



Hygienic HMI-Systems

Even without the legal, normative, and other guidelines, hygiene in the processing industries is an important topic whose significance is constantly increasing. In the areas of foodstuffs and packaging, the most important thing is keeping the products being worked on free from contamination. As can be expected, this is also a common topic in medical technology and the pharmaceutical industry. In this case, however, there is the added issue of protecting those involved from infections and diseases.

When taking a closer look at the area of automation technology, it becomes evident that controllers, drives and other automation components are well-fitted into switching cabinets and specially dimensioned and encased installation areas of machines and systems. However, it is essential that at least one component of the machine or system leads back to the user. Therefore, this interface between the operator and the machine (Human Machine Interface = HMI) must be designed in accordance with the respective hygienic guidelines. The main aim of these requirements is to provide health-related protection from product contamination for those involved as well as protection for the end-user. This is

achieved by using the appropriate materials and a hygienic construction. This not only means taking extensive measures to assure that seams, gaps, edges and surfaces are hygienic: the developer should also be well prepared in the concept phase to view the entire system and to effectively avoid such vulnerabilities.

Touch operation

The use of a touch screen should be taken into consideration beginning in the concept phase. The keys and entry devices already present are often integrated into the visualization. Touch screen systems can essentially eliminate operating errors because the use of im-

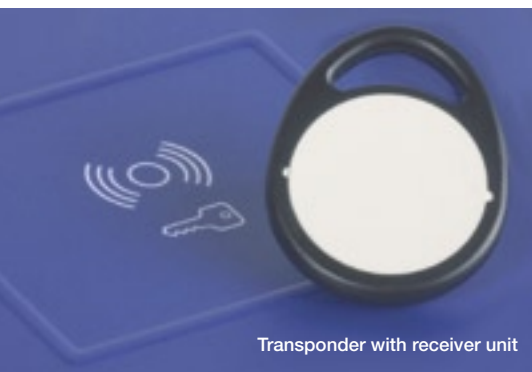
ages or pictures makes it easy to select menus regardless of the language being used.

A touch screen is easy to operate with confidence. The person operating the device makes the entries for the desired function intuitively. This minimizes the need for extensive training courses. Operational safety is increased by only displaying meaningful options on the screen. As a result, the possibility of error is kept to a minimum. The application determines which operating states are available for selection. This helps the user confidently navigate step-by-step through more complex procedures.

A resistive touch sensor is especially well-suited for use in the hygiene area. Its technological cover surface allows this touch screen to be integrated seamlessly in an operating panel. This is of particular importance to all B&R devices because touch sensors that are made especially for this type of installation are implemented. This guarantees full functionality, prevention of Newtonian rings and a long lifespan with several million touch entries. Resistive touch screens offer several advantages and feature quick reaction, high resolution as well as a sturdy and contamination-free surface. These screens can be activated by finger (with or without gloves) or using a pen. This essentially eliminates unintentional activation caused by dust, fluids or dirt.

Contact-free operator identification

Access authorizations often performed via key switch, can also be implemented using fully integrated transponder systems. This technology, already proven in millions of instances of building technology and time recording systems, can also provide a flexible and, most importantly, hygienic access authorization.

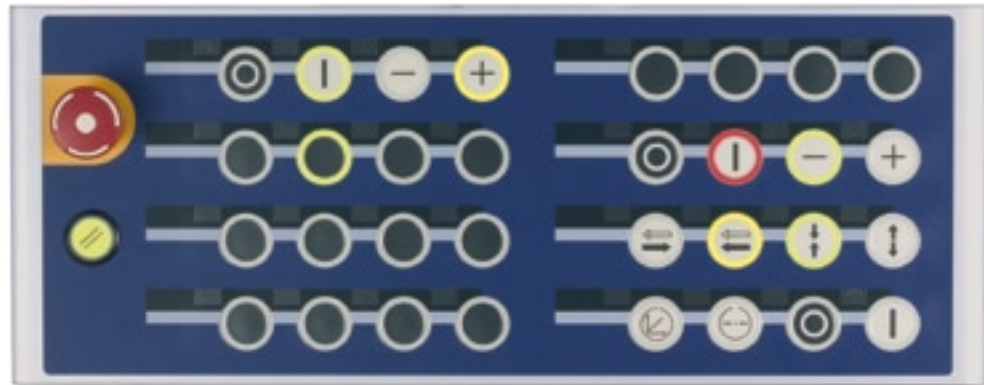


Transponder with receiver unit

Illuminated key rings

Not all operating elements can be transferred to the touch screen. Often, an illuminated key with a clear signal effect is necessary. B&R provides the illuminated key ring for such cases. This fully integrated key represents an alternative to the conventional electro-mechanical push key. Integration in the mylar cover prevents seams and gaps, thereby allowing 100% cleanliness.

Therefore, this not only minimizes seams



Advantages of B&R illuminated key rings:

- Integration free of gaps and seams
- Outstanding signal effect
- A variety of colors
- Multiple colors within one button
- Custom design of buttons
- Flexible button labeling with the use of label inserts

and gaps resulting from additionally mounted entry devices, it eliminates them altogether.

Interfaces

Ideally, data storage and recipe management is handled over the network on the server. In many cases, the end user does not have a corresponding network. Chip cards and diskettes are used as data storage in such cases. Depending on the construction, this results in openings in the area of the operating unit. Therefore, larger flaps and covers are necessary due to the size of the unit. A USB interface on the operating unit represents an alter-

native. The better form factor enables IP65 protection in the size of a 2 Euro coin. Added flexibility is a further advantage: USB sticks can be used for recipe management and data storage. Furthermore, this interface also allows peripherals to be added when necessary. Any chip cards or diskettes the operator may have can still be used by connecting conventional USB devices.

The B&R stainless steel program

B&R has developed a device series which is perfectly suited for use in the foodstuffs, pharmaceutical and pack-

The B&R stainless steel series is specially designed for use in environments with strict hygienic regulations.



aging industries. This series of devices features a hygienic construction and uses especially resistant materials such as smoothed stainless steel, high-grade polyester foil and special sealing materials. Several variations are available ranging from a simple visualization terminal to an operating unit with integrated controller as well as drive technology, integrated PC systems or remote units from the 5.7" monochrome display to the 15" TFT color display.

Operator panels from one piece

It is often necessary or desired to mount the operating unit to a swing arm system. In this case, a panel is mounted to the switching cabinet installation in a stainless steel housing, which is then attached to the swing arm system. The additional interface between the housing and operating unit likewise presents a hygiene risk because of the resulting seams and gaps. Furthermore, handles

Overview of advantages:

- Hygienic construction
- Gaps and edges in which dirt can collect are virtually eliminated or minimized
- Rust-free stainless steel (1.4301) with smoothed surface
- Well-designed geometry allows fluids to run off
- High-grade polyester foil resists cleaning and disinfection agents
- Shatter-protected display
- Foodstuff-qualified sealants
- Complete custom developments and designs
- Integration of B&R illuminated key rings
- Full functionality and integration possibilities as with B&R standard products

are screwed on for moving the housing. This also results in seams and gaps in which dirt can collect.

B&R took these vulnerabilities into consideration when building their fully enclosed HMI system. The operator panels originated from one source. The complete outer surfaces are made of

smoothed stainless steel and a high-grade polyester foil. A particularly narrow design was implemented. This means that additional handles are no longer necessary. The fully integrated touch screen and an IP65 USB interface are standard equipment. The backside is connected to a conventional swing arm system.

These operating units offer IP65 protection on all sides. Displays are available with 10.4" and 15" diagonals.



Individual optimization

Because optimization of the system is the main focus, even this extensive product series represents only the basis for special solutions. Candy production normally requires other demands and environmental conditions than meat processing. Even when filling fluids which have a high salt or sugar content, there are different demands than those required when pressing and packaging medical goods.

Even changes to our daily lifestyles represent an additional challenge, as is evident by the booming market for ready-to-serve meals. Aseptic product handling and processing offers all sorts of advantages for the user, whether it's through the elimination or minimization of preservatives or through longer product shelf-life.

These variations and special demands also require individually optimized operating units. At B&R, the expertise and interest go well beyond simply the switching cabinet cut-outs.

A custom operating unit from B&R provides numerous possibilities while still taking hygienic construction into consideration. Even the outer appearance can be tailored to accommodate the customer's ideas and needs.



“Special demands and areas of application also require individually optimized operating units.”

Rudolf Schwaiger
Business Manager
for custom HMI systems

We learn from our customer's demands. Countless custom-made HMI systems have already been developed using this philosophy.

