



— SABRINA SCHILLING

Having trouble? Not with the new TRUMPF cutting nozzle

Nozzle collisions repeatedly bring production to a halt at Chinese automotive supplier Duoli, but TRUMPF's X-Blast 2.0 nozzle is changing that - with fewer machine stoppages, significantly longer durability, and greater process stability.

The machine stops. An error message appears on the control panel indicating that a collision has occurred involving the cutting nozzle. Not again! Sometimes an interruption like that lasts only a minute. However, a damaged nozzle often results in longer idle states, additional checks and lost production time. When laser cutting hot-formed car body parts, such disruptions can throw off the rhythm of an entire production line.

— Nozzle collisions reduce productivity

At first glance, a nozzle is just a small component designed to expel the melt as efficiently as possible with the help of the cutting gas. For a long time, the rule in laser cutting was: the closer the nozzle is to the component, the better the cut quality. However, with complex 3D components, this narrow clearance increased the risk of collisions. The X-Blast 2.0 breaks with this principle. Thanks to its special geometry, it can cut at a much greater distance, drastically reducing collisions – even when cut with much more affordable compressed air.

At Duoli, too, nozzle collisions repeatedly caused interruptions. That is why the company decided to test TRUMPF's new generation of X-Blast cutting nozzles as part of a pilot project.





<p>Marina Cheng, General Manager, and Kai Yang, Process & Equipment Manager at the Duoli branch in Chuzou, recognise the need for optimisation in their manufacturing operations. And sometimes a single small component makes all the difference.</p>



<p>The Duoli Technology Group is an established supplier to the Chinese automotive industry. Competitive pressure is high. Quality, on-time delivery and productivity must all be right – but so must the costs.</p>



<p>Thanks to its special geometry, the X-Blast 2.0 nozzle can cut from a significantly greater distance even when using low-quality compressed air, drastically reducing the risk of collisions.</p>

Efficiency outweighs price

The publicly traded Duoli Technology Group is one of the established suppliers to the Chinese automotive industry. The company develops and manufactures punching parts, welded assemblies, tools and hot-formed structural components for international automotive manufacturers with production facilities in China.

Like many suppliers, Duoli faces intense competitive pressure. Quality, on-time delivery and productivity must all be right, while every cost factor counts. That's why efficiency, reliability and long-term profitability play a key role in investment decisions. Marina Cheng, General Manager of the Duoli branch in Chuzhou, explains: "We work with various machine manufacturers and compare the performance of their systems in daily use. In the end, it's not just the purchase price that matters – it's productivity, because that helps us minimize our part costs."

While laser cutting hot-formed structural parts for vehicle bodies, Kai Yang, Process & Equipment Manager at the Duoli branch in Chuzou, identified a need for optimization: "The nozzles we were using had an average service life of three to five days. We were also held up by around ten collision alerts per shift." Each malfunction required intervention by the personnel, leading to machine downtime and additional maintenance work. Depending on the severity of the collision, damage to the nozzle, the cutting head or the sensor also occurred in some cases.

Sometimes, optimising an entire production process begins with improving a single small component.

Marina Cheng, General Manager of the Duoli branch in Chuzhou

A small component – a huge advantage

When TRUMPF introduced the [X-Blast 2.0 cutting nozzle for the TruLaser Cell 8030 laser cutting machine](#) in combination with [BrightLine Speed technology](#), Kai Yang was ready to launch a pilot project. "Our costs were kept to a minimum: Instead of investing in a new machine, we simply retrofitted an existing machine," he explains. In addition to installing the new nozzle, only minor adjustments to the process parameters and a check of the cut quality were required.



But what makes the compact X-Blast 2.0 so special? The technical principle is easy to explain: the secret lies inside the nozzle. Thanks to its special geometry, it is possible – in conjunction with BrightLine Speed – to work at a significantly greater distance from the component. This prevents nozzle collisions, and one of the main causes of wear, downtime and quality issues is now a thing of the past. However, this only works in conjunction with TRUMPF's BrightLine Speed beam formation technology. In this configuration, the X-Blast 2.0 is also specifically designed for productive 3D laser cutting of [hot-formed](#) components.

— A nozzle lasts for months

The TRUMPF promise – fewer collisions, greater durability and more stable processes – has been fully realised at Duoli. "The significant reduction in collisions was the biggest eye-opener for us," says Kai Yang. "This not only extends the service life of the nozzle; it also reduces downtime and improves process reliability." The first practical test clearly demonstrated just how much longer the nozzle's service life is: a single X-Blast 2.0 laser nozzle remained in operation at Duoli for over 80 days, processing more than 80,000 components before TRUMPF service engineers removed it for analysis.



<p>The Chinese automotive supplier Duoli uses the TruLaser 800 Cell laser cutting system to cut hot-formed structural parts for vehicle bodies.</p>



<p>Duoli tested TRUMPF's new generation of X-Blast cutting nozzles as part of a pilot project.</p>



<p>A small part that makes a big difference: The X-Blast 2.0 cutting nozzle for the TruLaser Cell 8030 laser cutting machine, when used in conjunction with BrightLine Speed technology, significantly reduces collisions. This increases their service life.</p>

— Small cause – big impact

For Marina Cheng, however, it's not just the nozzle's longer durability that matters. The key factor is that the solution helps make day-to-day production more stable and efficient. In a market where costs and productivity are closely linked, a technical detail can become a commercial advantage. At Duoli, the use of the new nozzle has brought greater calm to the production process, even though productivity has increased. Machine downtime has decreased, and employees spend less time troubleshooting malfunctions or replacing worn nozzles.

The company is already planning to implement the solution at additional locations and is continuing to expand its activities in the field of hot forming. It has plans to build several new production lines. Marina Cheng is delighted with the new solution, explaining: "Sometimes, optimising an entire production process starts with improving a single small component."





SABRINA SCHILLING
TRUMPF GROUP COMMUNICATIONS

