robotics, automation & vision

Marriage of technologies creates a perfect match

Companies that supply automation, robotics and vision systems have been expounding for a long time the benefits to be derived from adopting all or some of these technologies. Today there is real evidence that the marriage of the three may well create the perfect match.

The arguments for each are well rehearsed and seem, on the surface, to be compelling. Automation can improve productivity, repeatability, speeds and reliability; robots can solve difficult handling problems as well as doing repetitive and potentially harmful tasks on the line; vision/inspection systems can eliminate damaged, mis-packed or faulty products and so reduce waste and product recalls.

But many UK companies, particularly those in the small to medium category, have shown a marked reluctance to invest, citing primarily cost, lack of skilled labour to run and maintain the systems, and the need to be ultra flexible as customers demand faster and faster delivery times and shorter runs.

Have the suppliers been able to respond to these barriers and are they succeeding? The answer is an emphatic Yes!

Bells & whistles

Machine builders have developed customised modular equipment to meet the required levels of automation; so the buyer does not have to have ALL the bells and whistles on offer, just those needed. Additionally the advances in control and component technologies means even 'entry level' models can perform as semi- or fully-automatic machines.

For robots the chief advance is in the cost, as well as the flexibility of equipment. Stirling Paatz, managing director, Barr & Paatz, explains, "The maths in favour of robots makes sense. During a period when hourly wages have doubled, the real price of robots has halved. Mass production has pushed down prices, while flexibility and functionality have hit new peaks. Most machines will pay for themselves within two years and give an average service life of 15 years."

"Industrial robots are recognised as the key components in the drive towards automation and represent one of the quickest ways of boosting productivity and reducing labour costs" - Stirling Paatz

But he warns, "Robot investment is booming in China, with a 20 per cent increase reported in the latest figures. It is expected to install more than 100,000 industrial robots by 2015. And demand for robots is also increasing in the so-called low wage economies."

While there are some encouraging signs of increased investment in the UK food sector, and if we accept robot density as an accurate indicator of automation, then with less than 100 robots per 100,000 people employed in the UK; this is below almost every other advanced or emerging nation.

A case can also be made in favour of vision systems. Not only have costs come down dramatically but functionality has increased with the development of camera technologies and X-ray equipment which can see more faults and detect a greater range of contaminants than was previously thought possible, and at very high speeds.

Mick Keane, technical director at RNA explains, "Recent requirements and trends towards flexible manufacturing combined with quality control have pushed the use of vision system technology into process lines and component handling systems. These systems are widely used to examine component parts in detail and evaluate the image to make accept/fail decisions. Also it performs data collection to assist quality control by identifying trends."

But the real breakthrough is the marriage of all three technologies into integrated production lines. Keane gives one example, "Vision guided robotic handling systems can automate the production line where small batch runs and sensitive, difficult components have been impossible or too costly to automate. The robotic arm, used for handling and manipulating the product and camera system both share the same PC-based control system in most cases integrated with a standard robot and controller."

Uncluttered design

More open and less cluttered designs of processing and packaging machines can now accommodate robots easily, while cameras used in vision systems are small enough to be mounted almost anywhere. Key to all this is the ability to integrate the control of all these complementary systems together so that the operator can feel 'in control'.

On the following pages a number of experts explain how these advances make such technologies the province of all sizes and disciplines of companies.

FURTHER INFORMATION

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