

Standardization for the operator interface

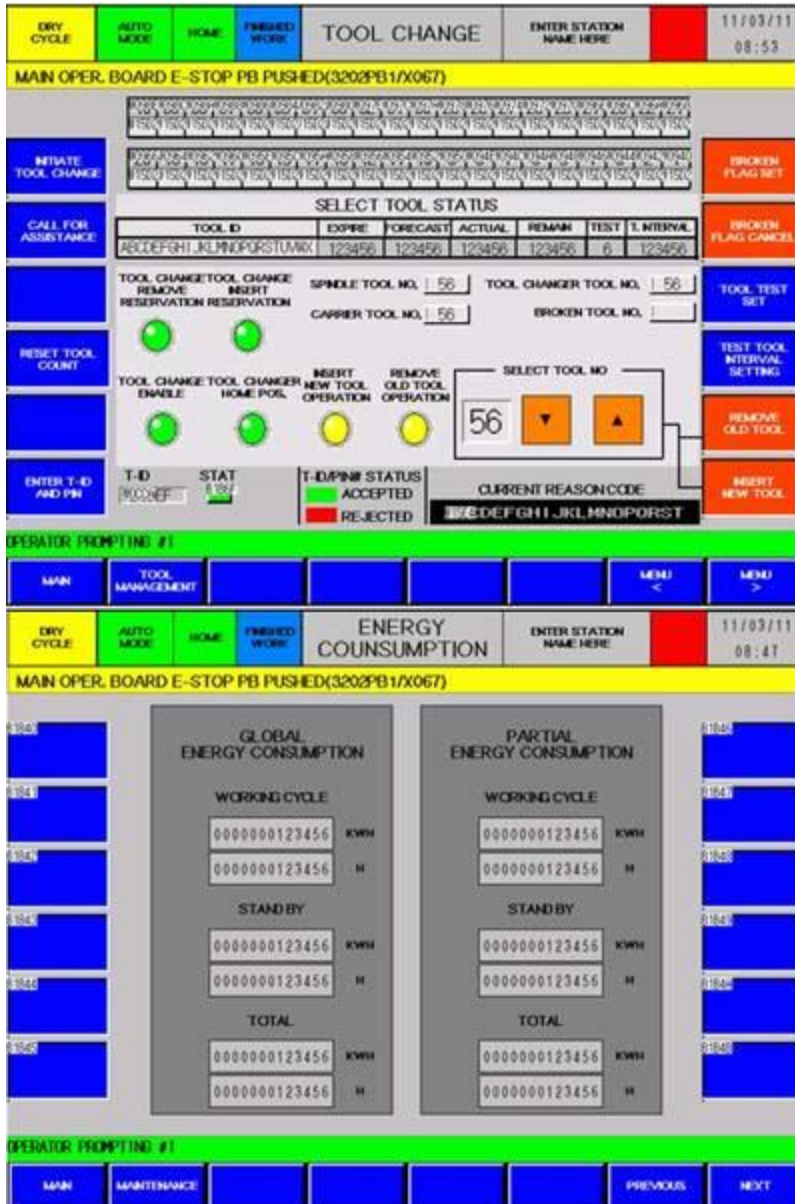
Inside Machines: OI standardization helps original equipment manufacturers speed time to market by using or adapting standard human-machine interface (HMI) screens.

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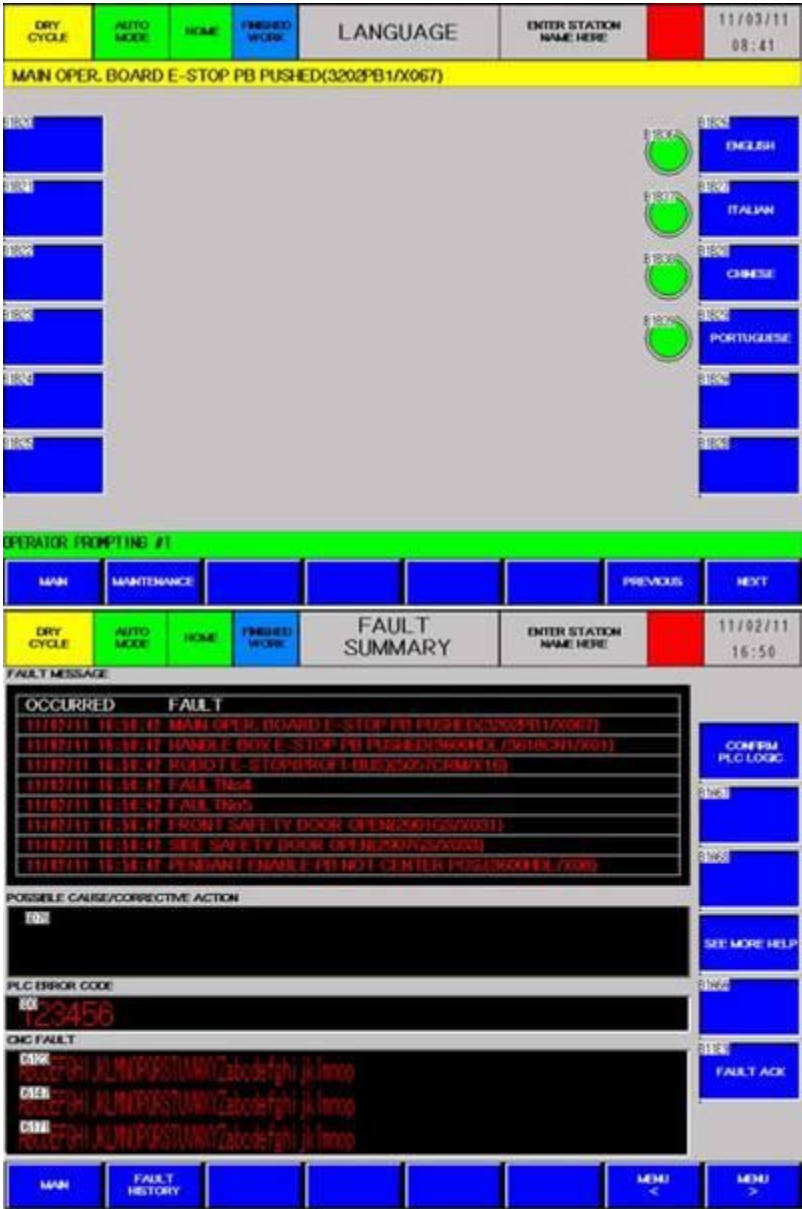
As automation technology has advanced, forward-thinking manufacturers are benefiting from the implementation of global technical standardization and the quick return on investment it brings. While the concept and movement toward standardization is not new, at least one control system integrator has seen more manufacturers requesting assistance with standardizing operator interfaces with human machine interfaces (HMIs).

Operator interfaces are an area that has mostly escaped standardization in the past. Design and development of HMI templates offer benefits of standardization of operator interfaces.



Currently, most plants have a variety of equipment from multiple original equipment manufacturers (OEMs). When equipment is built by an OEM for anything other than extremely large corporations, often the automation technology to be used and the design of the operator interfaces are not specified by the manufacturer it is being built for; it is left to the OEM's discretion. HMI screens on one production line can have absolutely no common look or feel, from inspection to check weighing to coding to packing and transport functions. In addition, older equipment still in use often has

clunky outdated interfaces that encompass a variety of push buttons, timers, panel meters, and thumb wheel controls. The result often is a plant with completely different operator interfaces from machine to machine and from line to line, complicating safety, efficiency, and training.



Lack of standard operator interfaces presents inefficiencies. If an operator is out, the efficiency of the entire production line can be compromised from the learning curve of the new or temporary operator, resulting in downtime and

slowed productivity. There are safety issues as well; red may mean start on one piece of equipment, but mean stop on another. In an emergency, if the operator responding is unfamiliar with the interface, injury or worse could result. Another factor is the cost in terms of time required to train new employees, as a universal company standardized training program cannot be implemented to train groups of new hires.

The new power and flexibility of today's HMI technology has increased dramatically, providing the ability to eliminate the inefficiencies outlined above. HMIs also can offer other benefits through the design and development of standardized intelligent and graphically rich user-friendly screen designs. While each machine will display equipment-specific requirements on each screen, there will be a common template design for a top menu bar, command buttons, navigation, alarms, and event messaging. HMI capabilities also can be expanded to provide the operator with equipment diagnostic information for quick problem resolution. Even the option for instant touchscreen change in language is available, allowing a Spanish-speaking worker to follow an English-speaking worker effortlessly.

The newly developed standardized HMI can be used to upgrade current equipment and be made a required specification for new equipment. This is a game changer for efficiency and productivity. The consistent look and feel of the HMI allows operators to move from machine to machine and line to line recognizing the layout on the touchscreen HMI. Stop is always red; go is always green; the top bar uses the same navigation; the alarm page, diagnostic page, and reset button are all in the same place on every HMI. Similar to using the same version of Microsoft Word, regardless of the computer being used, the layout is the same, and it is easy to find what is needed; speed and efficiency at multiple workstations increase with familiarity.

Beyond the efficiency and productivity gains, HMI screen standardization allows efficient group training programs to be developed for new employees. HMIs can even be programmed to include training videos built into the interface for quick and easy operator reference.



It has been widely reported that the aging workforce in the manufacturing sector is a real concern. The youth of today have been brought up using touchscreen cell phones, iPads, and video games. Not only will graphic-rich

user-friendly HMIs be more appealing to the younger worker, the learning curve and ease of training also can make the inevitable shift to a younger workforce less painful for employer and employee.

When the decision is made to standardize, manufacturers with U.S. and overseas plants need global automation technology providers for better access to continued support across the globe. A control system integrator partner to Mitsubishi Automation and Siemens Automation has worked on numerous projects developing standardized intelligent HMI operator interfaces for top tier manufacturers. The development of standardized Mitsubishi HMIs provides Chrysler advantages. Chrysler and other manufacturers have implemented standardized HMIs using the Siemens Transline 2000 standard.

Developing and implementing technical standards for HMIs supports compatibility, interoperability, safety, repeatability, and quality. Overall equipment effectiveness (OEE) is increased by reducing complexity into a simple, intuitive presentation of information.

Sam Hoff, executive vice president of Patti Engineering, said, "As plant-wide standards are applied, the benefits multiply through continuous improvement of efficiency and productivity, translating into a quick return on investment."

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