

## Shipping Customized Products In 24 Hours With Pallettech

An auto racing enthusiast for years, Chris Alston has been designing and manufacturing drag racing components and assemblies since 1975. His creativity, drive and ideals lead to the establishment of his own company, Alston Chassisworks, in 1987.

The core business of this Sacramento, CA, company is the design and manufacture of premium drag racing chassis and suspensions. The company also provides suspensions, chassis and front ends for “street machines”, which are revved-up versions of classic older cars. “We are the largest manufacturer of this product type,” claims Alston.

Serving the drag racing industry is a very competitive venture. Alston focuses on providing exactly what his customers want: high-quality parts with lots of options that are available as soon as possible. Alston has learned that by applying the best manufacturing technology, he can offer such products at competitive prices.

One of his products that customers are snapping up is Alston’s unique Fab9 rear-end housing, which is both stronger and 5 pounds lighter than stock housings. It accepts all nine-inch Ford-style differentials and comes with a choice of machined housing ends. “They can go into any rear wheel drive car. We also designed them so customers can modify and accessorize them any way they want,” says Alston.

Alston had found good flexibility and added production capabilities in a horizontal machining center outfitted with dual pallets. However, to increase his company’s machining capacity and capabilities, Alston realized a larger machining center integrated with a multi-

station pallet changer could dramatically enhance Chassisworks' ability to provide unique parts with short lead times.

After investigating the pallet and machining technology available, he decided on the Palletech® Manufacturing Cell from Mazak (Florence, KY). This cell, featuring an FH-680 horizontal machining center and 12-station pallet changer, offers the cutting power and speeds Alston demands. In addition, the larger work envelope, combined with the 12 pallets, accommodates multiple jobs in one setup.

The flexibility of the cell complements the lean manufacturing methods, such as reduced work-in-progress and just-in-time manufacturing, employed at Chassisworks. This flexibility and the speed of the machining center enable the company to do something truly amazing: ship 98% of its orders within 24 hours.

### **A Product for the Equipment**

All of Alston's products are designed to be high-quality, unique products for which racers and car enthusiasts are willing to spend money. Alston has come to learn that to provide these types of products, he cannot allow current machining technology to limit him. "I buy equipment for its strategic advantage," explains Alston. "I buy it based on its capabilities, then find or develop parts to run on it."

This business approach is counter to the standard manufacturing practice of first developing a product, seeing if it flies in the marketplace, then investing in the manufacturing equipment. "That level of timidity today means you won't survive," he states.

This strategy has Chassisworks constantly updating its manufacturing technology. "I prefer to get rid of machines before they start to lose value," says Alston.

While the previous acquisition of a 400 mm (15.7") horizontal machining center outfitted with a dual-pallet changer satisfied Alston's initial capability demands, it only whetted his technological appetite. Alston decided he wanted more capacity and flexibility. His dream

system became one that would have several pallets and a larger machining work envelope. He also wanted the faster feeds and speeds that were now available.

The dream machine chosen was a 12-pallet, 2-load/unload station Palletech manufacturing cell incorporating an FH-680 horizontal machining center. Once Alston decided on his flexible machining system, he completed his design work on the new product that would hopefully pay for the system: the Fab9 rear-end housing. To add more value to the product, Alston also designed several attractive options such as shock mounts and swaybar arms, all of which the new system would machine.

### **Amazing Capabilities**

In preparation for the Palletech, Chassisworks designed and built the tooling to support the large work envelope of the horizontal machine.

The uncomplicated pallet control made it easy for operators to quickly get up and running on the manufacturing cell. Ninety degree indexing at the loading station makes pallet loading and unloading convenient by providing the operator easy access to all sides of the tombstone. Once the fixtures are loaded, the pallet transporter delivers the pallet to one of 12 stations, where the pallet will await its turn in the horizontal machining center.

The attributes of the FH-680 horizontal machining center include a 41.5"x31.5"x32.4" work envelope, a 15,000 rpm/50 hp spindle, #50 taper, high pressure through coolant and 1260 ipm rapid traverse.

The large palletized tombstones are loaded into the machining center by a rotating-type pallet changer. The pallet changer, unique in a machine of this size, impresses Alston. "It is fast. It also has a very good weight capacity."

A cell controller maintains the machining schedule. When a job comes to the top of the production schedule, the controller retrieves the appropriate pallet using the Palletech

transporter, and then delivers it to the machining center. Pallet retrieval is automatic, allowing the cell to run several jobs and pallets without any operator intervention.

### **Job-Shop Appeal**

For the first two years of operation, the Fab9 was the only product machined on the Palletech. As Alston had hoped, this unique product did pay for the manufacturing cell. “We only had to run it a few days a month to meet our orders. I knew that once we had that product up and running, we would have phenomenal machining capacity available to us that would be capable of making anything. When we finally did start machining other jobs on it, the cell made us a lot of money.”

Today, the cell runs 35 products that represent different part families. “The parts coming off the Palletech may be almost identical, but with some variations. This means we may actually have 100 different part numbers being machined in a single week.” The Fab9 housing, with its variations, represents 50 different part numbers.

Alston has three guiding principles with which he runs his business. “You need to make money; you need to know what it costs to make the part; and you need to be able to predict when the part will be done.” The automation and flexibility of this manufacturing cell supports these principles.

The cell also supports lean manufacturing methods by reducing work in process and inventories. “A pallet-supported machine is a superior method. Each day we run many different products through the cell. We do this by running three to five different jobs on each pallet. By producing these different parts at the same time, we greatly improved throughput. It also means we can make a large number of pieces of one part using just a few fixtures.”

“In summary,” says Alston, “If you can figure out how to keep the cell running, you can make a lot of money fast.”