

Protection from Blunders

Using ultrasound at the workbench

*The use of ultrasound has many industrial applications.
The newest application is in the area of quality assurance
at manual work stations.*

The following is based on the article "Schutz vor Fehlgriffen" which appeared in Industrie Anzeiger (Industry Indicator) magazine, issue no. 1/2011.



Sarissa GmbH, based in Weingarten, Germany, brings ultrasound technology to the manual work station with their product, the Local Positioning System. This universal and comprehensive solution can be easily installed at any assembly or sorting station. The technology not only shortens training time but improves efficiency of the workers.

"With LPS we shift the boundaries of possibilities in security and supervision of assembly in the manufacturing

processes," promises Volker Jauch, Managing Director of Sarissa. "The LPS immediately detects whether any work steps or installation instructions have been overlooked or ignored and alerts the employee. The LPS virtually eliminates sorting and assembly mistakes."

"Eliminates sorting and assembly mistakes"

The LPS system is sold in two configurations, which can be combined

or used separately. The first is the LPS QualityAssist, which involves the worker wearing tiny transmitters on each hand. The second is the LPS ToolNavigator, which involves the transmitters being attached to tools in the workplace.

"Saves money from the first moment it's installed"

Describing the basic advantages of the system, Volker Jauch says, "The LPS saves money from the first moment

The QualityAssist in Use

Hettich-Heinze GmbH, based in Spenge, Germany, is a worldwide manufacturer of furniture hardware. They rely on the LPS QualityAssist to ensure distribution quality of their assembly kits for different sliding door damping systems. If the correct packing sequence is followed, the LPS automatically displays the next task. But if the system registers an incorrect move, the system stops, the monitor immediately displays an error message and offers a solution. A scale and a label printer are connected to the system. At the end of each packing sequence, the scale determines the total weight of the package and the information is transmitted to the LPS where it is compared to the target weight. With the LPS, packaging errors have become a thing of the past. Every hardware kit that goes out the door is certified complete by the LPS.



it's installed by integrated QA testing procedures into the value-creation process, saving time and effort." According to Jauch, "The investment costs are manageable, and minimal compared to the benefits."

Installation is simple, and can be accomplished in little time. Usually it takes no more than half a day of training before the employee is proficient in using the system. Programming the system is easy, promises the manufacturer of the LPS.

Components of the System

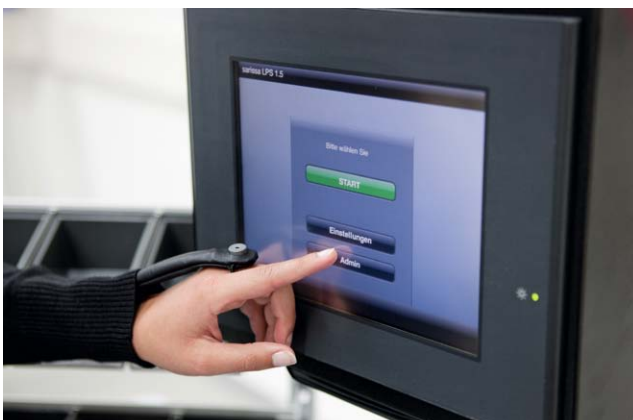
The heart of the system is a Win-

dows-7 based PC and a large (12") color touchscreen. The PC is connected to the receiver unit by USB cable. The whole system can be quickly installed at any work station.

The PC receives the ultrasonic signals from the transmitters worn on the employee's hands or affixed to the tool to be monitored. The transmitters are small and weigh only a few grams. Within milliseconds, the transmitters begin sending their ultrasonic signals, which are undetectable and physiologically harmless to humans. The receiver is basically a microphone which picks up the ultrasonic signals of the transmitters. The effective

reception range can be described as a parabola with a maximum radius of three meters, more than enough for most work stations. The movements of the transmitters in the reception area are passed along to the program in real time and compared to the previously defined sequence of assembly steps. Accurate assembly steps are indicated either acoustically or visually, while unintended movements are reported as errors.

The 3D system detects positions with a resolution of up to 0.1mm; however, in normal usage an accuracy of +/- 0.1 to 2.0 mm can be expected.



“Programs can be transferred to other assembly lines”

Configuring the system requires only two steps: First the workplace needs to be defined. This includes the work areas that need to be monitored, such as assembly positions on a work bench, or remote positions such as material containers or parts boxes, as well as various tool positions. Next, the assembly sequence needs to be specified, and the preset sequence programmed step by step into the PC.

The software is sleekly programmed and to a large extent self-explanatory. The system configuration and data input is organized into clearly structured and user-friendly input windows. Incorporating diagrams and pictures into the program is easy, as is the use of the Input/Output channels, as well as setting up data exchange with external devices, for example, scales or printers.

Once programs have been created they can be modified at any time, or they can be transferred to other assembly lines which have the same configuration. Access to these settings and functions are password protected, as they should be. To get started, the employee simply activates the start button on the touchscreen, and everything else runs automatically. The worker will never notice the presence of the LPS “looking over their shoulder” as it only interferes if irregularities arise.



Background

Sarissa, located in Weingarten, Germany, has been developing ultrasonic applications for quality assurance, coordinate specification within fixed areas, production traceability, motion studies, and ergonomics since the beginning of 2010.



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