Healthy production healthy profit

The food and pharmaceutical industries face increased pressure to increase production, while at the same time complying with ever more stringent hygiene regulations. Are robots the answer to the industries' needs?

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Photo ABB

> In this age of cut-throat competition, companies are constantly on the lookout for ways to improve their chances and widen their appeal to new markets. Sausages made in Germany should appeal to consumers across Europe – or across the Atlantic. Which means companies need to comply with an increasing range of hygiene standards. Add this to potential hygiene-related costs from product loss, contamination, bio-terrorism and food safety fears, and it becomes apparent that hygiene is a high priority for companies working with food and beverages.

So where does automated production, which provides efficiency and consistency, fit in the picture when it comes to hygiene? One indication is the increase in regulations and standards regarding the hygienic design of machinery for packaging and processing of food products. The European Hygienic Engineering & Design Group (EHEDG) has published many best practice guidelines and recommendations to help comply with all of these standards.

One fundamental European regulation is the EU Machinery Directive 98/37/EC. This requires that machinery suppliers meet certain essential hygiene requirements for the handling of foodstuffs. Within this directive, Technical Committee 153 has prepared the general hygiene standard EN 1672-2: Food Processing Machinery, Part 2: Hygiene Requirements. This standard sets requirements regarding the risks to hygiene arising from the use of machinery and processes.

With increased activity in international trading, failure to comply with overseas legislation can result in goods being barred from such markets. In some

countries, machinery can come under the same control regulations as the products themselves.

There is growing demand for hygienically designed products and the development of production systems and environments that meet all of these hygienic standards. The hygienic design of production equipment, particularly in the pharmaceutical and food industries, is obviously key in determining a company's competitiveness.

One of the main concerns of the food industry is the risk of contamination, whether it is microbiological, chemical or foreign bodies. This is even a concern for pharmaceuticals, not just during production but also in the form of tamper-proof packaging. Here, the costs associated with product recalls and loss of consumer confidence could be crippling.

There are several aspects to hygienically designed production lines that engineers should take into consideration. One of the fundamental principles is that machinery should be easy to clean.

As with any other machinery application, end users need to be able to justify such capital investment. The most obvious benefits associated with the installation of robots are those of labor savings, reduced sickness benefits, the overcoming of potential and existing labor shortages, better product quality, reduced risks of injuries or strain and improved working conditions. Less obvious are savings linked to a reduced head count such as a reduction in floor space and facilities as such. In many cases a work area reduction alone offers cost savings in real estate.

"Where do robots fit in when it comes to hygiene?"

In the past, investment criteria for robotic picking, packing and palletizing have tended to focus on labor reduction. Says Frank-Peter Kirgis, segment manager for consumer industries at ABB Robotics: "Other factors are now increasing in importance. The design of easy-to-use hygienic picking and packing robots, facilitated by the design of high-speed wash-down robots with integrated vision systems, has focused attention on the benefits of higher outputs and consistent quality and hygiene."

In spite of the possible perception that robots may be inappropriate for food or pharmaceutical applications where hygienic wash down is required, the situation has changed and there is no longer a reason to dismiss the advantages such automation brings. Manufacturers need to reassess their strategy to identify opportunities to exploit robotics in packaging and handling operations.

As the tangible benefits of robotic solutions become ever more apparent, it is widely expected that robotics will be adopted at a much higher rate in industries such as food and pharmaceuticals. The hygienic design of robots not only improves food quality and safety, but can also extend the life of machinery and equipment, as well as reduce labor and maintenance costs.

ABB's new IRB 360 robot is designed with hygiene in mind.

>FACTS

The smart and clean solution

Historically, robotic companies have not developed a robotic solution specifically designed for the food and beverage industry, but rather adapted robots from automotive applications. A rare exception is ABB Robotics' FlexPicker, says Klas Bengtsson, technical manager for consumer industries at ABB Robotics.

The FlexPicker is a world-leading robot in applications where objects need to be moved quickly and precisely, one at a time, from one location to another, says Bengtsson. The FlexPicker wash-down version features a special paint finish, corrosion resistant material, sealed components and a specially designed fourth axis with slide bearings, for easy cleaning using detergents. The FlexPicker is one example where robots are specifically hygienically designed for use in packaging applications with open food, such as meat, dairy products and ready made meals. To meet the most stringent demands, a stainless steel wash-down version is also available.