.



In this display the experimental variables are on the leftmost 9 axes and the result variables are on the right. The user has begun to explore the Surface by fixing values for the first 4 variables. These are shown as blue dots.

The remaining variable values are now indicated to lie within the green ranges. The model has correctly deduced that these experimental variables are independent of each other so any value can be chosen from the entire green range.

See the interactions between variables. This is a powerful tool, especially to users of the very small datasets that are commonly found in Formulation and Design-of-Experiments activities.

This Surface Model was built in seconds from the whole set of 12 points without requiring any mathematical knowledge.

What results will I get if I perform this experiment?

Change the first four variable values by simply clicking and dragging the blue dots. See the results instantaneously, without waste or inconvenience.

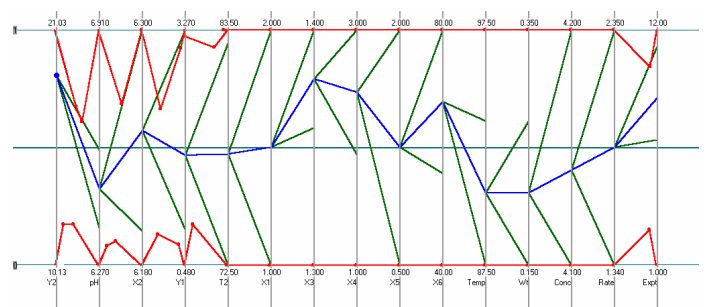
Explore the entire surface and apply and check domain knowledge and possibly eliminate an Experiment or Formulation altogether for extra benefit.

Winner of the EPSC Award for 'The Biggest Contribution to Improved Process Safety'

What experiments should I perform to achieve my desired result?

In this picture, the result variables are on the left and the experimental variables on the right.

Insert the desired results and see how to operate in order to achieve them. Save valuable time and money the Curvaceous way.



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