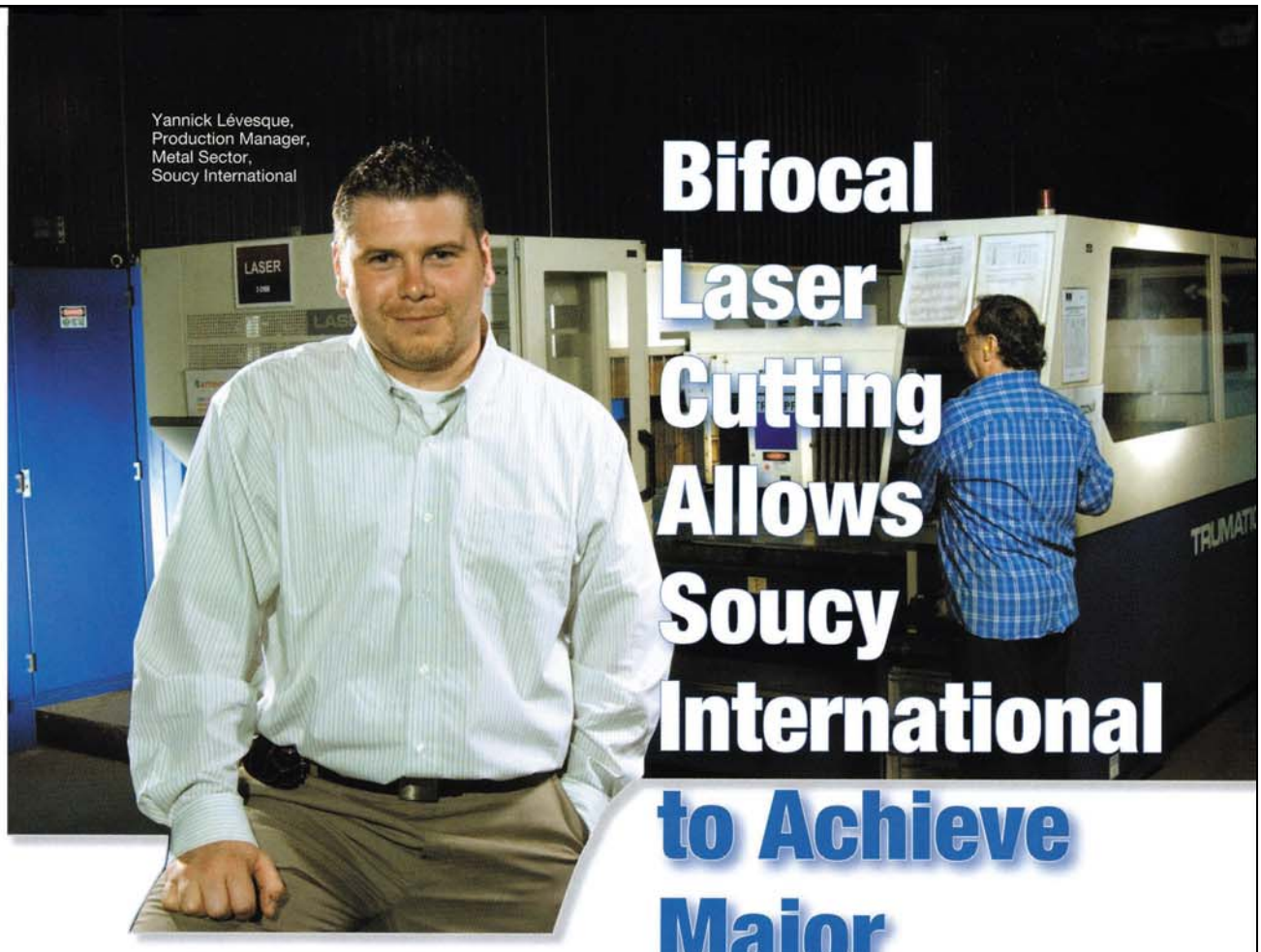


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# Bifocal Laser Cutting Allows Soucy International to Achieve Major Productivity Gains

By Yannick Lévesque and Viwek Vaidya

Thanks to a revolutionary metal-cutting technology, this Drummondville company has markedly increased cutting speed, resulting in significant benefits for the firm.

**Soucy International** specializes in manufacturing parts and accessories for all types of vehicles. The company operates three divisions – Rubber, Metal, and Thermoforming – and employs close to 400 workers in Drummondville, Que. In December 2006, the Metal Division, which focuses on manufacturing parts for snowmobiles and all-terrain vehicles, as well as tracks for recreational, industrial and agricultural vehicles, adopted a laser metal-cutting process in which the laser beam is focused on two points rather than one. This unique feature results in very high efficiency.

In the past, the Metal Division used two laser tables to cut sheets of low-carbon steel, stainless steel and aluminum. During peak periods, the two machines were in use 24 hours per day, 7 days per week.

Table and machinist

According to André Todd, Vice President of Operations: "We tried to take full advantage of their capacity in order to increase our flexibility in providing service to our clients, while at the same time reducing production costs."

The limited capacity forced the plant to lengthen its production and delivery lead times during peak periods. In addition, it was sometimes necessary to subcontract work in order to keep up with demand. The company was forced to optimize its production process in order to reduce the expenditures that this entailed, and to improve customer service.

Near the end of 2005, one of the machines had reached the end of its useful life, and was taken out of service. Management opted not to replace it right away, seeing this as an opportunity for upgrading. Steps

were taken to increase the overall productivity of the one machine that remained in operation. Among other things, this exercise made it possible to reduce downtime. However, cutting speed was unaffected.

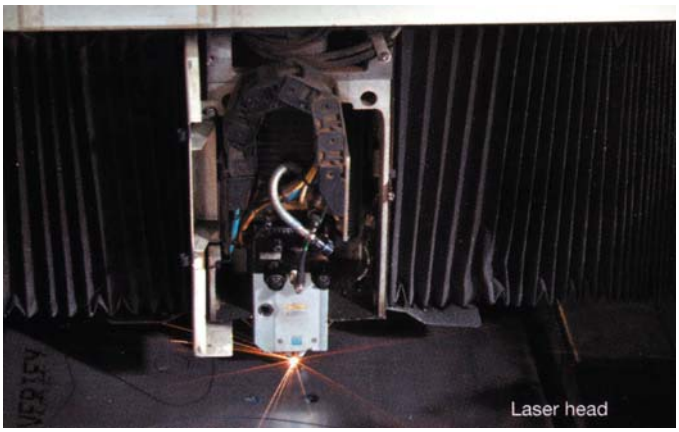
In order to improve cutting speed, management studied the possibility of using bifocal laser cutting technology, which it had become aware of via the Internet. The bifocal process, which was invented in Denmark, belongs to Air Liquide, which had bought the patent. Air Liquide carried out extensive research and product development before bringing the product to market.

## Speed Versus Quality

The process resolves the dilemma posed by conventional laser cutting technology, which requires users to choose between cutting speed and the quality of the cut. Using conventional technology, the laser beam is focused on a single point. A high cutting speed can be achieved when the focal point is close to the surface of the part, but this results in dross formation and burring on the underside of the metal sheet. Removing the burrs requires an extra grinding operation, which is both time consuming and costly.

When the focal point is positioned on the underside of the part, the resulting high concentration of energy in this area reduces the formation of burrs, but the increase in quality comes at the expense of speed. In fact, the lower the focal point, the more unfocused the laser beam is at the surface, and the more the speed must be reduced.

The bifocal technology, on the other hand, makes it possible to reconcile cutting speed and quality. By focusing simultaneously on the underside and on the top surface of the metal sheet to be cut, it provides a clean cut, while achieving a higher cutting speed. The process results in more efficient distribution of the laser beam along the thickness of the material, and therefore, it delivers equal or higher quality, at a cutting speed that is markedly higher than that obtained using a standard laser lens or mirror.




## Increased Productivity

As a general rule, increasing production speed results in higher profitability and lower variable costs, such as those for labour, supplies and maintenance. These advantages can translate into annual savings in the thousands of dollars.

Soucy recorded significant gains in terms of cutting speed as soon as the mirror was introduced. The plant experienced a 15 per cent improvement in cutting speed for low-carbon steel, which accounts for 85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per cent of its cutting operations. Aluminum and stainless-steel cutting operations showed improvements of 39 per cent and 14 per cent respectively.

Management estimates that it recouped its investment within a month, or two at the most. The improvements that were obtained are directly reflected in the company's ability to deliver products to clients more rapidly.

In addition, the four operators of the machine produce more parts than before, which is directly reflected in reduced labour costs. Thanks to the improved productivity and the resulting savings, management has not had to invest in another laser machine, which has made it possible to purchase a plasma table for cutting thicker parts.

In integrating technology, management's objective is to maintain the productivity gains achieved or even improve upon them. This requires avoiding operator-initiated cutting-speed fluctuations, which are likely to occur at first. A breaking-in period is required before optimal performance can be maintained. The employees involved underwent two days of training, during which they learned to redefine the laser-cutting parameters.

For André Todd, the benefits derived from using the technology, and especially the improvement in delivery lead times, "are perfectly in keeping with the exercise that is currently under way at the plant, which is aimed at implementing value-added production."

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