

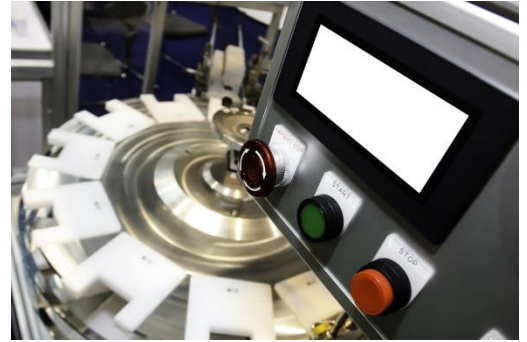


## Application Note: Packaging

According to estimates by the World Packaging Organisation, the global packaging industry is estimated to be a US\$500 billion annual business. This massive market includes all of the packaged products produced across all industries. Beijer's business is the manufacturing and marketing of human machine interfaces (HMI's). Packaging machine builders integrate HMI's into their machines to operate, control and manage these devices. In the USA alone, the packaging machinery industry is estimated to be around \$7.5 billion per year.

### HMI's in Packaging Applications

Most modern original equipment manufacturers (OEMs) machinery used in packaging applications integrate HMI's into their machines to enable secure operator control, performance measurements, recipe management, and production statistics including error conditions, alarms and logging. Beijer HMI's are used by packing machinery for beverages, food, chemicals (household/industrial/agriculture), personal care products, medical and pharmaceuticals applications. These machines perform a myriad of tasks such as:



- Conveying
- Coding/dating/printing
- Labeling
- Feeding
- Filling (dry, liquid)
- Bottling
- Capping
- Sealing
- Cartoning
- Bagging
- Casing, loading, erecting, grouping, bundling
- Sealing
- Blistering
- Palletizing
- Wrapping
- Gluing
- Metal detection

### **Controls Applications in Packaging Environments**

HMI's provide the eyes and ear of the packaging machinery. HMI's enable operators to monitor operations and to react to abnormal conditions. HMI's, in association with the control and computing systems, address the following:

- Speed – motors, actuators, conveyors
- Flows – valves, meters, regulators
- Electrical – voltages and frequencies
- Environmental – temperatures, pressures, fluid levels
- Recipes – raw materials, mixtures, formulas
- Performance indicators – warnings and alarms
- Time displays – operating time, preventative maintenance
- Security – local and remote access for users and user groups with authentication, authorization and logging
- Safety – integrated with machine and facility safety standards and requirements
- Language – localized for the targeted installation country and/or operator whether it displays a single local language or toggles between two or more languages.

**Beijer**  
ELECTRONICS

#### **Americas HQ**

Beijer Electronics, Inc.  
1865 West 2100 South  
Salt Lake City, Utah 84119-1303 USA  
www.BeijerInc.com / +1.801.466.8770

#### **Global HQ**

Beijer Electronics Products AB  
P.O. Box 426  
201 24 Malmö, Sweden  
www.BeijerElectronics.com / +46 40 35 86 00

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## Application Note: Packaging

### Configuration, Sizing & Integration

Each HMI used in a packaging machine must be sized for the application. Packaging machines vary in size and costs. HMI displays range in size from 3'-5" on the low-end, 7"-12" in the mid-range, and 15"-24" on the high-end. For most packaging machines, the most common need is in the small to mid-size range HMI costs vary based on size, performance capabilities, storage, and connectivity. An HMI must be proportional to the value of the machine. One model of HMI may be ideal on one machine but overkill on another. Some packaging machines use standard communication protocols like Modbus, whereas others use proprietary ones like Profibus or EtherNet/IP. Some machines use serial communications where others use Ethernet. Beijer's iX HMIs are designed to give packaging OEM manufacturers maximum flexibility.



### Why Industrial HMIs from Beijer Electronics?

Beijer's iX HMIs are advanced operator terminals that provide industrial control and user interfaces in packaging environments. Beijer's iX Developer programming software includes a simple, drag and drop objects and dynamic tag assignment environment to a more sophisticated C# programming environment for those with complex, custom applications. The iX HMIs can be configured to log events, start/stop/change parameters, and push/pull logs into standard formats for analysis, trending and long-term storage. The alarm viewer provides real-time awareness of abnormal conditions. Operators can view system and component manuals, videos and web pages. The operator interface terminals provide the control, data repository, and drill-down capabilities for administrators and technicians, whether they are physically next to the OEM devices or connected remotely. iX HMIs communicate with most PLCs including those from Rockwell, Siemens, Schneider, Mitsubishi, ABB, Omron, etc. across standard and proprietary networks. iX allows a programmer to create a single HMI project on a packaging machine with multiple configured controllers in which only one is activated based on the deployment environment; for example, EtherNet/IP for a North American deployment and Siemens S7 MPI for a European deployment. Some versions of Beijer HMIs integrate a soft PLC that is based on the IEC 61131-3 industry standard. This provides a cost efficient and streamlined PLC+HMI solution. All iX HMIs support the industry-standard OPC Unified Architecture, a M2M protocol that some packaging machinery prefer.

### References

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- Contract Packaging Association, <http://www.contractpackaging.org>
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- Packaging Consortium, <http://www.pac.ca>
- Snack Food Association, <http://www.sfa.org>
- U.S. Dairy Export Council, <http://www.usdec.org>
- U.S. Poultry & Egg Association, <http://uspoultry.org>
- National Confectioners Association, <http://www.candyusa.com>
- Packaging + Processing OEM, <http://www.pp-oem.com>
- Packaging World, <http://www.packworld.com>
- Persistence Market Research, <http://www.persistencemarketresearch.com>

**Beijer**  
ELECTRONICS

#### Americas HQ

Beijer Electronics, Inc.  
1865 West 2100 South  
Salt Lake City, Utah 84119-1303 USA  
[www.BeijerInc.com](http://www.BeijerInc.com) / +1.801.466.8770

#### Global Headquarters

Beijer Electronics Products AB  
P.O. Box 426  
201 24 Malmö, Sweden  
[www.BeijerElectronics.com](http://www.BeijerElectronics.com) / +46 40 35 86 00

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