

## Business Profile: Stewart Steel Inc.

Stewart Steel takes Lean to new levels with plasma/waterjet table.

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Stewart Steel's 10-ft.-wide by 16-ft.-long Machitech table is equipped with the KMT Waterjet STREAMLINE SL-V 60,000 PSI, 60-HP intensifier pump and an HPR260 Hypertherm HyDefinition plasma torch.

Stewart Steel prides itself on providing innovative products to its clients in the oilfield, industrial, and agricultural markets. The Weyburn, Sask.-based fabrication company didn't always cut its own parts in-house, but when company President Brad Stewart realized he could boost his lean manufacturing processes to a higher level with the addition of a combination plasma/waterjet table, he made the investment.

Stewart, a machinist by trade, bought a machine shop in 1984. He and his wife Deanna purchased a small steel fabrication company in 1994 and expanded it to become a custom fabrication, manufacturing, and repair company. Born and raised in the Weyburn area, Stewart describes himself as "a farm kid who had a desire to build stuff." That farm kid is now building "stuff" for customers as far away as Europe, Australia, and New Zealand.

### Worldwide Agricultural Product Lines

Stewart describes the business as a light steel fabrication shop, dealing mainly in ¼-inch plate and thinner materials. The shop is right in the heart of the Bakken Oilfield, and Stewart has been providing design and innovation to the petroleum and industrial industries for over 20 years. But what has made the company a worldwide presence is its agricultural products.

"Some of our product lines sell within a 100-mile radius, others sell within a 300-mile radius, but our agricultural equipment, particularly The Extender and The Axceller, is sold worldwide," said Stewart.

The Extender is a combine unloading auger extension that gives farmers added reach when unloading grain. The operator's efficiency increases because a larger header can be used, and the grain can be unloaded into a truck or grain cart without stopping the combine.

The Axceller Kit is built for Case combine rotors on all models from the 1440 to the 2388. This kit replaces the elephant ears on the CIH rotor and, according to Stewart, provides a smoother feeding system with less rumbling and improved performance and efficiency.

"We've differentiated ourselves from a lot of companies that copy OEM parts," explained Stewart. "Stewart Steel builds only original equipment improvements. Instead of copying a part that John Deere or another company might make, we create an improved part. The Extender is an unloading auger extension; it's a separate part added to the machine. It is our own design and manufacture; OEMs do not build it. The Axceller kit and some of our other products are also Stewart Steel's own design and not produced by OEMs. This has been a good business decision for us because manufacturing provides a steady work flow. The challenge in Saskatchewan and western Canada in general is keeping busy in both

summer and winter. Originally Australia looked like a great market, because their harvest season is opposite to North America's. Even taking into account shipping time lags, this has been a good market for us."



The waterjet cutting system in action on the Machitech combination table.

### **Plasma/Waterjet Flexibility**

Stewart Steel's shop has skilled welders, a brake, shear, rolls, and a blast and paint facility to manage all major build requirements for its clients.

One of its most recent investments was a combination plasma/waterjet cutting table. The 10-ft.-wide by 16-ft.-long table is equipped with the KMT Waterjet STREAMLINE SL-V 60,000 psi hp intensifier pump and an HPR260 Hypertherm HyDefinition® plasma torch. The Hypertherm control is also equipped with a plate alignment system that ensures accurate cutting of a nest with both the plasma and waterjet heads.

"At one time all of our cut parts were outsourced," said Stewart. "The only thing we did in-house was shearing. We had a dual plasma/waterjet before this one, but we had problems keeping it running, which resulted in a lot of downtime on the machine. We were introduced to Machitech through Praxair with a newer table that does what we need it to do. Praxair provides good support and backup, which gives us an acceptable amount of uptime on that machine. For a shop that cuts parts in the morning, welds that part and other components in the afternoon, and in a lot of cases gets those components to the paint room the same day, having uptime on that machine is absolutely crucial."

Stewart is a big proponent of lean manufacturing, and he feels that the plasma/waterjet helps eliminate four of the seven key wastes in manufacturing: waiting, unnecessary inventory, unnecessary transport, and defects.

"Lean manufacturing is something we concentrate on," said Stewart. "We continually try to learn new, more efficient processes and improve existing processes. The plasma is pivotal because it has the ability to cut multiple thicknesses, nest parts, and use the remains of sheets later, which eliminates a lot of waste. The Machitech plasma/waterjet system is a large step forward in lean manufacturing."



Parts cut using both waterjet and plasma technologies.

Many fabricators would invest in a waterjet system, laser, or straight plasma cutter for their shop, Stewart Steel has a variety of needs this combo machine is ideal for.

Initially it was a large stainless steel job Stewart was bidding on that required both rough cutting and very accurate hole cutting in stainless steel for tapping that drew him to the combo machine.

“In our product line we often need a variety of materials, such as wood, nylon, neoprene gasket material, stainless, aluminum, or mild steel,” Stewart explained. “We are able to cut all of those parts on this one combination table. After cutting steel, stainless, or aluminum, for example, the torch can easily switch over to the KMT Waterjet pump for cutting ¾-in. nylon for bushings and bearings.

“Waterjet tables are hard to keep busy for some fabrication shops unless they have a specific manufacturing line. This machine has allowed us to have that special cutting capability with waterjet in the same footprint as the plasma. The all-in-one has worked well for us as it take the shop space and maintenance required for one machine.”

Stewart suggests that it’s about an 85/15 split between plasma and waterjet cutting on the machine, although operations are always fluid.

“The waterjet isn’t used a lot, but when you need it, there’s no replacement for it,” Stewart noted. “It could be anything from very hard plate requiring a precise hole like an orifice plate for the oil industry, or something as simple as wood. There are certain wood parts we make that are light and cheap and durable in particular applications.” The versatility of this machine allows both processes to be done efficiently.

Machitech Automation is a Quebec-based custom builder for applications in laser, plasma, and waterjet, as well as robotic cutting systems. “What we do with all of our customers is look at what they are doing in their shop, what they are outsourcing, and go from there to determine what sort of table they might need,” said Tass Hamstra, territory manager for Machitech. “Bevel cutting, a pipe rotator, drilling, and tapping are just a few of the other popular applications available on this type of table.

“The shop can use the waterjet to do very precise cutting for bolt holes that need to be tapped or that require inside profiles, and the plasma can be used for cutting outside contours very quickly and inexpensively,” Hamstra continued. “With plasma you can get a pretty smooth finish, but it doesn’t have the same tolerances as what is possible with waterjet. They are good enough for certain applications, but not all of them.”



Stewart Steel's Extender product.

### **Lean Benefits**

Stewart said there’s no one answer to why Stewart Steel stopped outsourcing its cutting when it did, but managing the shop’s lean journey certainly was part of it.

“In some cases, a supplier could do a good job of delivering parts in a variety of thicknesses of steel, but there’s no way they could guarantee that the parts would be here every day without some buffer stock,” Stewart noted.

Stewart Steel also runs cells in the shop that are essentially “pull” systems, in that once certain parts arrive at a cell, that is a cue for welders to start construction of a product. Now that nylon and steel can be produced on one machine on the shop floor, bottlenecks can be avoided.

It’s not just a matter of not having to wait for parts on the production line, Stewart explained; it’s also a matter of having precisely the correct number of parts on hand.

“We have to be careful not to overbuild just because we can do it in-house,” he said. “Lean manufacturing has helped us identify the right size of racks to hold just what we need, ensuring the count is always right. In our manufacturing plant, counting is a tough job. Nesting parts on the Machitech plasma/waterjet table helps us keep an accurate count of what we have cut.”

The table has also helped the shop track its parts so it can note the hours worked on every job.

“Owning the parts as well as cutting them is important to us,” said Stewart.



Examples of Stewart Steel's Hefty Hoppers.

### **Change – How to Stay Competitive**

Stewart takes a lot of pride in the company, but he attributes much of his success to his dedicated team.

Having people on the shop floor who take pride in their work is key to staying innovative and producing quality parts.

“It’s hard for a lot of companies to be innovative,” said Stewart. “We excel and pride ourselves on this ability. At Stewart Steel our products are continually changing. Innovation is how we stay competitive. Product we built 10 years ago that was quite acceptable then wouldn’t even be sellable today. We have to keep changing for the better.”

“We build products that we are continually improving,” Stewart continued. “That is characteristic of how we think on the shop floor and is a critical part of the success of our company. An example of this is when we built our first batch of 100 Extenders. The model changed from being an inside-mounted extender to an external-mounted extender in order to save weight. It didn’t do anything different, but our innovation made a difference to the customer, and the customer will always buy the better product. The problem is figuring out what is better.”

The way Stewart sees it, he and his team are there to make their customers successful. Innovation is part of the process.

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