



◀ Kyle Ashleman programs ButlerBuilt's plasma table to cut aluminum parts.

Plasma delivers precision for top seat manufacturer

ButlerBuilt Motorsports also finds speed off the asphalt

Brian Butler has a deep-seated desire to excel in his business. Butler, a former race car fabricator for Darrell Waltrip and other race teams, got his start in 1980 when a new stock car driver came to him for a form-fitting seat. Butler ultimately created a seat that not only enhanced the driver's performance, but also provided exceptional comfort and safety.

That type of commitment helped to create ButlerBuilt Motorsports, Concord, N.C., one of the leading aluminum fabricating shops in the motorsports industry. Today Butler's shop builds 60 percent to 70 percent of NASCAR®-style seating and nearly 75 percent of sprint car seats.

ButlerBuilt's products are in demand because they are incredibly accurate to the original measurements of drivers. Kyle Ashleman, a production fabricator, compared the process of building a custom race car seat to tailor-fitting a suit. It begins with measuring the driver, including chest depth, jacket size, arm length, and torso height; involves accurate cuts, refined welding, and precise bending; and results in a seat that perfectly fits the driver.

Early in the business, ButlerBuilt cut and laid out parts by hand, using a manual hand saw for cutting. Additionally, the cutting of some parts was outsourced to a waterjet machine. However, the waterjet wasn't the ideal solution for ButlerBuilt.

"Waterjet uses an abrasive, and all of the abrasive has to be ground off of anything that would be aluminum-welded because of the impurities left behind on the cut face. As beautiful as the waterjet is at times, it's not as functional as we would've liked it," Ashleman said.

In 1993 the business turned to plasma technology to keep up with higher cutting volumes.

"A lot of the early machinery was bought at the APEX Show, and the manufacturers said it would work on aluminum," Ashleman explained.

Even though precision plasma cutting was evolving at the time, little information was available to provide parameters for optimizing plasma's performance on aluminum. However, plasma cutting did offer low initial investment and operating costs, faster cutting speeds, and good-quality cuts.

"Plasma was the best acceptable cutting form, so we had to train ourselves and try things that were not in

any books," Butler said. "We did, and it's worked great for a long time."

Time to Cut the Old Technology Loose

With its 14-year-old machine no longer meeting its needs, ButlerBuilt looked for a change in 2007. ButlerBuilt and Ashleman considered two options: upgrade the existing plasma cutting system or purchase a new system.

The manufacturer of the original plasma power supply was in the process of discontinuing all support on the plasma system ButlerBuilt purchased in 1993. Additionally, the drive carriage on the plasma cutting system had an outdated rail design, and the drive capabilities were considerably less than newer machines on the market. An upgrade would cost almost as much as a new machine.

The decision was made to purchase a new machine, and Ashleman began an intensive process to research the best systems to meet their needs.

"Our first plasma system gave us good service for almost 15 years, but we chose to refresh with a new machine, new warranty, and new technology," Butler said.

All About the Accuracy

After mapping out ButlerBuilt's specifications and thoroughly researching several plasma systems, Ashleman determined the final decision on a machine would be based on three factors: part repeatability, tolerance of a finished piece over the life of a consumable, and optimal cutting speed.

"With our old system, as the consumable life grew, so did the part tolerance," he said. "It was something we were trying to minimize, and it worked out great to find the machine that would do it for us."

ButlerBuilt selected a Genstar cutting table and a KALIBURN Spirit 150a plasma cutting power source from Westwood Robotic Technologies in Elizabethtown, N.C., in the spring of 2007.

The Spirit150a is a 150-amp machine, which gives the seat fabricator the power to maintain repeatability over the consumable's life span. The power source is more than double the size of the company's previous 70-amp system.

The new plasma cutter also gives ButlerBuilt the capability to cut materials up to 1-inch-thick plate, if necessary, and 3/4-in. plate on a daily basis.

THE THICKNESS OF THE PLASMA CUT IS 0.090-INCH THROUGH 3/8-INCH ALUMINUM, BUT WE WERE MAXED OUT AT HIGH-TOLERANCE CUTTING OF 1/4-INCH PIECES. NOW WE CAN QUALITY-CUT AS MUCH AS AN INCH THICK IF WE NEED TO," Ashleman said.

ButlerBuilt's 150-amp system delivers the speed and cut quality it needs for a majority of the aluminum it cuts. But it also provides the strength necessary to mimic the same results on harder aluminum alloys, which can be comparable to cutting carbon steel.

Picking up Speed With the New System

Since installing the new plasma cutting system, Ashleman said the company's productivity has picked up significantly.

"The operator can square a piece by himself with our preset start points, press the start button, and walk away. The machine comes to where it needs to," he said. "The new machine has definitely reduced time for setup and starting."

Ashleman recalled how everyone would have to wait on the old system's gantry to move out of the way at a slow 60 inches per minute (IPM). Now he can assign a preset to the control and the gantry and torch move out of the way.

Ashleman estimated that the new system has allowed them to cut their consumable costs in half.

"I can press the button, tell it where to go, and go back to doing other things ... I'm not waiting on the machine," he added.

The company also is getting the accuracy it built the business on. The new plasma cutting system is delivering the same size hole from start to finish. Ashleman said that when he sets the machine to make a series of 1/2-in. holes at 150 IPM, the tolerances remain the same. With the older machine, the plasma torch would form an egg-shaped hole, and as the consumables wore, the hole became even more egg-shaped.

Ashleman added that ButlerBuilt is experiencing time savings related to the elimination of secondary processes. The old plasma cutting system left a much grainier finish on the edge, he said, and forced the welders to file the finished weld joints. The new table can produce smoother cuts that don't require any cleaning of the cut parts.

Ashleman estimated that the new system has allowed them to cut their consumable costs in half. A big reason for this is the equipment's automatic gas console (AGC), a feature that automatically sets cutting parameters, monitors a consumable's usable life, and displays the required torch parts and part numbers.

"Having the auto gas console has taken all of the guesswork out of changing amperage and consumables, and I really see that as a major timesaver," he explained. Before having such a control system, the operators set the gas manually, which resulted in discrepancies from one operator to another. Consumable life was consistently inconsistent.

Now the ButlerBuilt team can have a seat and enjoy the benefits. ■

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