Maschinenfabrik Gustav Eirich: zenon as the new user interface for industrial and laboratory mixers

Concentrating on the essentials

Multi-Touch technology, modern design and a clear interface now characterize the new human-machine interface at Maschinenfabrik Gustav Eirich. The company thus ensures a consistent, smooth and efficient production process throughout the entire mixing procedure. The basis for the new solution is zenon, the HMI/SCADA software from COPA-DATA.

Maschinenfabrik Gustav Eirich offer a comprehensive range of services in industrial material processing. The focus is on machines, equipment and services for mixing, granulating/pelleting, drying and fine grinding. The main areas of application are concrete, dry mortar, plasters, building materials, sand-lime brick, ceramics, glass, carbon items, friction linings, battery compounds, metallurgy, foundry molding sand and environmental protection. The family-run company has been in existence since 1863 and has twelve production sites, with 1,400 employees from across five continents. "We want to be pioneers" was the slogan that represented Maschinenfabrik Gustav Eirich more than 150 years ago, and that still applies today.

INTUITIVE AND APPEALING MULTI-TOUCH APPLICATION

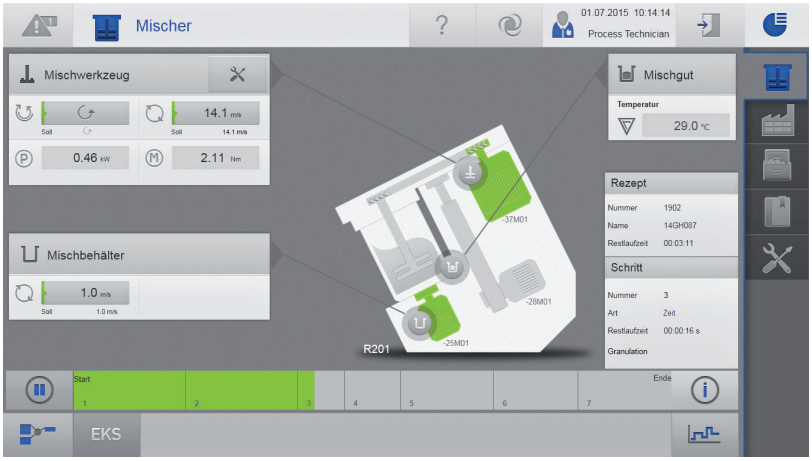
Maschinenfabrik Gustav Eirich also carries out pioneering work with the use of new machine visualization: The company is now using a Multi-Touch application that is characterized by modern design elements and an ergonomic operating concept. For the

Maschinenfabrik Gustav Eirich has been active in the development of industrial mixing systems for over 100 years. In this image: Laboratory mixer.

modern Multi-Touch solution, Eirich uses zenon, the HMI/SCADA software from COPA-DATA, and Microsoft Windows 7 as the operating system. Thanks to the Multi-Touch technology and the large-scale screen elements, the application can be operated very well with fingers. Data can be entered either by means of virtual keyboards or with the help of context menus in modal dialogs. "Our aim was also to promote pleasure in working with the new user interface. The solution should be simple and intuitive, and the induction and training effort should be kept to a minimum," explained Michael Link, Product Manager of Control Systems at Eirich. "In addition, our machines are also frequently used in research and in the higher education sector and we want to offer young people a user interface that is attractive and similar to modern application handling on a mobile device." All images, icons and screens are reduced to the essentials and icons are easily recognized. For example, the icons for "Start mixer" and "Stop mixer" are similar to the "Play" and "Pause" buttons of a media player. The operating states of the equipment parts are displayed by means of simple color identification. For example, green means "Machine part in operation" and red means "Machine part problem". In addition, Michael Link and his team have developed a compact progress display that shows the overall progress at a glance and also provides the status of the process steps, which can be flexibly combined with one another. In this progress display, it is also possible to start or stop processes, and to make manual interventions.

PERFECT USABILITY IN A REDUCED USER-INTERFACE DESIGN

When developing the new concept, managers from different areas such as process technology, service, programming and sales were also included, so that wishes and requirements from the respective experts could be included. The focus of the new usability concept was on the users – for example production employees, laboratory workers or product developers – and their respective tasks. For the operating concept, Michael Link and his team thus defined several use cases, which describe different application scenarios. For example, a product developer is led through the corresponding input dialogs when creating new recipe versions, in order to enter process flows, quantities of raw materials and details for the planned trials.



Graphic illustration of the machine and display of the operating data of the process.

A laboratory worker can then process these trials, add comments to the automatically registered process values and then transfer all data to a USB stick or a file server in the company network. For time-saving standard reports, they can also have the reports printed directly from a network printer – on the basis of pre-defined reports with tables and curve progressions. Michael Link: "Establishing the use cases was certainly a laborious measure, because firstly all relevant information had to be logged and provided for the respective user, and secondly it had to be ensured that the solution was still easy to operate."

COMPREHENSIVE REPORTING – GET INFORMED QUICKLY, REACT CORRECTLY

Documentation is an essential part of product development and optimization. Eirich has therefore introduced a new interface for production and trial reports on the basis of the Report Generator and the Report Viewer in zenon. The new Report Viewer offers complete graphical reporting at the HMI, based on Microsoft's reporting technology. With the Report Generator, it is possible to analyze online data and archive data, to process this further and to compile it. "This is another reason why we now use zenon. COPA-DATA uses standard tools and standard technologies such as Microsoft Reporting Services," adds Michael Link. Eirich now offers customers a number of standardized protocols and reports, which they can either take on or amend to their requirements. These reports include, for example, documentation of the production parameters, batch protocols, diagrams of measured values and lists of raw materials. Michael Link: "Manually-created trial documentation can take up a lot of time, so this automated documentation support in the zenon-based solution is a significant advantage for our customers."

FUNCTIONAL AND WELL-THOUGHT OUT HUMAN-MACHINE INTERFACE

The human-machine interface portrays the complete mixing and preparation process – from the creation of the recipes, through production, to data logging and archiving. The central workspace of the new visualization is framed by a header with status information, a footer with the context-specific functions of the current use cases and the main navigation on the right for the machine, development, production and archive areas. All mixers and units are visualized with a graphic illustration in the "Machine" area. Manual operation is carried out here and all the important operating data from the process is displayed here. This includes detailed information on the mixing tools applied, the operating parameters used, such as speed and the time-variable output quantities of drive power, torque and application of energy. A compact progress bar for the process chain, in combination with the display of the measured sensor values, informs the user of the current status of the process. With the context-sensitive action bar in the footer, the user can select further functions – for example a stopwatch for manual processes or a configurable diagram of measured values

Quick and simple configuration of the process and materials added.

> *Our machines now offer a wide variety of functions. At the same time, companies save on personnel resources. As a consequence, this means that an operator can cover a wide range of tasks. This is why it is so important that modern applications are understandable, intuitive and simple.*

MICHAEL LINK, PRODUCT MANAGER OF CONTROL SYSTEMS AT MASCHINENFABRIK GUSTAV EIRICH

for online trend curves. Interesting sections can already be zoomed into with finger gestures and saved as a screenshot for subsequent reports at the press of a button. Axes, colors and lines can also be amended individually and the raw data can be exported for further processing as a text file at any time. The “Production” area is for starting the process for a selected recipe and displaying all available information. If necessary, correspondingly-authorized users can also intervene in the ongoing process and amend the current set values for mixing tools and peripheral devices, or extend, shorten or skip individual process steps. In the “Development” area, the product developers can change comprehensive settings for the recipes easily and quickly. This includes, for example, the components of a mix, the respective quantity and the sequence for their addition. Furthermore, they can determine the speed and direction of rotation for the mixing tools in the individual process steps and enter how long a step lasts or whether a subsequent step should be carried out, depending on temperature, output or another process value. Up to 30 steps can be defined in the process, which are then processed in the corresponding sequence. The list of raw materials includes another summary of the materials added for the preparation of the trials and there is additional information in the recipe details on the trial, the mixing tools and comprehensive possibilities to add comments.