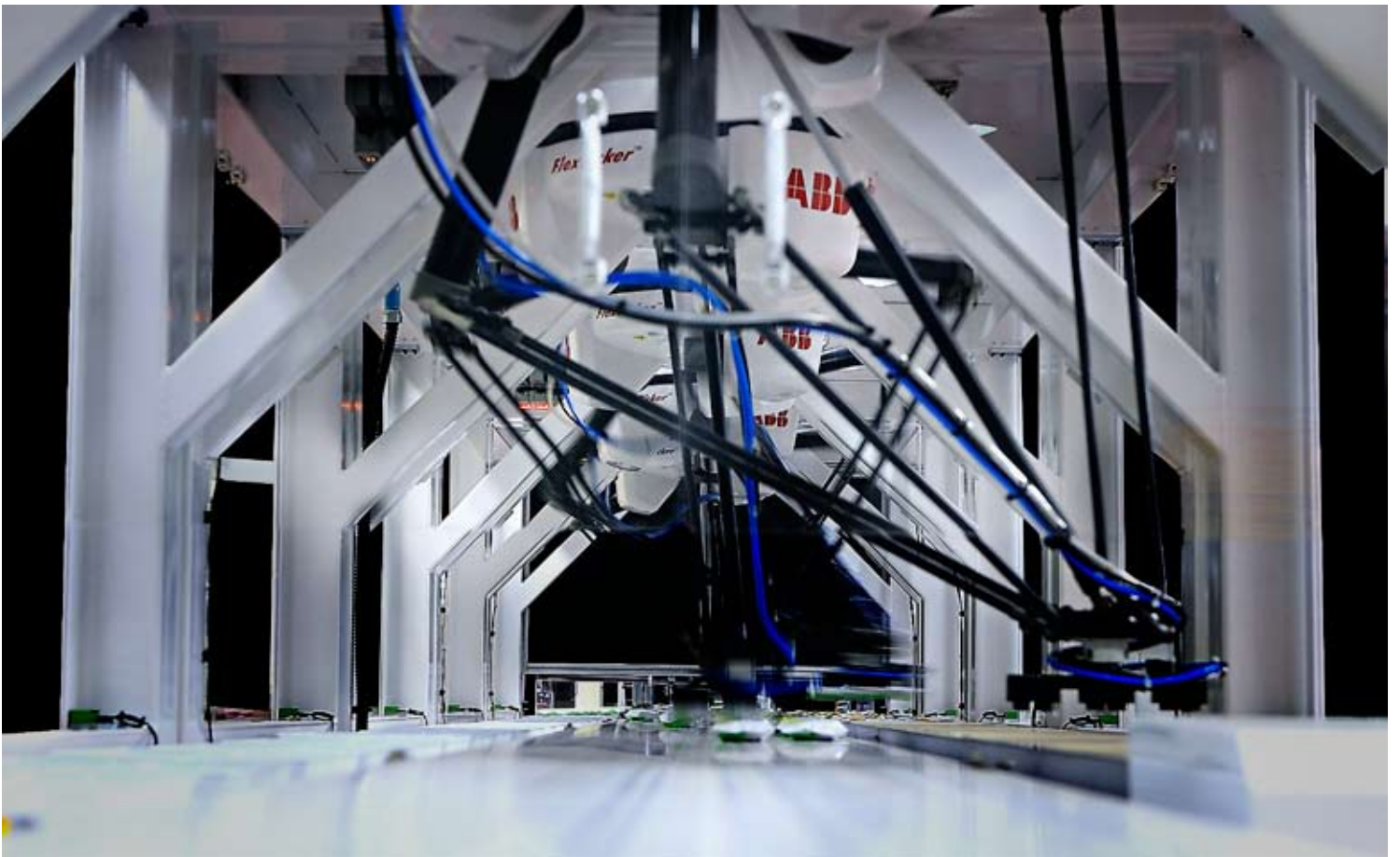


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A customer magazine  
of the ABB Group

# robotics



Consumer Industries Special:

## Robots pick up the pace

**Brushing up productivity 09**

Swiss toothbrushes innovate to succeed

**Healthy, wealthy and wise 16**

Addressing health and safety concerns

**Small but mighty 18**

ABB introduces a new compact robot

Power and productivity  
for a better world™





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**Stacking up**

Large daily deliveries by a British bakery are made possible by robots.



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**A sweet deal**

South Korea's leading confectioner upgrades to keep up with demand.

# robotics <sup>2</sup>|10



**Per Vegard Nerseth**  
Group Senior Vice President  
Head of Business Unit Robotics, ABB

Welcome to this issue of *Robotics* dedicated to consumer industries. At ABB we think a great deal about what our value offering is in this arena, and at the end, this is what we do: we create more uptime out of flexible automation with our robots and tools. The stories in this issue prove it.

Even in the dark days of 2009, when the entire robotics market shrank by almost fifty percent, robots for the Food and Beverages segment bucked the global trend and continued their double-digit growth; and I believe we are only scratching the surface.

The industry needs to stay focused, remain careful with ever-scarcer resources and be mindful of increasing complexity. Together, we can ensure more fit companies for the future.

The economic benefits that robotic solutions provide are critical to the success of our customers. Check out our article on how Propack in Canada has

helped Nutri-Nation Functional Foods increase its packing flexibility and efficiency (page 11).

Also, don't miss our story on health and safety trends affecting the food industry (page 16). At ABB we understand how safety issues can make or break a producer's bottom line.

On a similar theme, our story on Machinery Automation & Robotics's work with the meat industry in Australia (see page 12) underscores that some work environments are not suitable for people, and automation has more than just an economic role to play.

Inside you'll find similar success stories that I hope will inspire you and spark ideas for your business. We at ABB Robotics remain focused on helping you grow. In fact, we have more new, value-creating robots being developed in the pipeline for you. Watch out for them in the coming months!



# 06

## Dotting every eye

Thanks to increased production capacity, a bakery in Australia is looking to expand aggressively in new markets.



# 11

## Energy boost

Custom nutrition bars require flexibility.

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RobotWare 5.13 powers ABB's new IRC5 Compact controller.

## Precision programming New robot control software supports lean cell design

ABB recently introduced a new version of their robot controller software, RobotWare 5.13, to deliver even better performance, ease of use and enhanced safety for industrial robotic applications. The updated software provides manufacturers with improved programming and control of robotic equipment, as well as enhancing functionality, safety and motion control. This facilitates smarter, leaner robot cell concepts and the enhanced control of production lines.

This version of RobotWare takes safety to a new level. Powerful new features have been added to SafeMove, ABB's market-leading, next-generation robot safety system, and even more precise control of robot motion can be achieved with the new features – further allowing integrators to optimize cell design and production flow.

Moreover, the 'indexing conveyor' function allows a conveyor to be driven by the robot as an additional axis. When combined with ABB's FlexPicker IRB360, this feature increases picking and packing cycles to 450 products per minute. This function also eliminates the need for expensive racetrack installations and helps to significantly reduce the overall cost of a packing installation.

Another new feature integrated into RobotWare 5.13 is ABB's new Torque Slave software, which enables multiple motors to be driven as a single logical axis. Using this function, the robot is able to control large, heavy-duty equipment such as workpiece positioners.

To enable more users to reap the savings associated with the low cost DeviceNet™ Lean bus, ABB has extended it to support up to 20 units and to allow

the control of third party I/O units. In addition to significant cost savings, the Lean version of the DeviceNet communications protocol also offers new auto configuration and bus scan tools for seamless communications with all connected devices.

RobotWare 5.13 software is also 100% compatible with ABB's new IRC5 Compact controller, which combines the powerful performance of the standard IRC5 controller – including superior motion control and flexible RAPID language, with a significantly reduced footprint.

ABB Product Manager Mats Myhr says, "What should interest many robot users is that we are rolling out the recently introduced Compact version of the IRC5 controller on a wide range of robot types. In addition to the small IRB 120 robot, the new version of RobotWare 5.13 allows the IRC5 Compact controller to be used with the IRB 140 and IRB 1410 robots – this range will further expand during 2010."

Myhr is enthusiastic about ABB's rollout of new products. "We have also introduced a wide range of other improvements that deliver added efficiency and ease of use in many robot applications. These changes are a direct result of the feedback we receive from our users. What remains unchanged is ABB's advanced motion technology, which still provides the most accurate path following and shortest cycle times on the market."

Thanks to RobotWare 5.13, the IRC5 compact controller can be used for a greater range of robots.

Calendar  
Come and see  
ABB's newest  
solutions at the  
following events:

October 31–  
November 3  
PackExpo, Chicago

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October 24–26  
Qatar Customer  
Event, Doha

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November 22–25  
Emballage, Paris

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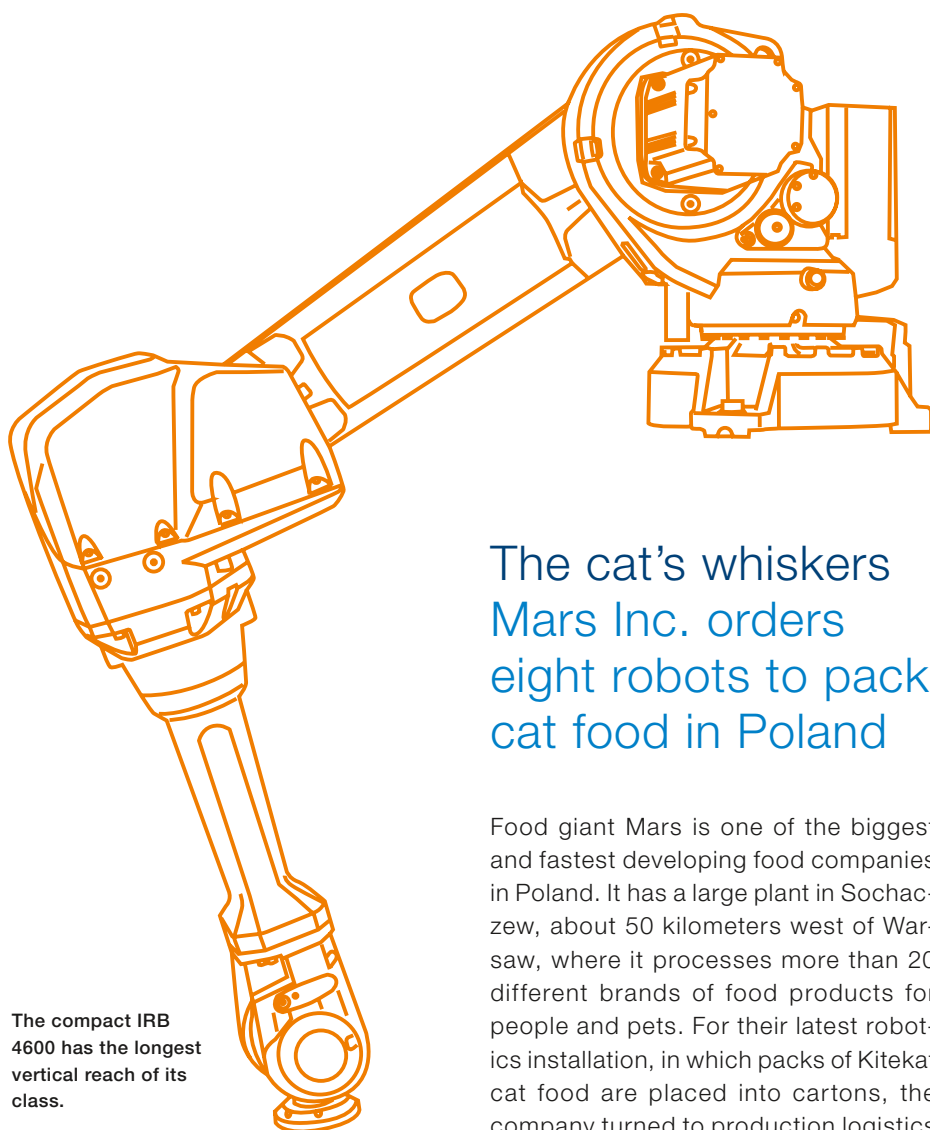
April 4–8  
Hannover Messe,  
Hanover

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March 22–25  
AusPack, Sydney

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May 12–18  
InterPack,  
Dusseldorf



The compact IRB 4600 has the longest vertical reach of its class.

## The cat's whiskers Mars Inc. orders eight robots to pack cat food in Poland

Food giant Mars is one of the biggest and fastest developing food companies in Poland. It has a large plant in Sochaczew, about 50 kilometers west of Warsaw, where it processes more than 20 different brands of food products for people and pets. For their latest robotics installation, in which packs of Kitekat cat food are placed into cartons, the company turned to production logistics company FlexLink.

FlexLink designed a solution involving eight IRB 4600 robots with the conveyor tracking option. "The robots pick from a fixed position, and place the sachets onto the moving infeed of a flow wrapping machine," explains Mats Halen, local manager at ABB.

"We have a good relationship with Flexlink in Poland," says Halen. "We are looking into other projects together."

For more information about Mars in Poland, please visit [www.mars.pl](http://www.mars.pl) – for information about FlexLink, check out [www.flexlink.com](http://www.flexlink.com).



# Dotting every eye

With faultless precision, robot-assisted production transforms Perryman's bakery in Australia.

Text Val Pavlovic Photography Perryman's

Anyone doubting that robotics can put the icing on the cake for a small business should see the production line at Perryman's of North Adelaide in South Australia. Perryman's is a forward-thinking family bakery that has made a name for itself on the quirky appeal of its popular "Gingerbread Babies." For owner and manager Neil Perryman, integrating a robot into the company's production process was simple and sensible.

"The return on investment has been immense," he says. "We couldn't have reached a higher level of production without a certain amount of automation, yet it hasn't affected our recipe, which retains the hand-made, homemade feel." (The company's legendary recipe was handed down the family line by Neil Perryman's own grandmother.)

In the production solution put together by integration specialist SAGE, an ABB robot dots the eyes, nose and bellybutton on each of 120 Gingerbread Babies in less than three minutes. "Before we moved to our current location in Brompton [on the outskirts of Adelaide], our output capacity was about 5,000 to

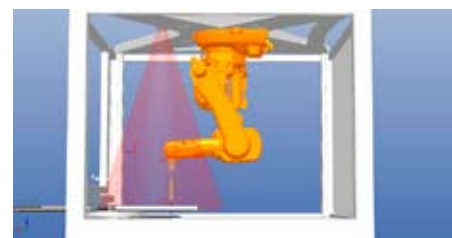
6,000 Gingerbread Babies per day," says Perryman. "The robotic addition raises capacity to about 15,000 a day." Four dots on each of 15,000 Gingerbread Babies adds up to 60,000 dots of icing – a massive task in manual terms, which Perryman says would require a large team and far more space than a robotic cell.

## The solution

To start, SAGE reviewed the scope of what was desired and researched available options. The resulting design was a compact, flexible work cell with an ABB IRB 140 robot hung from the top of the cell. The robot utilizes a vision system to identify the location and position of each of the 120 cookies on a tray as they leave the oven. Using that information, the robot positions a dispensing gun over each cookie in turn, icing all 120 in three minutes.

The concept became a completed solution in just 12 weeks. SAGE supplied the mechanical design, build and commissioning; the electrical design, build and commissioning; and a manual feed station. This solution for a simple, formerly manual task demonstrates that robots are fully affordable and applicable for small and medium-sized enterprises; the most mundane, time-consuming tasks can be transformed into quantifiable profit makers.

"Overall output can be as much as triple because the robot integrates with our other technologies, including packing machines and moulding machines, so our production process has been accelerated," says Perryman. The added speed and accuracy has greatly increased output, po-



ABB's RobotStudio software was used to visualize, program and test the installation before manufacturing began.

## + Quick facts

- The robot is about 1,500 millimeters square and 2.4 meters high; each Gingerbread Baby is around 55 millimeters in length and 35 millimeters wide.
- The compact, flexible work-cell size is 1.2 by 1.2 by 2.2 meters.



## SAGE Automation

**One of the main** reasons SAGE specified robots from ABB for this project is the strong relationship between the two companies, facilitating customer support, service and parts. SAGE Automation, Australia's largest independent automation and control systems integration company, has integrated 20 to 30 robots in the past four years. For more information, visit [www.gotosage.com](http://www.gotosage.com).

The complete turnkey project integrated the following technologies:

- ABB IRB 140 robot
- IRC5 Robot Controller
- HMI and cell safety
- Vision system: Cognex Insight 5403
- Hygienic icing system
- Custom-built dispensing gun



tentially opening up wider national markets and greater overseas prospects. "We have seen incredible growth since we began the business eight years ago," he says. "With robotics in our processes we have begun to export to New Zealand, and Singapore has shown genuine interest."

### Added benefits

Automation has also improved occupational health and safety and allowed

better deployment of staff. Employees at Perryman's showed a positive attitude from the outset, recognizing that new automation was a good step for all involved. "We have increased staff since adding the robot cell," Perryman points out, "and output has grown from a few hundred packages a day to palletized movements."

The benefits have continued to pile up. "Scrap and wastage is almost non-existent," Perryman says. "Only very rarely does the robot arm not do a perfect job. The more product we turn out, the more energy we save. The floor space taken up by the robot cell is minimal, and its height is only about two meters."

In addition, the design is flexible enough to accommodate other products Perryman's may introduce in the future. And the robots increase flexibility in other ways. For instance, pink icing can be introduced in product orders specifically bound for, say, maternity wards or charity drives.

Perryman has an ambitious vision for his company, and is increasing production accordingly. "We have distributors in every state in Australia. In our view, Gingerbread Babies could become as iconic as a yo-yo."





ABB robots are delivered to the Trisa toothbrush factory painted in Trisa's signature blue color.

# Brushing up on productivity

To remain competitive in the global market, Swiss market leader Trisa relies on highly automated production – and ABB robots play a key role.

Text Melanie Nyfeler Photo Roland Eschmann

The large, bright production halls bustle with activity. Highly automated systems manufacture toothbrush handles in various colors with an injection moulding technique. In another hall, a machine resembling a sewing machine punches bristles into the brush heads. As two women in overalls supervise, the bristles are then cut into shape and rounded down. At the back of the hall, finished toothbrushes automatically slide into pre-formed PET

covers; the packaging is cut and sealed before being readied for dispatch to retail outlets.

About a million toothbrushes leave Trisa's production plants each day. Some 120 years ago, the Swiss family company began as a small factory making brushes in Triengen. Today Trisa employs more than a thousand people and sells 250 million toothbrushes each year. Approximately 97 percent of the company's output is exported to about eighty countries

in Europe, the Middle East, North Africa, China and India. Amazingly, one hundred percent of the company's output is produced in Switzerland.

## Innovate to stay competitive

To remain globally competitive manufacturing a mass-produced item in a high-wage economy, Trisa invests intensively in new products. The company has become the sector leader in terms of innovation and technology; it develops complex



In order to stay competitive all over the world, Trisa invests heavily in technology and innovative product development.

multi-component technologies for toothbrush handles, flexible brush heads and a broad range of bristle designs.

Felix Fischbacher, Export Marketing Manager at Trisa, says, "Today's toothbrushes only reach about 65 percent of the surface of teeth, as it's very difficult to get to the area at the back of the mouth and in between the teeth," he says. "Our aim is to reach the whole tooth." Each year, Trisa develops 20 to 30 new products in the pursuit of perfect oral hygiene.

#### Investment in robotics

In addition to product innovation, the company places a lot of focus on automation. Around forty ABB robots are used at Trisa, primarily in the final packaging process. Another order for eight robots – one IRB 6000 and seven IRB 140s – has just been received for new production lines. "And despite the automation, we have created hundreds of jobs in the last twelve years since installing the first robots," adds Fischbacher.

Roland Eschmann, Head of Marketing at ABB Robotics in Altstetten, says, "Our collaboration with Trisa has grown over the years, and is characterized by

mutual trust." ABB delivers the robots in blue – Trisa's corporate color. Acting as its own systems integrator, Trisa incorporates the robots into existing or new production systems and programs them.

"It is essential that we can modify our robot systems very quickly and flexibly," explains Josef Lötscher, head of the technology unit. "We also have limited-batch production runs, and we can't afford to be idle for long periods." Lötscher values

"We have created hundreds of jobs in the last twelve years since installing the first robots."

Trisa's good relationship with ABB's specialists, as well as the reliable, low-maintenance robots, such as the older IRB 2400 which picks up six wrapped toothbrush batches in a particular order, places them in a rack, selects a label and sticks it on. The robot also checks that no packaging has been forgotten during this process. Nothing escapes its sensor-eye, ensuring that the end customer in the shop can select the perfect toothbrush.

## Trisa – a family company

The Trisa Group, founded in 1887 in Triengen, Switzerland, has operations in the oral care sector (73 percent), cleaning sector (18 percent) and hair care sector (9 percent). The Ebnat brush factory also belongs to the Group. The world's leading supplier of toothbrushes and oral care products generated turnover of \$200 million USD in 2008. Trisa AG exports 83 percent of its output. The company sets itself apart with a cooperative management style, a supervisory board with equal employee and shareholder representation, employee involvement in the decision-making process and commitment to social responsibility.

For more information, visit [www.trisa.ch](http://www.trisa.ch).

# Energy boost

Packing up to 350 bars per minute, a carton top-loading robotic system at Nutri-Nation Functional Foods has dramatically raised productivity.

Text Jack Mans

Canadian company Nutri-Nation Functional Foods is a contract manufacturer of private-label “functional” food products such as energy bars, sports nutrition bars and total meal replacement bars. With a new robotic carton loader at the company’s facility in Port Coquitlam, British Columbia, the company has dramatically improved productivity and flexibility.

“With the ever-changing diet and nutrition market, it is important to partner with a manufacturer that can respond quickly to new trends and technology,” says company president Richard Schroeder.

Nutri-Nation began operations in 1998, and now has three production lines. However, until recently, it packed bars into cartons manually.

“This had become a problem,” says Schroeder. “Although we produce trailer-load quantities for many customers, we



The IRB 360 saves valuable floor space.

also accept orders as small as 50,000 bars. And because we run many different bar sizes, we sometimes have a number of changeovers during a single day. Plus, we needed different numbers of workers as our operations changed.”

Schroeder opted for a top loader from Propack Processing & Packaging Systems that is equipped with a FlexPicker (IRB 360) pick-and-place robot from ABB. “We have a small plant, and space was at a premium,” says Schroeder.

A flow wrapper delivers the bars to a product-infeed conveyor. From there, the bars are metered into the loader’s product-indexing conveyor, placing the bars precisely for pickup. As the cartons

and bars travel through the loader, the pick-and-place robot synchronizes with the movement of the bar-indexing conveyor to maximize the time that the robot contacts the bars. (See article featuring the Indexing Conveyor function on page 4.) The robot picks up bars with vacuum cups and places them in the cartons. The system can run different numbers of bars and cartons.

Schroeder says, “I estimate that we use two less people now than when we were hand-picking,” he says.

- +** **Robot benefits:**
- overhead conveyor solutions saves space
  - two less employees than when hand-picking
  - flexible options for product size and quantity



In this product example, the FlexPicker robot picks up eight bars at a time and places four bars in each of two cartons on each cycle. The cartons are released after two cycles, so each carton ends up with eight bars.

## Nutri-Nation

Nutri-Nation Functional Foods is part of a family-owned and operated manufacturing and marketing group which includes Bio-Care Laboratories, Flash 5 Energy Foods, Aalperne Research and Poor Richard’s Distributing Corp. Founded in 1971, the company operates out of Port Coquitlam, British Columbia, near Vancouver.

For more information, check out [www.nutri-nation.com](http://www.nutri-nation.com).



The brisket cutter makes one well-placed, sanitary cut.



Photo: Jacky Ghossein

## Clyde Campbell, CEO of ABB Partner MAR

Clyde Campbell founded MAR in 1987. Campbell says, “Our association with ABB provides us equipment that serves as a basis for us to develop innovative solutions for industry. With robotics, we can improve productivity levels, streamline manufacturing processes and provide safer working environments.”

# Clean cut

Machinery Automation & Robotics, a leading robotics integrator, transformed a dangerous work environment at a meat processor with three safe and sanitary robotics solutions.

Text: Garry Fabian Photos: MAR

**M**eat processing is a labor-intensive, hands-on industry that requires extensive safety protocols to protect the health and safety of operators—not to mention the health and safety of consumers, too. Recently, an international meat processing company based in Australia needed to raise its operations to a safer and more productive level.

The company sought help from Machinery Automation & Robotics (MAR), a firm that designs, builds and integrates automated manufacturing and industrial solutions across a wide range of industries. The meat processor hoped MAR could address

not only its occupational health and safety issues, but also the lack of reliable skilled labor (particularly in the area of brisket cutting) that was threatening the company’s ability to stay competitive.

MAR’s team of experienced engineers analyzed the abattoir’s production and came up with three innovative solutions that have transformed productivity, safety and sanitation at the facility.

### **Making the cut**

Clyde Campbell, CEO at MAR, says. “Traditionally, the brisket cutting part of meat processing requires a person to operate a heavy, industrial-size hydrau-

lic knife device called a brisket shear,” he says. “This practice combines a dangerous tool with a physically demanding task that commonly results in wrist and back injury. Our solution eliminated the need to endanger employees altogether.”

MAR’s robotics installation features an IRB 4600 industrial robot from ABB and an advanced sensing system to ensure accurate, reliable operation. A circular cutting saw, fitted with a dustless micro-toothed knife blade and centering guides, makes one clean cut at the center of the brisket. This has drastically improved quality with fewer instances of internal organ puncturing and other dam-



An IRB 4600 industrial robot is fitted with a vacuum wand to remove kidney fat.

age, thereby simplifying downstream processing. Moreover, consistent submerging of the blade and guides after every cut sterilizes them more thoroughly and prevents cross-contamination.

#### Safety first

Contamination that spreads from a sheep's pelt to the carcass costs the industry in terms of product quality, extra processing, and reduced yield. The way the meat processor had addressed this earlier was a manual process in which personnel operated a Sani Vac wand. This solution put employees at risk for repetitive strain injuries, limited yield through various inefficiencies, negatively affected product quality and required extra processing.

Thus, the second solution MAR provided the meat processor was front and rear Sani Vac systems, essentially steam sanitisers with vacuums attached to IRB 140 industrial robots, to clean areas prone to contamination before cuts are made. With accurate sensing and programming, the wand delivers steam to loosen soil, kill bacteria and remove contaminants – and removes them via vacuum.

Additionally, Campbell points out that having both the front Sani Vac and the

brisket saw robot in the same guarded cell reduces the amount of guarding on the process line.

#### Losing the fat

Finally, the third solution that MAR provided the meat processor involved kidney fat removal from sheep carcasses. Like the other two installations, MAR's automation saves workers from a repetitive and strenuous task best left to robots; it interfaces an IRB 4600 robot with a specially designed fat extraction wand connected to a vacuum system.

"The heavy vacuum that operators handled in the manual process caused repetitive strain injuries and serious back and shoulder problems," says Campbell. "Also, there was a risk of cross-contamination from one carcass to the next. The carcasses travel pretty fast on the chain, so you need a very competent operator to make sure fat is removed consistently and sterilization procedures are completed thoroughly – every time."

MAR's dramatic improvements to the meat processor's work have achieved the most important goal of all: there have been no injuries reported since the installation.

## Machinery Automation & Robotics

Machinery Automation & Robotics (MAR) provides flexible turnkey robotics solutions to diverse industries all over the world such as food production, meat, brewing and beverages, pharmaceutical, solar, white goods, packaging, chemicals, water treatment and filtration, aluminum smelting, castings and metals.

With offices all over Australia, the company is headquartered in Silverwater, Sydney, in its own purpose-built business park. From here, national projects are scoped, designed, built and tested (Factory Acceptance Tested) before being installed on-site. In addition, MAR's state-of-the-art R&D facility is equipped with the latest robotics, PLC and vision equipment.

In 2008 the company was named Telstra Australian Business of the Year out of a competing pool of more than 4,500 nominated entrants and 21 finalists. The award is based on a comprehensive range of criteria, including technical innovation, customer service and excellence in innovative design and solutions.

For more information, visit [www.machineryautomation.com.au](http://www.machineryautomation.com.au).

# A sweet deal

Highly efficient packaging lines at Lotte Confectionery's plant in Pyeongtaek are helping to satisfy South Korean sugar cravings.

Text John Scott Marchant Photography K. H. Jung

Since opening for business in 1967, South Korea's Lotte Confectionery Co. Ltd. has known the sweetness of success. Today, local and overseas consumers buy more of the company's high-quality fare than ever before, driving production of its much-loved biscuits, candy, chewing gum, chocolate and ice cream to record levels.

But it takes more than luck to become the top confectioner in South Korea. The company's plant managers are renowned for their efficiency, and take great pride in ensuring that every part of their operations functions at maximum efficiency.

A few years back, the Lotte Pyeongtaek plant in Gyeonggi Province, south of Seoul, was plagued by repeated breakdowns and poor uptime of its traditional automated packaging lines. Having heard that two FlexPicker robots in-

stalled by ABB at a company ice cream plant in 2005 were performing admirably, the company began to consider building two robotic lines at Pyeongtaek.

After consulting with a major subcontractor who was using FlexPicker robots, Lotte decided to take the plunge. A Lotte spokesman said, "Management was convinced that introducing ABB's robotic technology would improve productivity, reduce turnaround times and lower failure rates." ABB channel partner Winner in Factory Automation (WIFA) designed, built and installed two lines, each utilizing five FlexPicker IRB 360 robots.

#### Keeping up with demand

"Chic Choc," Lotte's first new line, began operation in March 2009. It was followed less than a year later by "Custard." The spokesman said, "Chic Choc



## Winner in Factory Automation (WIFA)

Founded in 2005, the company provides robotics solutions to major firms in South Korea's consumer goods industry. Its headquarters are in Cheonan, South Korea.

cookies and Custard cakes were chosen for the company's first major foray into robotic packaging because of consumer demand. These are two of Lotte's most iconic and popular brands, and we needed faster production to keep up."

Lee Sang-ho, a section chief with ABB South Korea, explains that Lotte's



WIFA employees Chan-Yong Park (left) and Sung-Dae Kang (right) pose with Lotte's Soo-Yong Jeon in front of the robotics installation in Pyeongtaek.

### + Robot benefits

- Improved productivity
- Increased uptime due to replacement of traditional automation with more reliable FlexPickers
- Increased flexibility with vision infeed supervision
- Reduced changeover time between different product lines
- Very high pick-and-place speeds of up to 110 per minute

FlexPicker robots are used to load snacks into trays, with each robot picking up two or three pieces per cycle. The average cycle is 45 per minute, and a single line is capable of 560 picks per minute.

The entire process is overseen by a single digital camera using PickMaster 3.2 software from ABB. Lee says that this allows one line of FlexPickers to act as one, with the workload evenly distributed.

"The FlexPicker is a natural fit for Lotte as it provides the company with greater flexibility in meeting different packaging requirements," he said. "In addition, it is cheaper and takes up less space than a conventional system."

#### Tweaking the system

But even the best-laid plans go awry. Although the FlexPicker was hitting high performance benchmarks, and Lotte

was satisfied, a potentially serious problem emerged during installation.

"The by-pass rate became a key issue," Lee says. "The client had set a target of less than 0.2 percent. During installation, this climbed to an unacceptably high 2 percent. In full operation, this equates to 72 pieces per minute being wasted, or 4,320 pieces per hour."

ABB worked with Lotte to redesign the vacuum belt conveyor's control system and speed regulator. "We brought in a dedicated engineer to solve this issue on-site," Lee said.

For Lotte, ABB exceeded expectations. "The support provided by ABB resulted in a major improvement to the stability and performance of our system," the spokesman said. "This is the kind of top-notch response we have come to expect from ABB."

## Lotte Confectionary

Founded in 1967, Lotte Confectionary Co. Ltd. produces a variety of foods, including biscuits, candy, chewing gum, ice cream, rice cakes and more. The company employs more than 4,900 workers and has production plants in Yeongdeungpo, Pyeongtaek, Yangsan and Daejeon.

Find out more at [www.lotteconf.co.kr](http://www.lotteconf.co.kr).

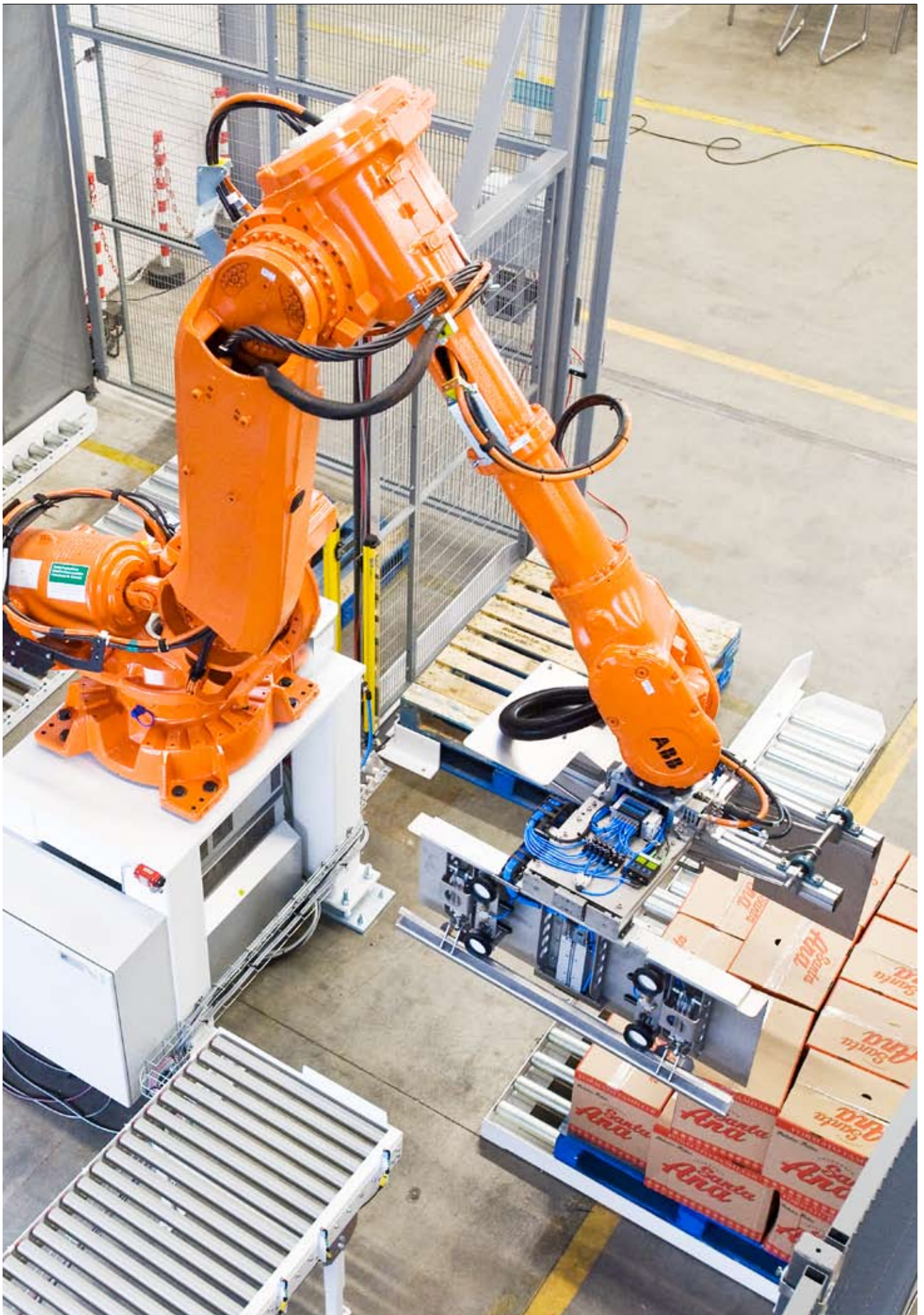


ABB palletizing solutions use software functions such as SafeMove to improve worker safety in heavy and repetitive lifting applications.



# Safely does it

## Food producers face increasingly high consumer expectations regarding health and safety.

Text Elaine McClarence Photography Ruben Keestra

Thanks to the Internet, it's never been easier for food producers to lose a good reputation because of a health and safety scare. In fact, the US Food and Drug Administration (FDA) and the National Institutes of Health launched the Safety Reporting Portal website in May 2010 to make it even simpler for consumers and industry professionals to submit reports about food and other products. The FDA expects the number of reported incidents related to food to rise significantly.

The new FDA website comes against a backdrop of growing consumer interest in where and how food is produced. "Traceability is the challenge for the food industry," says Ian Greaves, Managing Director of IGI Ltd, a specialist firm of consultants working internationally on health and safety issues for the food industry. "The 'Farm to Fork' concept is now a key issue. Although the food industry has always been able to follow its product, there will be more pressure from agencies on food suppliers, manufacturers and retailers to prove where their food came from and show all the steps it took to get to the consumer."

Traceability is inextricably linked to health and safety. Greaves believes that the food industry is already well-regulated and has recognized safety systems in place. "These may be ISO or in-house quality standards," he says. "HACCP [Hazard Analysis Critical Control Point] has been part of the manufacturing in-

dustry for years, but now enforcement officers are more familiar with the concept, and, as legally required, they are looking at process management and in-house monitoring a lot more."

When it comes to process management, the introduction of automation and robotics has clear benefits. Alan Spreckley, Channel Partner Manager at ABB, says, "For the consumers who buy the products, the risk of contamination needs to be lowered as much as possible. This can only be done by automating and removing human intervention. Direct contact with machinery should be minimized, and in the more uncomfortable areas of production, most of the workforce should be removed."

Greaves adds, "Most food safety issues are caused by people. Therefore if you take the 'dirty hands' away, the food is safer. However automation can lead to physical contamination if it is not monitored or maintained well. Moreover,

there are still areas in the food industry in which automation is too difficult or costly to implement. And when companies do introduce a new process or a piece of equipment, they have to ensure that the staff who interact with it are trained to use it correctly and safely."

**"Most food safety issues are caused by people."**

Spreckley points out, "Robots traditionally remove people from hazardous and unhealthy environments. High repetition – for example feeding or unloading machinery – invariably results in lapses in concentration. It only takes a split second for an accident to occur, and that can have long-term consequences. Robots can perform these tasks to a consistent quality and at a higher consistent speed than a human being. Industry suffers from lost days due to work-related injuries such as repetitive strain, not to mention the subsequent compensation claims. Robots definitely minimize these instances by removing people from dull, dirty and dangerous tasks."

Training and maintaining the highest hygiene standards, however, remain at the heart of safe food production. As Greaves notes, "Good food producers have an overall ethic on quality, service and safety. The words 'safety culture' are often used to describe a producer who does not compromise on training its staff, monitoring its product and always looking to improve. A safe food company is one where the directors down to the shop floor understand the need for safety and want to be part of that culture." And for those companies who get it right, he says the benefits are "safer product, enhanced reputation, less wastage and motivated staff."

## IGI Ltd

IGI provides a complete range of food safety services, from creating the right processes and training staff to supporting companies through any incidents or investigations to microbiological testing of foodstuffs and water. All of its consultants are qualified Environmental Health Officers and members of the Chartered Institute for Environmental Health.

For more information about IGI Ltd, visit [igint.co.uk](http://igint.co.uk).



# Small wonder

The compact IRB 120, the most accurate six-axis robot available, has amazing flexibility and speed.

Text Nancy Pick Photos ABB

**W**hen ABB first began testing the accuracy of its new compact industrial robot, the IRB 120, the designers thought they had a problem.

“When we got the first measurements, we were worried,” said Nicolas De Keijser, the robot’s product manager. “It turned out that the robot was so accurate that the measurement system could not give the right values.” In other words, the robot was too good to pass the test.

“That has been the story of the IRB 120 all along,” says De Keijser. “The little robot has been full of surprises.”

In 2007, when the robot model’s design work first began, ABB intended it for assembly work in the electronics industry. The idea was to make an affordable robot suited to low-cost countries where electronics are typically manufactured.

But the robot has turned out to have much broader appeal. On sale since January of 2010, the IRB 120 has already attracted interest not only from the electronics industry but also the pharmaceutical, packaging, food and beverage, automotive and solar photovoltaic industries.

“It’s a practical robot for small, simple tasks,” says De Keijser. A six-axis robot — with a jointed arm and wrist — the IRB 120 offers a spherical working envelope. Its capabilities include placing small tubes

into centrifuges, handling solar cells or picking up stock cubes and placing them in a carton. (Watch the IRB 120 in action packing stock cubes at [www.youtube.com/abbrobotics](http://www.youtube.com/abbrobotics).)

And it’s fast. Using a standard industry test cycle, the IRB 120 can make up to 100 “picks” per minute. “We expect the IRB 120 to be a great success in packaging applications, primarily because you get many accurate picks per dollar out of it,” says De Keijser.

**“The IRB 120 has the best stroke-to-reach ratio in the business.”**

### The smaller, the better

In designing the IRB 120, the engineers focused on one key feature: “We did everything to make sure that the robot was as compact as possible,” says De Keijser. “In every industry floor space is expensive, so we wanted to keep the robot as close as possible to the machine it works with. The robot’s base covers only 18 centimeters by 18 centimeters. That’s half a piece of A4 paper.”

Weighing just 25 kilograms, the robot has an extremely compact radius when it moves. In fact, its second axis of mo-

tion has no offset beyond its first axis. This helps prevent the robot from interfering with any machine in its working range. Compactness also offers an advantage when mounting the robot upside-down, as it can be installed at a relatively low height, once again saving space.

At the same time, the robot doesn’t sacrifice reach. Its “stroke” measures 411 millimeters, which is long compared to its total reach of 580 millimeters. In fact, De Keijser says, “The IRB 120 has the best stroke-to-reach ratio in the business.”

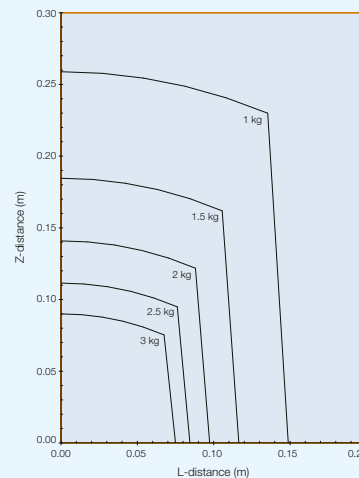
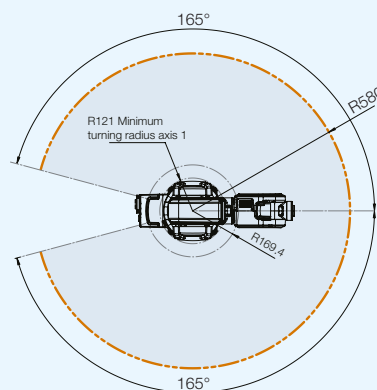
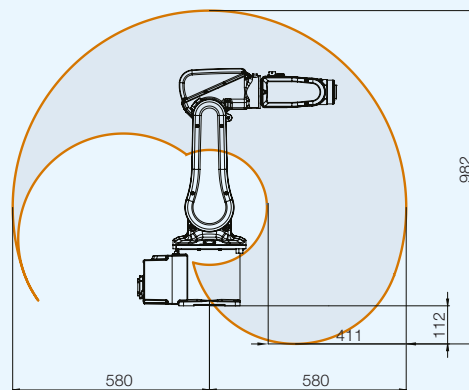
### New controller

The robot’s new controller, the IRC5 Compact, was also designed with size in mind. “We reduced the weight from 150 kilograms to just 27 kilograms,” he says. They also reduced the controller’s size by more than 80 percent compared to the standard model. “Having a small robot with a large controller didn’t make a lot of sense, in terms of footprint reduction.”

The entire new system offers unprecedented flexibility. The IRB 120 is compatible with ABB’s larger and more versatile controllers. Over the course of 2010, the new compact IRC5 controller will gradually be made compatible with some of ABB’s larger robots, up to a payload of 8 kilograms — more specifically, the IRB 140, IRB 1410, IRB 1600, IRB 260 and, last but not least, the FlexPicker (IRB 360).



Nicolas De Keijser, Product Manager, demonstrates the IRB 120 robot's incredibly compact size.



## The IRB 120

- Weight: 25 kilograms
- Accuracy (RP): 0.01 millimeters
- Base: 180 x 180 millimeters
- Reach: 580 millimeters
- Payload: 3 kilograms (4 kilograms with vertical wrist)
- Mounting: Any angle (floor, wall and ceiling, and any tilt)
- Pick-and-place cycle (Inch-Foot-Inch): 0.58 seconds
- For more information, please visit [www.abb.com](http://www.abb.com).

# Stacking up

A leading bread products producer in the UK stacks more pancakes faster and more efficiently with robotic automation.

Text Jonathan Wingate Photography James Bedford

**H**oneytop Specialty Foods is the leading bread products producer in the UK for a reason: The company understands that to remain at the top, every aspect of its food production and packing process has to be efficient, hygienic, flexible and most of all productive.

For the picking and stacking of pancakes in its factory in Dunstable, Bedfordshire, Honeytop sought the help of ABB Partner RG Luma – a firm that supplies industrial automation, custom purpose-built machines and robotic integration. RG Luma designed, built and installed two lines, each using four FlexPicker IRB 360 robots from ABB Robotics. This innovative technology enables Honeytop to meet its own exacting standards for hygiene and increase productivity by reducing labor costs and speeding up the production line.

The four FlexPicker robots are capable of handling an astonishing 110 picks per minute, meaning that Honeytop's pancakes are picked and stacked precisely and quickly. Pancakes are all manually checked before entering the robot enclosure, where they are picked and stacked in piles before being placed onto one central out-feed conveyor. Each robot is connected, via a series of conveyor belts, to an automated hotplate production line that produces large quantities of batter-based products, including delicious, light and fluffy American-style pancakes.

The conveyor belt operates on a cascading system (helping to cool the pancakes to room temperature after

they have been baked) before preparing them for stacking and packing. This has dramatically reduced turnaround time between products and ensured that Honeytop can meet its customers' tight deadlines – a vital point when dealing with some of Europe's biggest supermarkets and fast-food chains.

## Improved hygiene

Before Honeytop had enlisted RG Luma, pancakes were picked manually, which was much more labor-intensive and much less time-efficient. RG Luma's system cuts out human error and ensures that no human hand touches the pancakes before they reach supermarket shelves.

"We work in a competitive industry with very tight turnaround times and receive daily orders that are expected to be sent out to the depots within 12 hours of production," explains William Eid, Honeytop's Director, whose own background is in engineering.

"I have to admit that when we first began talks with RG Luma regarding this production line, we had some reservations about whether the robots could help introduce the flexibility and reliability that we needed," he says. "Despite our apprehension, they have delivered exactly what we wanted, and we are extremely happy with the way our business has benefited from their innovative robotic automated technology. In fact, we have not experienced one issue since the installation last year. The robots have already enabled us to absorb a number of

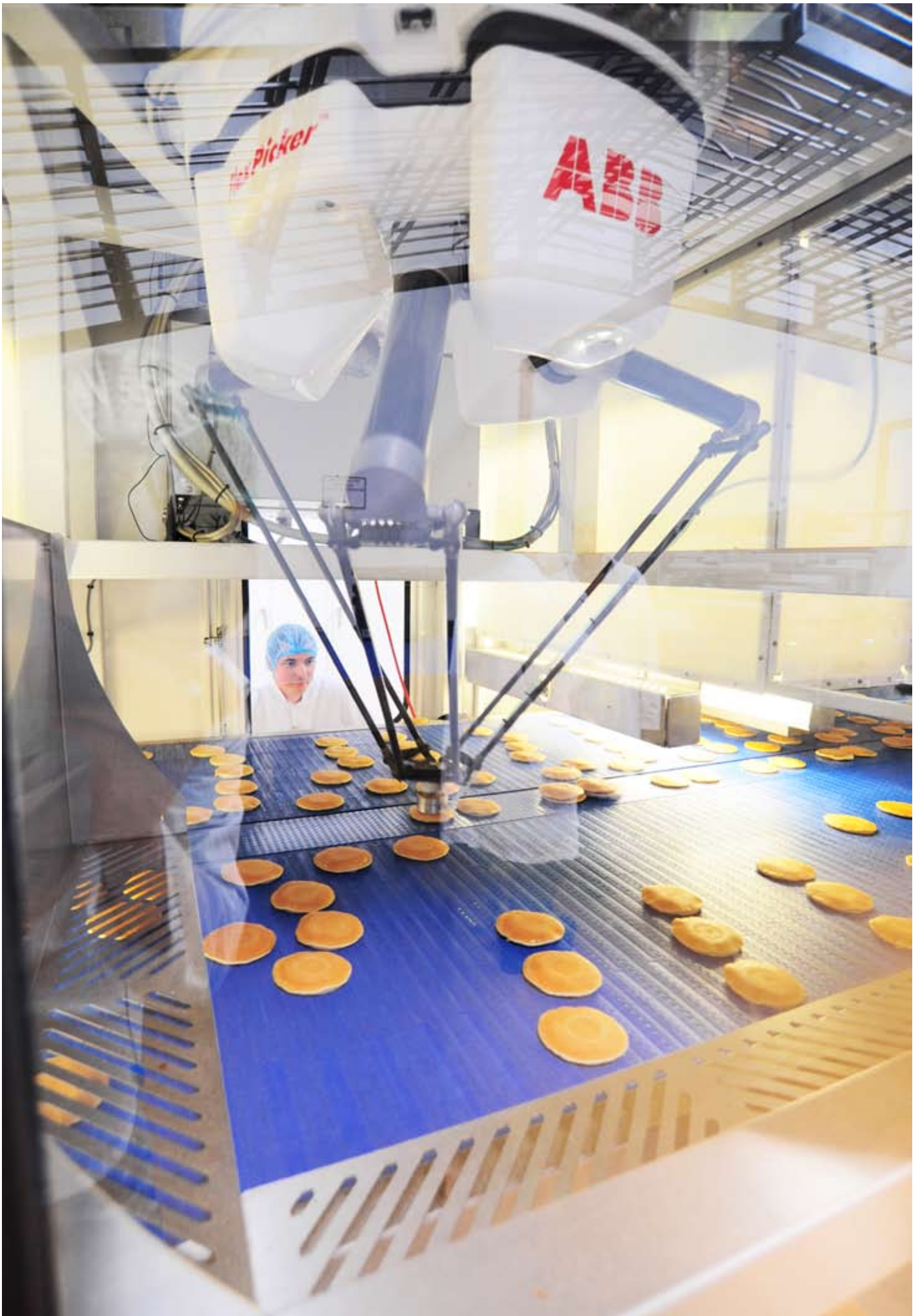


## Quick facts

- The original speed requirement was exceeded by 14 percent.
- The robots enabled a reduction from 10 to two people per shift.
- Changeovers between different products are carried out from an 'operator interface screen' in a matter of seconds, so urgent orders can be met almost immediately.

## Honeytop Speciality Foods

**Honeytop** Specialty Foods Limited was established in 1984 by brothers William and Charles Eid. Honeytop is the UK's leading privately owned naan bread producer and Europe's leading volume manufacturer of specialty flatbreads. It also produces pancakes, dough balls, tortillas and crumpets. More information can be found at [www.honeytop.co.uk](http://www.honeytop.co.uk).



01

- 01 PickMaster 3 software directs the FlexPicker (IRB 360) robots to pick and place pancakes, even if they overlap, into stacks.
- 02 RG Luma project engineer Jeff Davies instructs a Honeytop employee.

“The robots have already enabled us to absorb a number of overheads, thanks to a reduction in labor costs and improved productivity.”

William Eid, Co-founder and Director, Honeytop Specialty Foods



overheads, thanks to a reduction in labor costs and improved productivity.”

Each one of Honeytop’s final production lines uses four IRB 360 robots, PickMaster 3.2 software and four IRC5 controllers from ABB Robotics. The IRB 360 FlexPicker robots are known for their speed and efficiency, but also their reliability and flexibility. The robots are mounted above the conveyor and arranged so that each one is able to handle a quarter of the production.

**Advanced, user-friendly software**

ABB’s groundbreaking PickMaster 3.2 software simplifies programming for the whole process, allowing users to model for applications and to optimize multiple robot installations. The software not only helps Honeytop to monitor the total number of picks but also to quickly change production from one product to another, depending on the client’s requirements. RG Luma has also provided Honeytop with a secondary control system which works alongside the PickMaster 3.2 to vary the out-feed conveyor speed, preventing overflows or short stacks.

Four-gigabit Ethernet cameras are integrated with the PickMaster 3.2 software, with a camera mounted in front of each robot to locate every individual pancake’s position on the moving conveyor below. The image is then communicated to the robot, and the PickMaster 3.2 software tells each robot precisely which pancake to pick. These robots track the pancake position, then pick and place it

onto the central out-feed conveyor, and the stack pattern is then gradually built up by the four robots. (Videos of the Honeytop system in action can be found at [www.youtube.com/abbrbotics](http://www.youtube.com/abbrbotics).)

RG Luma designed the software so that it could recognize overlapping product, and – for the first time ever – FlexPickers are able to pick a pancake which has overlapped on top of another one.

The final stage of the production line requires the pancakes to be checked by operators before entering Honeytop’s automated packing and labelling machine. The pancakes are ready for delivery.

**An adaptable solution**

Andrew Jones, RG Luma’s Sales Director, says, “After three weeks of production, a brand-new product was introduced in less than an hour without the need for any new investment from Honeytop.” The versatility of the production line has dramatically reduced the changeover time between each different product. “That makes it much easier for Honeytop to meet its constant deadlines whilst always maintaining the high-quality pancakes that their customers demand from them,” he says.

For Jones, this installation is a terrific example of how companies can benefit from robots. “Honeytop set us a challenge,” he says. “Working with ABB Robotics, we were delighted to provide a solution to that challenge which has given them both improved productivity and improved quality – and it paid back in less than a year.”



02

**RG Luma Automation**

**A leading** supplier of custom robotic and automation solutions for the food, automotive and defense industries, RG Luma Automation Limited specializes in picking, packing and palletizing applications.

For more information, check out [www.rglumagroup.co.uk](http://www.rglumagroup.co.uk).



Founded in 1921, Wolfgang Candy is one of the oldest family-owned and managed candy companies in the United States. It manufactures millions of pounds of seasonal candies for various organizations and groups; read more at [www.wolfgangcandy.com](http://www.wolfgangcandy.com). Above, robots pick and place delicate caramel-filled cookies.

# Handle with care

Robots mean cookie quality – and consistency – has improved at Wolfgang Candy. Text Alex Miller Photography JLS

Founded in 1921, Wolfgang Candy of York, Pennsylvania, is one of the oldest family-owned and managed confectionery manufacturers in the United States. Until recently, the company's picking, placing, inspecting and packaging phases of its operation were primarily done manually. When the company concluded that this limited efficiency and growth, it turned to leading automation integrator JLS Automation, also located in York.

"We needed a system that could meet or exceed 200 pieces per minute," says Rob Wolfgang, Managing Partner responsible for Food Safety and Quality. "JLS has given us both flexibility and speed. We can pick-and-place nearly anything, which lets us deliver customized product solutions for existing and future customers."

The system is designed to meet FDA requirements for food contact. Two IRB 340 FlexPicker robots from ABB are top-mounted delta robots with vacuum tooling capable of gently picking and placing delicate cookies precisely and reliably, one cookie at a time, into ther-

moform trays. Using a vision system and the ABB PickMaster software, the IRB 340 pick-and-place robots accurately select perfect objects, ignoring misplaced or defective items on the belt. The robot and vacuum tooling needed to be precisely coordinated so that the caramel-filled cookie can be picked up without losing its caramel filling due to too much pressure. The robot placement repeatability during the conveyor tracking is within 1 millimeter, allowing the cookies to be placed into a very tight tray compartment. The trays are placed onto a flow wrapper infeed, after which the trays are wrapped and then discharged.

With the automated system in place, Wolfgang Candy has increased production, improved quality and safety, reduced contamination issues and reduced its labor costs. The company estimates that with the new automated system, it has increased packaging speed by approximately 12 and a half percent.

"We'll be able to compete more effectively with our Wolfgang-branded products," says Wolfgang.



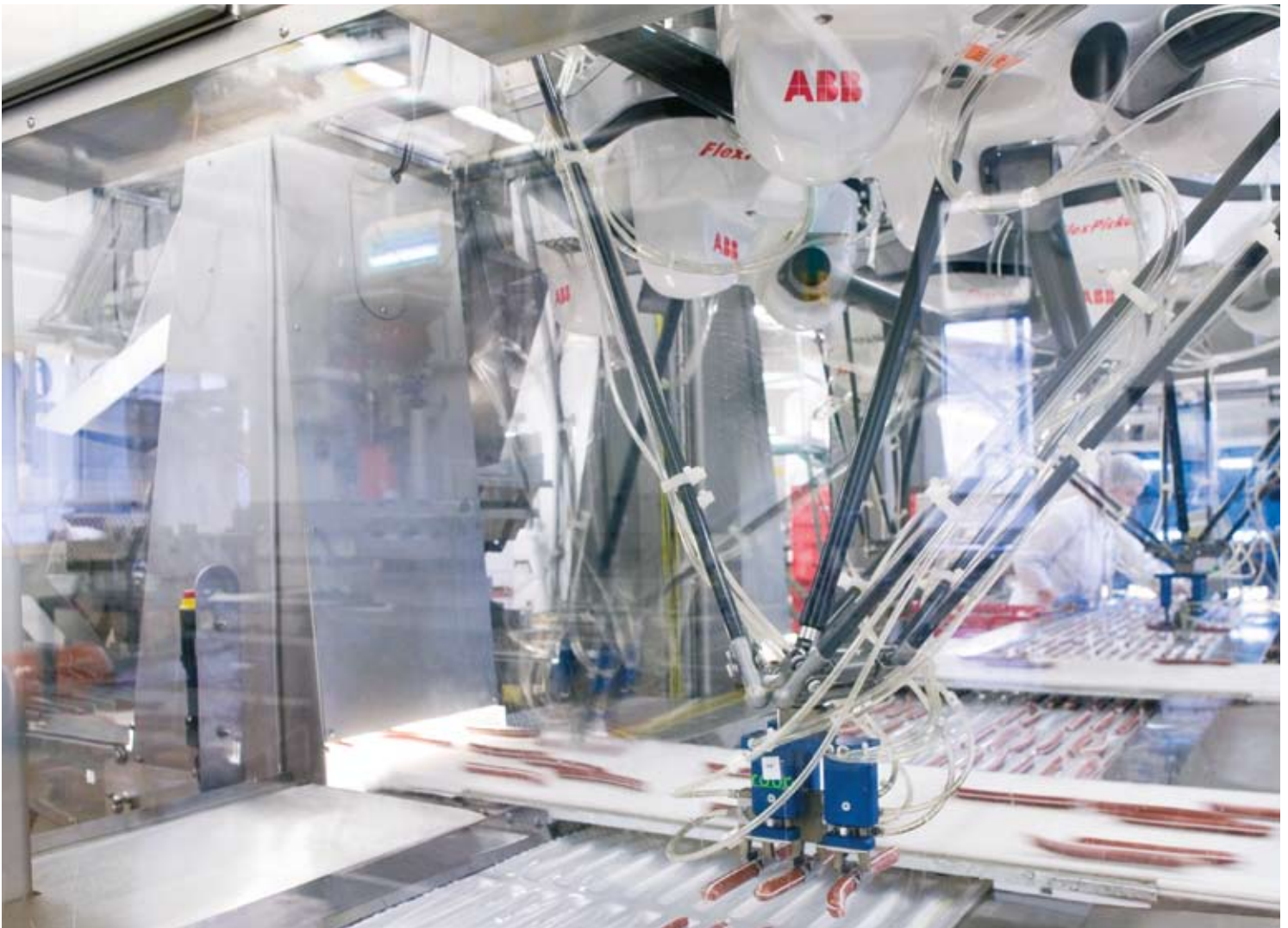
## Robot benefits

- Improved quality and consistency
- Increased packaging speed by 12.5 percent
- Higher production at 200 pieces per minute
- More flexibility
- Better for employees
- Shorter return on investment than with other capital investments

## JLS Automation

Founded in 1955 by Joseph L. Souser, JLS Automation provides advanced motion control technology in many industrial applications requiring precision and reliability.

Read more at [www.jlsautomation.com](http://www.jlsautomation.com)



Improving uptime without costing the earth.



ABB provides products, systems and services that increase industrial productivity and energy efficiency for a wide range of picking, packing or palletizing applications. Our robots, drives and servo motors provide a high level of hygienic, flexible and reliable automation in these labour-intensive application areas. ABB's automation can really be the key to improving uptime, product quality and workplace safety, whilst reducing energy consumption and waste.

For more information visit [www.abb.com/robotics](http://www.abb.com/robotics)