Baumer
Passion for Sensors

Technical Report – *VeriSens*® the next generation web interface

The trick with semi-transparency

For years, technical devices have been complicated to use, and some people even have stopped trying. Nobody knows exactly when the revolution started – probably sometime between satellite navigation systems, smartphones and tablet PCs. Suddenly user interfaces became crucial to the success of a product and are now taken seriously and even talked about.

The challenge for intuitive user interfaces is to hide the functional complexity on the inside while appearing minimalist and well organized on the outside. This philosophy has brought success to a whole generation of products in the consumer sector but has also created expectations in other sectors. As a result, today›s machine control systems must be easy to use without the user being aware of their underlying complexity. In industry, cost factors need to be considered as well. Each additional operating step costs valuable time and even a simple operator error can often be the cause of significant follow-up costs. Furthermore, the operator is often not fully skilled.

A user interface for vision sensors?

There is still potential for more automation in quality control, and this can be unlocked with the help of industrial image processing. However, image processing is a complex technology that is usu-
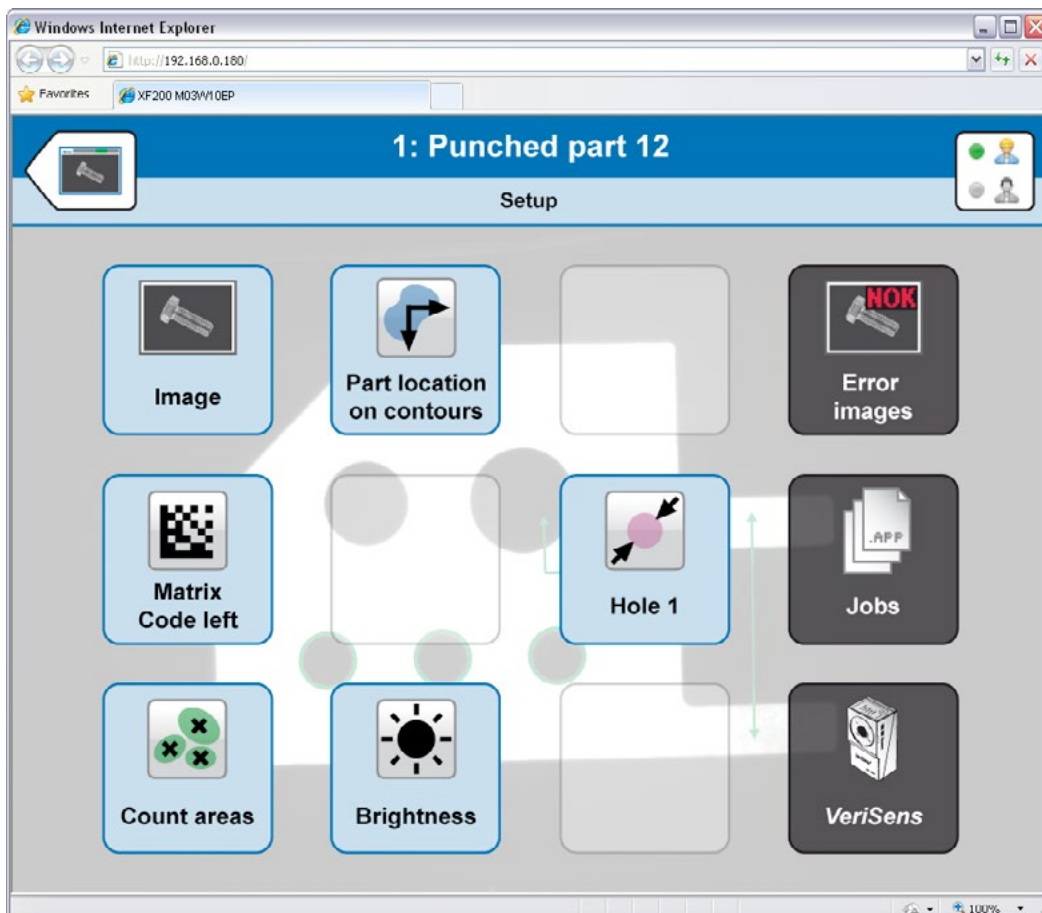
Transparency creates trust – the live image of the running process is visible at any time.
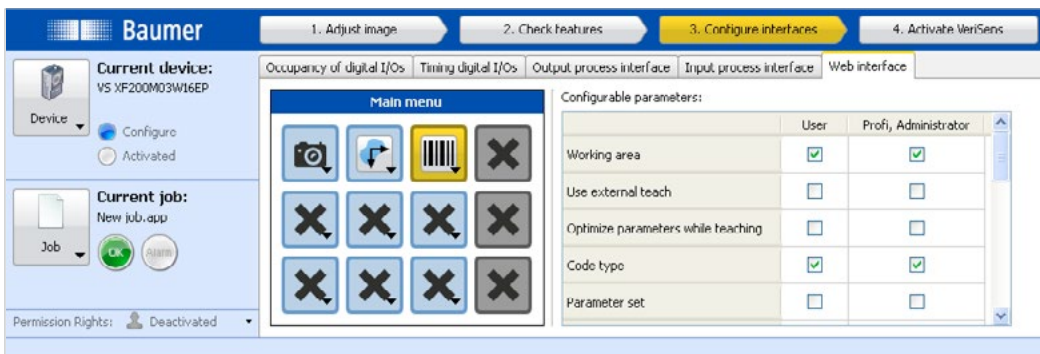
During configuration of the inspection task, the web interface can be configured at the same time.

ally associated with high initial costs – especially when involving manageable batch sizes, e.g. in machinery manufacturing, where customized solutions need to be created for display and operation later on. One approach, established over several years, has been to use vision sensors. The reduction in their external complexity is opening them up to new user groups. As with classical sensors, all the elements of an image processing system are integrated into a compact, industry-suited housing – optics, illumination, image sensor, hardware and software for image analysis and interfaces. In the simplest case, the vision sensor interacts via digital inputs and outputs. Alternatively, as in the case of *VeriSens*® vision sensors by Baumer, the data can be exchanged via a process interface (TCP/IP). A one-time configuration is required to ensure that the vision sensor integrated into the machine is able to fulfill its specific tasks in the future. This means that where they are integrated, vision sensors have to either be set up to perform

the same task "for life" or periodically receive new parameters from the control system. Alternatively, configuration software such as the *VeriSens*® Application Suite could be installed on the system in order to reconfigure the vision sensor when product or process changes are made. However, in practice this is often not feasible. Many customers are reluctant to install such "third party software" on their systems, the machines do not have access to a Windows PC, or additional external control panels do not fit into the system design. Often, configuration software is far too complex for the adjustments to be made by a machine operator in a short period of time. On the other hand, creating an OEM-specific GUI (Graphical User Interface) for setting and display of the vision sensor is a considerable expense for many customers, particularly as the functionality of the vision sensor must be understood and mapped in addition to carrying out the programming work. Furthermore, maintenance work is required for changes, such as software

VeriSens® vision sensors with both C-mount design and integrated flash controller (left) and with integrated optics (right).

enhancements for the vision sensor. All these ramifications call for solutions that provide an economical way to create an application-specific interface that is easy for the user. The existing web browsers used on many machine controls provide a platform-independent interface for this – as long as it is possible to work without plug-ins.

The golden middle path: A flexible web interface

For several years, *VeriSens*® has offered a web interface that can be used without plug-ins – and without third party software. The second-generation web interface presented at VISION 2012 goes beyond the display and job management functions that have been available up to today. To create an application-specific GUI, besides desktop customization configurable parameters (e.g. the size of the object under examination), further optional adaptation of functional scope and element positioning in a customized menu are mandatory. Ideally, it would be operated on the machine via the existing touch screen.

Customize with a few clicks

Starting work with the *VeriSens*® web interface has been kept as simple as possible: The interface can be assembled directly in the *VeriSens*® Application Suite configuration software with just those few clicks required for the task at hand. This includes the assignment of the operator control panels with a selection from the tool images, equipment functions (such as the display of defect images) and the associated sub-functions – all taking account of the user groups. But how does one achieve the required transparency for users, for whom a vision sensor is often just a "black box"? For this reason, an important design feature of the *VeriSens*® web interface is a permanent live image display, which remains visible even when navigating in sub-menus. To ensure that the machine operator retains an overview while at the same time not being distracted by too much information, a graphical semi-transparency is used, which enables the live picture to appear discreetly in the background. Underlying menu items are only displayed where it is unavoidable. At all times the operator remains informed of how he can find his way back and whether his settings have been applied permanently.

Not only new customers can benefit from the advantages of the newly developed *VeriSens*® web interface, but current users as well. All field-installed models in the XF, XC, ID and CS series can be equipped with this feature via a software update.

More information:
www.baumer.com/verisens

AUTHOR
Michael Steinicke
Product Management
Vision Competence Center

Baumer
Passion for Sensors

Baumer Group
Phone +41 52 728 1122
sales@baumer.com
www.baumer.com