

Gluing

Case study: Headlamps, Lumax, India

Applications

- Gluing
- Material handling

ABB Products

- IRB 140
- IRB 1410



With a majority share of India's automobile lighting business, Lumax Industries relies on automation to ensure the best quality and the lowest cycle times

Gurgaon used to be a small settlement in the Indian countryside but, thanks to its proximity to the capital, New Delhi, and its emergence as an outsourcing center, Gurgaon has become one of the fastest-growing cities in India. One of the earliest arrivals in Gurgaon was Lumax Industries Limited which, four decades after its foundation, established an automotive lighting plant here in 1985. Today, it is one of Lumax Automotive Parts' eight plants in India. The company accounts for more than 60 percent of the market share of the country's automobile lighting business. Among its international clients are such well-known companies as the American tractor manufacturer John Deere, while its domestic customers include such major Indian names as Maruti-Suzuki, Tata Motors and Mahindra & Mahindra.

"The auto market in India is growing at about 25 - 30 percent per annum," says Lumax Industries

Assistant General Manager (Projects), Shabaj Singh, as he surveys the assembly line of the Gurgaon operation "In the last three years, Lumax has managed to match that with an annual growth rate of about 25 percent. In this kind of environment, it's vital that Lumax performs at a consistently high level." Lumax Automotive Parts prides itself on keeping abreast of the latest trends in production technology.

Automating production

The company made its first venture into automated production in the 1990s, taking delivery of six robots from its Japanese joint venture partner, Stanley Electric Company Ltd. Between 1998 and 2005, Lumax bought six robots from Vaccutek Automation Inc, Taiwan. The following year, Lumax turned to ABB which has since supplied the company with a total of 28 robots, both IRB 140 and



IRB1410 robots. (The purchase of three more 6-axis robots from ABB is currently under discussion).

“When it comes to choosing vendors,” says Singh, “there are four crucial factors for us: quality, cost, delivery and after-sales service. ABB meet all these four requirements and that’s why we now go with ABB. Lumax is very satisfied with these robots and with their performance.”

Hot melt adhesive

The principal robotic application within Lumax is the gluing together of headlamp parts with hot melt adhesive. The specialty of the Gurgaon plant is the assembly of two-wheeler headlamps, mainly for Hero Honda motorcycles. An IRB 140 is used to glue together the lamp body’s main components, the lens and the reflector. Half a dozen employees are trained to operate the robot though, at any one time, only one person oversees the operation. The rest of the unit’s parts are assembled manually. For training purposes, Lumax used an IRB 1410 in its Gurgaon plant. Hanging from the roof above the robot is a plastic sign which proclaims in big, bold letters: “Quality is Everybody’s Responsibility.”

Increasing productivity

“The introduction of these robots was seen by Lumax not just as an improvement to the process but as an essential requirement,” says Singh. “For that reason, we don’t really look at the issue of return on investment in the same way as a lot of companies. But, yes, Lumax has done its sums. It estimates that ROI payback time is 39 months per robot – quite a long time – but, still, not so the decisive factor when you’re looking at an essential capital investment of this kind.” Lumax estimates the productivity levels using the ABB robots are significantly higher than when relying solely on manual labor: For every eight-hour shift, says the company, one hour of labor time is saved. For example, whereas manual production can produce 300 two-wheeler headlamps per hour, robotic production can produce 345 finished pieces per hour. Similarly, the cycle time for the manual production of a two-wheeler headlamp is about 16 seconds – four seconds slower than with robotic production.

Product quality

Though unskilled labor in India is still relatively inexpensive in global terms, skilled labor in this country is not always widely available and can no longer be regarded as cheap. Indian companies wishing to compete in the global marketplace increasingly realize that product quality is essential – and to achieve this, modern equipment and manufacturing plant are crucial. “Of course, productivity remains an issue,” says Singh. “But consistency and quality are the main factors for us and that’s where the robots really earn their worth as far as we’re concerned.” Also appreciated by the Lumax staff are the support and after-sales services provided by ABB engineers based at Faridabad, near Delhi. “It’s not so much that our ABB robots benefit any one individual in the company,” says Singh. “The way we look at it, they benefit the whole of Lumax Industries.”

> FACTS

Lumax

- Headquarters: New Delhi, India
- The company: Lumax Automotive Parts is one of four companies that make up Lumax Industries Limited, founded by S. C. Jain in 1945
- Turnover: USD 188 million
- Employees: 2,350
- Products: Automotive lighting
- Website: www.lumaxindustries.com

Why robots?

- Saved costs
- Increased productivity
- Reduction of level of parts rejection
- Maintenance of consistency
- One hour’s labor time saved for every eight-hour shift
- 345 finished two-wheeler headlamps produced per hour – as against 300 units with manual labor
- Cycle 25 percent reduction in time compared to manual production