

# FORMING IDEAS

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## WATERJET CUTTING EXPENSIVE? DOESN'T HAVE TO BE

There is little question that waterjet cutting is an expensive cutting process. This is due to high operating and maintenance costs but, more importantly for the customer, cut speed. Cut speed on Brenco's two waterjet tables is variable. Speed is measured in percentage of maximum cut speed for the material type and thickness.

At 100% cut speed, the edge quality will suffer as shown on the right where you can see the striations on 1" Mild Steel and Aluminum plate. High speed cutting will always produce a part with high accuracy and good finish on the pierce side but as the jet progresses to the underside, dimensional tolerance and definition progressively deteriorate.

The image on the far right shows the same materials cut at 20% cut speed. The cut quality is far superior. Dimensional tolerance and definition are maintained throughout the thickness of the material. But, is it necessary? Unless the edge quality is critical, the answer is usually no.

If the edge is going to be machined or welded, edge quality is not critical. If the material is thin, edge quality is usually not critical since it can't be seen without magnification. Parts cut at 20% cut speed will take five times longer to cut compared to 100%. Brenco will default to the cut speed (ranging from 20% to 100% at 10% increments) we believe is best for the part based on our understanding of the requirements. Providing us with information that will ensure that you get the correct cut quality will save you money by either reducing your purchase cost or reducing your finishing cost.

Also in this issue:

- Other People's Drawings
- Mapquest Blues
- National Anthems

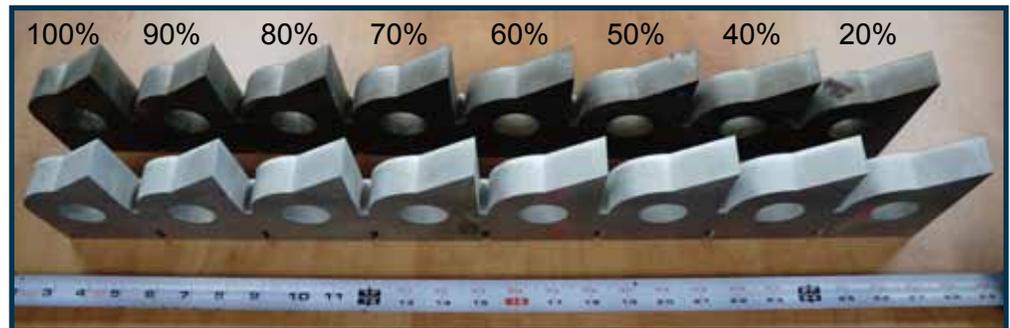


100% Cut Speed



20% Cut Speed

Two 1" test parts showing the cut quality of various cutting speeds.



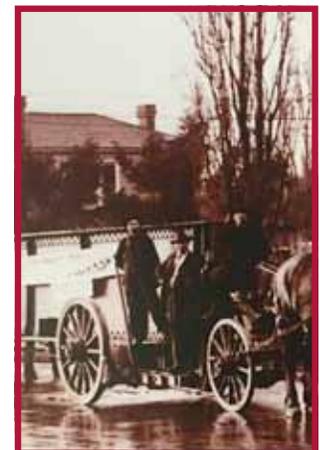
**Waterjet and Welding  
Problem Or Not?  
A Waste-o-Saurus Story**



**Wäs-tö-sau-rús**, n. [Waste, and Gr. sauros, a lizard.]  
A cute but troublesome creature that wastes time and material. The Waste-O-saurus is elusive but commonly identified through reduced profit and productivity.

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## History Mystery



# WASTE-O-SAURUS SIGHTINGS

## Waterjet Welding Problems?

From time to time, customers share their concerns over the possibility of contamination of aluminum due to the waterjet cutting process. The question is a valid one since garnet, acting as an abrasive in the waterjet stream, impacts the material and subsequently breaks down. Brenco's practice is to rinse waterjet parts after being cut, but, could it still be possible that garnet becomes impregnated into the cut edge of the material? If so, could this contamination affect the welding process?

Brenco has operated waterjets since 2004. Over twelve years, we have never been made aware of welding problems on waterjet cut edges. Brenco did some research but could find no documentation on the subject. Not satisfied with that, we conducted our own experiment to determine if there was any validity to this concern.

The experiment involved creating two weld coupons made of .250" 5052 H32 aluminum. The parts for one coupon were cut with waterjet, the other from sheared parts (a mechanical process using no consumable materials that could contaminate the material). Both coupons were welded and given a visual inspection before undergoing a destructive test to determine if there were any differences in yield or weld strength between the waterjet and sheared coupons.

The photos below provide a comparative of the welding results for both processes. The welds appear identical. There is no indication of porosity or differentiation between waterjet and shear cutting processes.

The destructive test (shown on the right) resulted in no differentiation in weld strength or appearance.



We safely come to the conclusion that there is no indication of contamination causing potential failure in the welding process of aluminum parts cut with waterjet. Any particulate that may be present would be no different than that left behind by a sanding or grinding process.



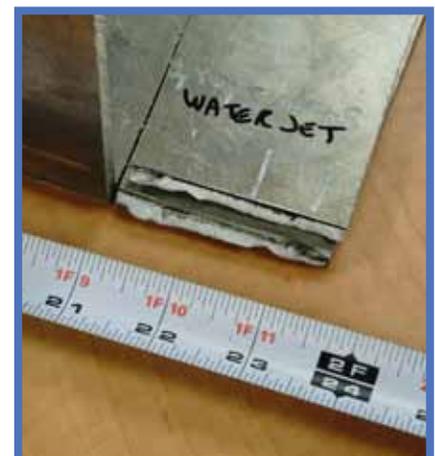
*Weld on sheared edges*



*Weld on waterjet edges*



*Destructive test on sheared edges*



*Destructive test on waterjet edges*



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# SHARPEN YOUR EDGE

The Waste-o-saurus is intended to provide value to our readers by presenting issues relating to efficiency and quality in an effort to encourage and promote improvement. We value your comments and ideas.

Email us at: [thebest@brenco.com](mailto:thebest@brenco.com)

# History Mystery

*Submitted by Rob Third of George Third & Son.  
A company with a very long history in Vancouver.*

Legend has it, George (Geordie) Third shod the draft horses for this "Eight Horse Team" delivering a Riveted Bridge Girder to the job site. Remarkably these working horse's giant "horse-shoes" needed to be replaced ever six weeks.

Geordie Third was the "Wayne Gretzky" of Heavy Horseshoeing in the Pacific Northwest. He was an honorary member of the Heavy Horse Breeders Association; along side his son Bruce Third.

Known across the country, Geordie stopped at the Budweiser Stables in St. Louis on a holiday once, and asked to see the Clydesdales. As

Geordie and his wife Anne had arrived unannounced, it took some talking to get in to the stables, but the company's stable master soon realized that Geordie Third was not just a sightseer, but someone extraordinary around heavy horses. Once inside he started to give them advice on the horse's shoes and pointed out faults in the shoes that should be mended. The farriers at Budweiser were so impressed with Geordie and his knowledge of horses, hitches, and wagons that they offered to hitch up the "full eight horse team" and let him drive the wagon around the lot.

(...That favour would have taken several men a few hours to accommodate)



*Massive riveted bridge girder being delivered to a Vancouver job site, circa 1925.*

## WHEN OTHER PEOPLE USE OTHER PEOPLE'S DRAWINGS

**Brenco celebrated 33 years** this year. Over the course of three decades, we have created literally millions and millions of parts, filled hundreds of thousands of orders and met the requirements of thousands of customers.

In one way or another, those customers have conveyed their requirements to us. Those methods have changed dramatically over the years. Even in the early 80's, drawings were done by hand, either in sketch form or drafted. Blueprints reeking of ammonia were delivered by courier. Instructions were given over the phone (an almost certain recipe for trouble) and occasionally, a crusty Queensborough fisher-

man would pop in with a crude sketch on the back of a cigarette package.

Then came the fax machine which eliminated the "over the phone" drawing (a giant leap). Next, CAD which sometimes created new problems such as scaling issues, but helped eliminate most other human errors. Then finally, the internet. While the fax machine came on the scene faster than a bolt of lightning, the internet was slow to evolve and be widely adopted. There was good reason not to be an early adopter because baud rates were so slow and connections so uncertain, that watching paint dry was more exciting and trustworthy. That has all changed now which has caused a significant shift in how our industry conducts business.

There remains one issue that technology hasn't changed that Brenco is always careful about. That is the matter of company A inappropriately using the drawings of Company B. It doesn't happen often and having dealt with so many clients over the years, we are almost certain to spot it. If we suspect a problem, we will request that the customer provide confirmation of their legitimate use of the drawing or decline to accept the drawing. It's pretty rare and usually done without bad intention.

Brenco respects and protects the property and confidentiality of our customers. You can be sure of that.

## Another History Mystery:

# Why We Sing The National Anthem At Sporting Events

In the United States during the course of the nineteenth century, The Star-Spangled Banner was often played at public events like parades and Independence Day celebrations (and, on occasion, sporting events). In 1889, the Secretary of the Navy ordered it the official tune to be played during the raising of the flag. In 1916, President Woodrow Wilson ordered that it be played at all military ceremonies and other appropriate occasions, making it something of an unofficial national anthem.

After America's entrance into World War I, Major League Baseball games often featured patriotic rituals, such as players marching in formation during pregame military drills and bands playing patriotic songs.

During the seventh-inning stretch of game one of the 1918 World Series, the band erupted into "The Star-Spangled Banner." The Cubs and Red Sox players faced the centerfield flag pole and stood at attention. The crowd, already on their feet, began to sing along and applauded at the end of the song.

Given the positive reaction, the band played the song during the next two games, and when the Series moved to Boston, the Red Sox owner brought in a band and had the song played before the start of each remaining contest. After the war (and after the song was made the national anthem by a congressional resolution in 1931), the song continued to be played at baseball games, but only on special occasions like opening day, national holidays and World Series games.



During World War II, baseball games again became venues for large-scale displays of patriotism, and technological advances in public address systems allowed songs to be played without a band. "The Star-Spangled Banner" was played before games throughout the course of the war, and by the time the war was over, the pre-game singing of the national anthem had become cemented as a baseball ritual, after which it spread to other sports and other nations.

While it might seem odd that The Star-Spangled Banner did not become America's national anthem until 1931, many Canadians don't realize that Canada didn't officially adopt "Oh Canada", until 1967.



MAPQUEST.



Brenco has been at its current location in the Nordel Business Park for over 16 years. MapQuest has been in existence over 16 years. For the last 16 years, MapQuest maps show Brenco as being located in the Tilbury Industrial Park. Brenco is not in Tilbury. Never has been in Tilbury. Likely never will be in Tilbury. On behalf of MapQuest, and the auto manufacturers that use Map-

Quest for their GPS systems, Brenco apologizes to all the good people that have been misdirected to Tilbury over the past 16 years. The solution is easy: Use Google Maps. They provide well detailed maps to direct you to our real location on River Way, near the Tim Horton's, Esso, Great Pacific Forum and the Truck Scales at the south end of the Alex Fraser Bridge.

Brenco has been publishing  
**Forming Ideas**  
for you since November 2007

Back issues are available  
on line at [www.brenco.com](http://www.brenco.com)



Brenco renewed its ISO 9001:2008 certification in August. We are pleased to share that we received BENCHMARK status in all 6 business maturity categories.

As Dan, our General Manager, loves to say, "Wooooooooooooooooooooo Woooooooooooooooooooo!!!"

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