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Winning over the automobile industry with laser cutting robots

Founded in 1963 and located in the Henan Province of central China, the Zhengzhou Yutong Bus Co., Ltd. (Yutong Bus) has since grown into one of the world’s largest bus manufacturers. Originally created as a bus repair factory, Yutong Bus now produces more than 340 units daily and exports to more than 130 countries and regions around the world.

To produce the various metal components and body parts used to make a bus, manufacturers have traditionally relied on processes like stamping, punching and trimming; until recently, robots have only been used for low-precision applications such as spot welding and painting.

Experience has shown that conventional robots in the automotive industry do not have the precision to perfectly cut even moderately sized circles in sheet metal. With poor axis control capabilities, they are too slow to handle parts moving quickly along a production line. And because lightweight robots are not rigid enough, they are susceptible to deformation and therefore cannot ensure the precision required to produce flawless laser cutting results.

Fortunately this trend has reversed itself, to the point where laser-cutting robotic solutions are becoming increasingly popular with both car and bus manufacturers in Asia and the rest of the world. As early as 2011, Yutong Bus began integrating Stäubli’s RX160L robots into its production lines. Handling a laser cutting tool, the six-axis, ceiling-mounted robot quickly and accurately cuts through doors, bumpers and other metal sheet parts that roll by on a moving table, producing everything from

Customer benefits :

- Precision, flexibility and reliability
- Compact and rigid structure
- Repeatability of ±0.05mm
- 2 times faster than conventional cutting methods
- Extreme precision for cutting small round circles and complex 3D forms
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the smallest circular cutouts to more complex 3D freeform surfaces.

Thanks to a cast-iron tube construction, the RX160L has a solid, compact structure that guarantees a high level of rigidity. And because the robot is also constructed with aviation aluminum, it resists against warping and deformation. The result is extremely high precision laser cutting that meets the exacting quality standards of the manufacturer.

Jiangsu Yawei CKY Laser Equipment Co., Ltd., is an integrator specializing in laser cutting solution. “When we first entered the laser cutting industry, we investigated different brand robots and found that Stäubli’s robot arm weight was very light. Compared to other robots with the same arm length, Stäubli’s arm weight is only half of the other’s. This brings a big advantage in a ceiling mounting configuration, dynamic stability and for flexible processing. “Says LIU Hongsheng, project manager of CKY Laser ,”Many car manufacturers have higher requirements for laser cutting equipment in the security and efficiency aspects. Stäubli robots have better accuracy and speed than other robots, as well as an open system showing development of more functions. These are some reasons why we cooperate with Stäubli,”

Considerably less expensive than the traditional, five-axis cutting machines used previously, Stäubli’s solution has also accelerated the production process. “The RX160L robot has proven highly efficient. It has a high repeatability within +/-0.05 mm, an accomplishment no other robot on the market can achieve, and is as fast as traditional laser cutting machines, while with significantly lower cost and more flexible products switching”, says LIU Hongsheng, Jiangsu Yawei CKY Laser Equipment Co., Ltd., project manager for Yutong.

With improved flexibility, reliable tracking, and higher production output, robotic solutions are emerging as the preferred choice for laser cutting applications in the automotive industry worldwide.

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