

Blow moulding

Case study: Plastics bottles, PowerPlastics, Australia

Applications

- Blow moulding
- Packing
- Material handling

ABB Product

- IRB 4400



At Power Plastics in Sydney, Australia, hand-packing 3000 polyethylene condiment bottles an hour was taking a high toll in labor costs and operator health and safety – in a highly competitive market. Robots were the answer.

Australia's Power Plastics may be small in size, but the company has high aspirations. "We're not about being the biggest operator out there. We just want to be the best," says Managing Director Russell Barber. "We began in 1997 with four old blow moulding machines and six employees." Since those humble beginnings, the company has grown to some 65 employees, and provides containers for major customers in the food, pharmaceuticals, personal care, household and industrial markets, produces injection stretch blow moulding (SBM), extrusion blow moulding (EBM) and some injection-moulded rigid thermoplastic containers. When Power Plastics considered a robotic solution for its labor intensive squeezable condiment bottle operation: "We originally talked to ABB in Sydney because we wanted the best robot we could get," Barber says. Skyrocketing raw materials prices influenced the decision, but the operational and human costs of hand-packing 60,000 bottles a day,

in 250 ml and 500 ml sizes and five different colors, were the key drivers. "The final crunch was we had a bad year with workers' compensation claims from RSI (repetitive strain injury). The best way to make sure we didn't have any RSI was to get a robot," says Barber. Sydney-based systems integrator Apex Automation and Robotics had already built a non-robotic automation solution for Power Plastics.

Flexibility required

When Apex's General Manager, Dany Seif, first looked at the condiment bottle line, he found "two operators on each shift filling plastic-lined cardboard boxes with the bottles, sealing them placing them on pallets. Power Plastics required a high degree of flexibility and ability to handle product diversity. Our challenge was to generate a concept using the most suitable technology for the application. "ABB have a wide range of robots, user-friendly software and keep our finger on the pulse



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of their latest developments. They also provide a high level of training and technical support to our customers, after the project is completed,” says Seif.

The robotic cell built for Power Plastics is based around one 6-axis IRB 4400L robot, with a 2.43-meter reach and 30-kilogram payload. Bottles are fed from two extrusion blow moulding machines, along accumulation conveyors, from which the robot picks them – eight, nine or 10 at a time, depending on bottle size – using an Apex designed and built robot gripper. The gripper uses vacuum cups to pick up a row of bottles, space them and place them upright on a stainless steel platen. In the next cycle, the gripper rotates 180 degrees, spaces and places the bottles upside down between each bottle in the first row. When the platen is full, the cell signals the operator, who inspects the bottles, slips a plastic bag over them, seals it and takes it to a pallet.

24 hours a day

The robot sits between two in-feed conveyors, which supply two identical packing zones 180 degrees apart. When the operator is bagging one platen of bottles, the robot works in the opposite zone. “Apex said they could automate the whole line,” says Barber, “but I was concerned about going from essentially 100 percent inspection to zero inspection. I think we got it just right. After six months of moulding millions of bottles, our quality has not been diminished one bit.” The line start with six employees over three shifts. Now it’s down to one per shift, but that person also works on something else, while running both SBMS. The line runs 24 hours a day, so measuring any improvement in output was difficult, says Barber. “But, on weekends – when we always operated with a skeleton crew – output is up between 30 and 40 percent,” he says.

“We provided the whole turnkey robotic cell from scratch,” says Apex’s Project Manager Angelo Di Lorenzo.

Barber says no jobs were lost: “It’s allowing us to grow our business.”

It’s also been positive in terms of Return on Investment (ROI). Says Barber: “What we pay in

lease costs annually is much lower than what we were spending on labor costs. “Apex helped us find the right solution and the partnership with Apex has also been a big part of its success. It’s also given me confidence about this business going forward as a company that embraces technology. I’m delighted with the result. We’ll be looking at more projects.” And the end result? Six months after giving the job to an ABB robot, two-thirds of the line’s staff had other jobs, efficiency was on target and weekend output from the line was up 30 to 40 percent.

> FACTS

Better production with robots

- Labor input on the line has been reduced from six to the equivalent of two full-time operators
- Staff have been re-allocated elsewhere, allowing the business to grow
- Line operating 24/7 and maintaining efficiency targets
- Weekend output improved 30-40 percent
- Cash-positive Return on Investment
- Repetitive Strain Injury no longer an issue for workers

About Apex Automation and Robotics

- Founded in 2005 based in Sydney, Australia
- Specializes in automation and robotic cells for warehousing and manufacturing industries
- Staff of six and an annual turnover around AUD 2 million (USD 1.73 million)
- Over 100 systems installed, including more than 30 robotic cells
- Website: www.apexautomation.com.au

About Power Plastics Pty Ltd

- Founded in 1997 and based in Kings Park, Sydney Australia
- Manufacturer of containers for the food, pharmaceuticals and industrial markets
- 65 employees and forecast sales of over AUD 15 million (USD 13 million) the next year
- Customers in the food, pharmaceuticals, personal care, household and industrial markets
- Website: www.powerplastics.com.au