

GAMED

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Visual DataXplorer

Discovery of Errors and Quality Problems in the Production Process





Visual DataXplorer – Find Causes of Production Errors and Quality Problems

Visualize and Analyze Production Data, Optimize Processes

Typical Applications:

- Reduce quality costs: see effects of individual process parameters on defects in product
- Increase availability: discover breakdown patterns of machines
- Optimize maintenance: check effects of maintenance activities on technical availability of the equipment
- Material and cost efficiency: test effects of alternative materials on product quality
- Energy and material efficiency: compare energy and material consumption of alternative processes

Advantages for the User:

- No in-depth statistical knowledge needed
- Analyze over 100 process parameters simultaneously
- Focused feature set and moderate price
- Rapid data workup and analysis
- Can be extended with additional algorithms and visualizations

Even in today's world of increasing automation and the associated glut of data, the causes of errors in the production process are often hard to find. Where exactly in the process cycle does the error arise? Which parameters affect it, and how do they affect each other? The Visual DataXplorer is a new toolkit for process engineers that makes such problems easier and quicker to analyze. Even in complex production environments, it allows rapid diagnosis of the causes of errors. Corrective actions can be taken faster, and the resources that are bound up in the production process can be utilised more efficiently. The Visual DataXplorer will help you optimize your processes and make your production leaner.

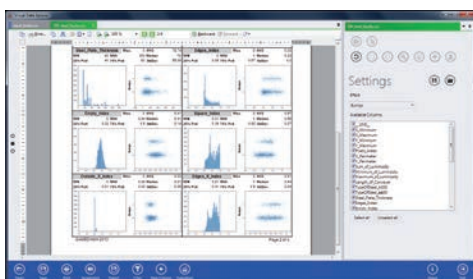
Data > Actions

Production plants nowadays typically have a large number of sensors collecting data, but often very little use is made of the data. Ordinary business intelligence software is not able to analyze multidimensional correlations, and professional statistics software is usually too complicated for the users. The Visual DataXplorer fills this gap. It opens up the data to a quick graphical analysis, and combines the necessary algorithms with a user-friendly interface. Experienced engineers can easily integrate their intimate knowledge of the process into the program.

Perfect for Process Engineers

The Visual DataXplorer is designed for the needs of process engineers. It can compare multiple process parameters and reveal previously unknown relationships. An intuitive user interface allows different evaluation methods to be selected and combined. Visualization functions enable multidimensional results to be displayed on 2D screens. The production process can be followed step by step, so that interactions between parameters can be identified as clearly as possible.

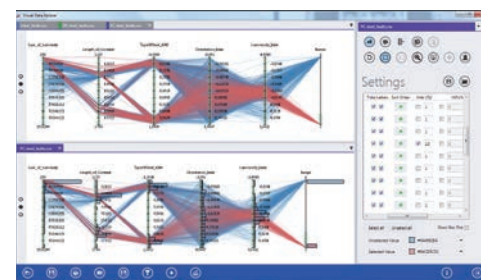
Of course, different processes need different analyses. For this reason, the Visual DataXplorer offers a series of algorithms that are especially suitable for analysing production processes. The framework of the program can be expanded and customized as required.



For every quality event, you can examine all the process parameters and discover direct effects.



Screen for interactions between process parameters; see correlations at a glance.



Overview of process parameters: color codes for good and defective products help reveal multidimensional relationships.

Reactive and Proactive

Successful analyses require a sufficient amount of relevant data – and in practice it's often hard to bring the data together and process them into an understandable form. To make this easier, GAMED provides the DataBridge, a programmable communication system that merges data from different sources – in real time. This real-time analysis offers the possibility of a sophisticated early-warning system: you can detect critical states of the process based on multiple parameters and the comparison with historical data. In this way it may be possible to take avoiding action before certain types of failure become critical.

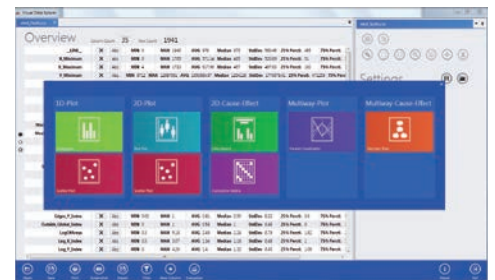
Filtering data:

- Select a suitable filter
- Hide irrelevant data
- Focus on the essentials
- If needed, create new variables
- Export and save the modified data sets

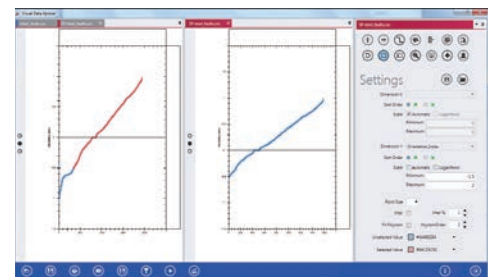
Universally Applicable

In principle, the Visual DataXplorer is designed for all kinds of production processes; but it is especially useful for complex, multistep processes being used to produce a wide range of different products. It is a tool for the people who are working on process optimization. The Visual DataXplorer supports rapid diagnosis of causes of failure, allowing you to take corrective and preventive actions in a timely manner.

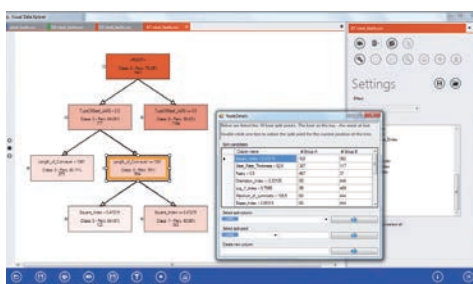
This leads to higher productivity, lower production costs and an improvement of competitiveness.



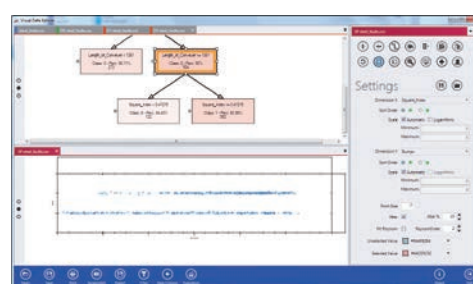
Customized for the user: the engineers' knowledge of their own processes is integrated into the analyses.



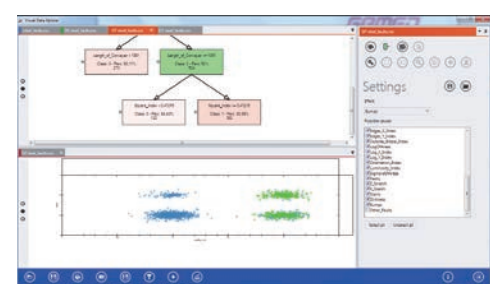
Filtering data: focus on data subsets, filter out invalid value ranges, create new variables, export data sets.



Visualize multidimensional relationships: set software to suggest main effects automatically and allow selection of alternative effects in the decision tree.



Going deeper: analyze details, validate results, generate new information; discover alternative effects that are more accessible to control.



Link different areas: color code different subsets of the data, find overlapping points.



“Process engineers need efficient tools to discover complex causes of errors quickly and to optimize production.”

Wolfgang Rauter, voestalpine Steel Donawitz/
Product and Process Development

Success Story: voestalpine Stahl Donawitz Uses the Visual DataXplorer to Analyse and Optimize Production.

In Upper Styria, voestalpine Stahl Donawitz GmbH has built on more than 125 years of experience to position itself as a niche supplier of high-performance products. With an investment of around 150m, the plant was refitted as the world's most advanced compact BOS steelworks. The capacity of the steel production line is now over 1.5m tonnes/year. The line consists of sintering, blast furnace, desulfurisation, BOS crucible, secondary metallurgy, and continuous casting. The products are high-quality steels in the form of billets and blooms. Between price-sensitive markets and the need for profitability, the Donawitz plant is under pressure to constantly optimize production. The complex process landscape of the steelworks generates a lot of data, but the process engineers lacked a suitable tool for quick discovery and analysis of errors. “We wanted a software that would be easy to use and customized. We wanted it to do just as much as we needed, but not more”, explains Wolfgang Rauter, the senior technologist responsible for product and process development. “The detailed visual presentation of the Visual DataXplorer is perfect for what we want to do: we can identify relationships between different factors along the process path and work out the quickest routes to solutions.” With this tool, we can monitor every batch in full and precisely locate deviations in individual parameters. We could never do this with tables, and with simple tools like Excel we wouldn't be able to do these multidimensional analyses at all.”

Visual DataXplorer:

- Reduces quality costs
- Increases availability
- Optimizes maintenance
- Evaluates alternatives (material, energy etc.)
- Analyzes over 100 parameters simultaneously
- Is not unnecessarily complicated, and therefore moderately priced
- Concentrates on essentials
- Can be individually extended
- Delivers results fast



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KVP Guide

Planning, Control and Evaluation of Improvements



Visual DataXplorer

Discovery of Errors and Quality Problems in the Production Process



PM Steel

Manufacturing Execution System for Steel Plants



Process Master

Control and Quality Management according to ISO/TS 16949



IPC

TPM and Maintenance Management



OEE Analyser

Analysis and Performance Parameters of Machines



Machine Eye

Visualization in the Production Plant – Andon Board

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