

# Healthy infection of ideas

## Case study: IMA

### Applications

- Picking
- Packing

### Products

- IRB 340



**With pressure to save on costs and become more efficient, the pharmaceutical industry is learning robotic tricks from the food industry, with help from Italian automation specialist IMA.**

IMA Industria Macchine Automatiche, with headquarters at Castenaso, Bologna, has a philosophy based on research and innovation. For over 40 years, the company has produced hi-tech automatic machines for the pharmaceutical, cosmetics, tea and coffee industries, with a wide range of customers all over the world. Recently, the company devised a special version of the Flexa cartoning machine that integrates ABB's IRB 340 robot. Specially designed for a U.S. pharmaceutical company, the solution automates the pick-up of flowpacked droppers from a conveyor belt (where they arrive scrambled), and the insertion of the droppers in a carton along with a bottle containing penicillin. And all of this is done at phenomenally high rates. In no small part, the solution is a result of the courage of IMA in revising, while the project was actually being deve-

loped, the feed concept that had already been fully approved by the customer. Instead, IMA proposed a more effective solution that transferred methods and experience from the food segment and cleverly adapted them to the specific demands of pharmaceutical production.

### **Replacing manual handling**

The new versions of the Flexa cartoning machine was made to meet the demands of its American user, who needed to replace an old penicillin bottle packaging system where the dropper handling was mostly done by hand. The challenge, says IMA, consisted not so much in processing and placing the bottles in cartons, which is a usual demand that did not pose any problems, but rather in handling the flowpacked droppers, in particular at a rate of 150

The ABB logo, consisting of the letters 'ABB' in a bold, red, sans-serif font.

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pieces a minute. Flow packs are extremely variable, with some packs adhering perfectly to the product while others swell up, which makes them difficult to handle and position correctly for feeding into the cartoning machine.

## Vision system

To solve the problem, IMA used two FlexPicker ABB IRB 340 parallel robots. The robots pick up the droppers from a belt on which they arrive scrambled, and there the droppers are viewed and identified with the PickMaster, ABB's robot guidance system that includes vision based on Cognex hardware, which is integrated into the FlexPicker. Customized grippers were devised by IMA. Once the positions and the orientation of the droppers have been calculated, the PickMaster transfers their coordinates via the ethernet to each of the two robots, while phasing both their workloads, and the robots are capable of working at rates that are a lot higher than those demanded by the customer. The system works in several stages that entail the temporary storage of the flowpacks in minipallets, their subsequent orientation and, only after that, insertion into the cartoning machine.

## Improving flexibility

The solution devised in cooperation with ABB offers a series of advantages. For one, the overall

layout of the machine takes up less space. A risk analysis has shown that there are a limited number of critical points. And a robotized system, in the mid- to long-term, guarantees lower maintenance costs and a far less complex tooling-up period compared to mechanical solutions. But what really makes the difference above all is the flexibility. By merely replacing the pick and place head of the robots, they can handle similar products, anything from syringes to spoons instead of droppers. As IMA has stated, the solution represents an "opening up, a dialogue between this segment and others, food first and foremost, in a continuous exchange of experiences and technologies, where everyone has a lot to gain. To confirm a certain synergy between the two areas that, up to even just a few years ago seemed far apart. More and more project engineers today committed to pharmaceutical companies have transferred over from the food sector, or at any rate come from the field of consumer products."

If in the past packaging lines were only devised for a single product and format, now they have to be flexible, efficient and adaptable to different products and formats. With these kinds of complex demands, robots can give the best answers as has been demonstrated in the food and in many other industrial sectors already.

## > FACTS

### IMA

- World leader in the design and manufacture of automatic machines for the processing and packaging of pharmaceuticals, cosmetics, tea and coffee
- Consolidated turnover: 425.2 million Euro for the fiscal year 2006 (export: 92.3 percent)
- Employees: about 2,700, more than 1,100 are based overseas
- 15 manufacturing sites in Italy, Germany, Spain, U.K., U.S., India, China
- Worldwide sales network covering more than 70 countries.
- Web site: [www.ima.it](http://www.ima.it)