

# American Aerospace



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# Catches Fire

When American Aerospace Technical Castings saw its past go up in smoke, a spark of hope kept it looking toward the future.

Shea Gibbs, Associate Editor

A flex hose vibrated unseen between the roof and the drop down ceiling at American Aerospace Technical Castings (AATC), Phoenix, Ariz. The hose, which was acting as a conduit between the power box and the air conditioning, slowly built up heat as it gyrated in an area of the company's 70-year-old building that didn't fall under the day-to-day watchful eye of the maintenance team. Beneath it, in one of the more critical areas in an investment casting house, the wax room, employees continued to pump out patterns, undisturbed and unaware of the fire hazard above them.

The hose continued to writhe back and forth in a tight motion throughout the dog days of summer 2007. On Aug. 10, it created a spark. The spark grew into flames. The flames grew into a structure fire, swelling within the 18,000-sq.-ft. space AATC called home.

"The fire had nothing to do with the investment casting process," said Patti Bredengerd, the company's president. "It was just the age of the building."

The cause, of course, wasn't nearly as

relevant as the effect. In the aftermath of the blaze, AATC discovered it had severe damage in its wax room and beyond. The company was at a crossroads. Would it refurbish the old space, performing the necessary maintenance to restore production and ensure that future fires would not occur? Would it move on to another building? Or would it simply close its doors?

Had the fire occurred a year or two earlier, the answer would have been clear. The company, which serves military and commercial aerospace customers, as well as miscellaneous commercial industries, hit hard times in 2005-2006, and its future was uncertain. A good old fashioned structure fire may have simply put it out of its misery.

But immediately prior to the fire, the organization had seen an up-tick in profits for the first time in several years. Because the management team was able to point to that after the fire, the company's owner and board members agreed AATC should move forward and purchase a new space in which to do business. Today, after several months and \$3.5 million, AATC

is poised to pick up where it left off prior to the disaster that interrupted its newfound growth.

## Getting Hot Before the Fire

During the lowest point of its run, AATC was on its best customer's watch list. Goodrich, a \$600-billion per year aerospace company, was concerned about the investment caster's ability to continue delivering high quality castings. But AATC eventually turned the relationship around.

"This is one of the [metalcasting facilities] we've been using for a lot of years," said Ken Brown, a senior resident representative for Goodrich that works closely with AATC. "They've been off our watch list for over a year, their deliveries have been great, and we plan on giving them more business in the near future. If I had more to do with it, it'd be tomorrow."

Earning an undesirable spot on the watch list was a gradual process. For several years under the former management team, AATC was stuck on an annual revenue count of about \$5 million. But revenues finally spiked





A fire that threatened AATC's existence started in its old wax injection room. The new room (left) offers no reminders of the disaster.



in the first half of FY2007, coinciding with an upper management shift in December 2006 that inserted Bredengerd as president and led to a top-down reshuffling of a variety of personnel. The company's annual income was a projected \$7 million before the spark-welding flex hose interrupted things.

Bredengerd said the revenue increase was due to several factors beyond the management shakeup. One, the company renewed a major contract with Fischer Advanced Composite Components, Reichersberg, Austria, an aerospace company that makes engine cowlings, among other things. The contract, originally signed in 2004, represents about 120 different part numbers for AATC, which ships them to the customer in a variety of assemble-ready kits.

Two, the company lost several customers. AATC management had for many years continued to supply many of its customers at the same rates it quoted when it first won the contracts—"1980s pricing," Bredengerd called it. The deals were therefore woefully under-priced, so AATC went to each customer individually and explained that for the company to continue casting their product at an acceptable quality level, they would have to raise prices. Some of the customers took off. Some stayed grounded. The net result was higher revenues per job and money that could be used to improve processes.

"We worked with each of our customers to show them where all

the costs have come from," Bredengerd said. "We lost a few, but we have a lot of previous customers that we're working with to bring back."

AATC did more than just up its income through better deals to show a revenue spike. It also lowered its costs by instituting lean manufacturing initiatives. Because the company's original manufacturing facility posed difficulties in terms of improving product flow (the primary goal of lean manufacturing), most of those initiatives focused on how AATC's employees could limit the bottlenecks and slowdowns around the floor. Many received cross training so that they could be put to work in whatever department might need them the most at any given time.

"In the past, supervisors were afraid to temporarily give up their best performers," said Larry Bredengerd, plant manager with 30 years metalcasting

experience and Patti Bredengerd's husband. "It's taken a certain amount of maturity and charity on their part to say, 'if I give you somebody, you give me somebody,' and know that they'll get them back."

After the fire in August 2007, the company coincidentally was left with versatile personnel. AATC's management team kept that in mind when it set its sights on moving into a new plant.

#### An Unorthodox Project

Every employee at AATC received the same curious letter from management.

The company had just suffered a significant disaster, and it was now moving on in dramatic fashion, according to the letter. Not only was the investment shop planning to move its entire facility, piece by piece, to another location, but management wanted to do it without contracting outside help. AATC quality manager David Ellis, a retired Marine Major with logistics experience, spearheaded the effort as the relocation team leader.

"At his recommendation, AATC management sent out a letter of intent and asked the employees officially to step out of their norm to participate in this exercise," Larry Bredengerd said. At the time (September 2007), the company expected to lose about 10% of its employees. That estimate was slightly liberal; the company still

#### American Aerospace Technical Castings Phoenix, Arizona

- Metals Cast:** Steel, aluminum and specialty alloys.
- Size:** Ounces to 60 lbs.
- Facility Size:** 47,000 sq. ft.
- Employees:** 82.
- Value-Added:** Magnetic particle, x-ray and dye penetrate nondestructive testing.
- Certifications:** Nadcap, AS9100 B.





AATC workers were asked to step outside the box and perform the variety of tasks necessary to move its operation department-by-department into a new facility.

employs 82 of its original 87 workers. "There were people that said, 'I don't want to do that.' But we found we didn't need them as badly as we needed the people that wanted to be a part of this."

The management team had priced the move out two ways. By getting everyone in-house onboard with the project, not only would AATC save money compared with contracting the services out, it would build the camaraderie it needed to continue making the business a success. But before embarking on the major task of moving a building full of equipment to a new location, the company had another major task to undertake. It had to build up a surplus of castings so it could continue to serve its customers while all of its employees were engaged in the process of moving.

"We did some long range forecasting and made a tremendous amount of castings ahead of the move," Patti Bredengerd said. In this pursuit, the ability of the AATC employees to step out of their comfort zones once again became a factor.

"We worked a lot of people overtime, and the cross training we'd been doing really paid off," Larry Bredengerd said. "Using employees in various departments throughout the process, it allowed us to nearly double production in about a three month period and build the inventory needed to satisfy the customers' future orders."

It was in late December 2007 when the move began. An ac-

quate surplus hadn't yet been produced, but the company was able to get started on the equipment in the facility that was not in use at the time. Implementing Ellis's plan to move the operation department-by-department, AATC juggled the moves to allow production to continue in certain departments before sending them packing. In late February and early March, they transferred the cleaning room equipment to the new address, where grinders and straighteners set up shop to do finishing operations on the remaining inventory.

It took some time for the amateur movers to get used to handling equipment weighing several tons, Bredengerd said, but without a single reported injury and zero significant equipment damage, they finished moving equipment by the end of March and had the plant 100% operational June 1, nearly 2 months ahead of the original planned completion date.



AATC put its cleaning room and hot straightening ovens into production before the rest of the new facility so that it could finish its casting inventory.

### Rising from the Ashes

It's appropriate that AATC only moved across town, maintaining a Phoenix address. The company had itself risen from the ashes. And its reincarnated form was better than the original. The new 47,000-sq.-ft. building, formerly home to a silk screening t-shirt operation, was a wide open 40,000 sq. ft. of manufacturing space when the investment casting firm moved in. Finally, the company could fully implement lean manufacturing principles throughout its plants.

"With the new building, we were able to come in and put in the flow that best suited us and our customers for quick turnaround and cost," Patti Bredengerd said.

Larry Bredengerd estimated that the company will spend \$1.5 million more on building improvements, including almost \$1 million on the electrical system, its former Achilles' heel. The extra space in the building has also allowed the com-

pany to consider bringing in operations it currently farms out, specifically machining and heat treating.

During the move, AATC brought with it a much improved swath of equipment. In early 2007, after renegotiating its existing jobs, it invested in new sand blast machines, new finishing presses and more compact electric hot straightening ovens, all of which were intended to reduce the bottlenecks the facility had in its finishing room. At the time, AATC had as much as 40 days





Goodrich, AATC's biggest customer, makes a variety of parts for the aviation industry, including engine nacelles.

of in-process inventory waiting to get through the bottleneck. But the improvements, which cost the company between \$15,000 and \$20,000, have reduced that inventory to five days or less.

AATC also hired a new maintenance manager, 20-plus year veteran Bill O'Shea, who made it a priority to perform overdue maintenance on the company's existing machines and set out a more precise preventive maintenance schedule.

"It was a two-pronged approach," Larry Bredengerd said. "We pinpointed specific needs to improve production and volume, and we made what we have better."

AATC had for too long relied on band-aid fixes, according to Patti Bredengerd. The new focus on maintenance is designed to keep the company ahead of the curve. At the new facility, O'Shea said the company would have no problems doing so.

"I would love to see a computerized maintenance management system," O'Shea said, who was involved in designing such a system at a previous metalcasting facility. "It takes a lot of time, but it's just so awesome to be able to keep track of everything, and that's ideally where we want to go. Once you get the system in, it's a matter of entering all the data as far

as equipment and then the parts you need for each piece of equipment."

#### Looking to the Future

Don't let the name fool you, American Aerospace knows that to ensure a stable future, it must diversify its customer base to weather dips in certain market segments. So while the company is currently producing roughly 90% aerospace castings, it has in the past maintained a product mix that was 40% commercial and is seeking the customers necessary to return to at least that level.

"The aerospace market goes up and down," Patti Bredengerd said. "We try to keep commercial castings in our product mix, as well, so we don't have our eggs in one basket."

The company maintains more than 50,000 active part numbers for more than 100 customers, and on any given day could be running any one of them. The remaining 10% of its product mix that is currently devoted to commercial castings includes parts for mining customers, a local arms maker, an industrial mixer manufacturer, and a company that produces crash test dummies in a variety of sizes.

To aid in its search for new customers, AATC offers customers a 98-99% quality rating on a variety of alloys,

from standard aluminum and steel alloys, to copper-base and super alloys, boasts tolerances of plus or minus five thousandths, and is willing to take on production runs from one to 10,000.

"There are some inefficiencies involved in being a job shop, but you have to overcome those and get really good at it if you want to be competitive," Larry Bredengerd said.

Sitting at her desk in the new AATC plant days before the plant ramped up to full production, Patti Bredengerd had the look of someone who had already overcome many of her company's inefficiencies. Twenty years earlier, she spent her days in the very room where the August 2007 fire began, working her first job with AATC as a wax pattern maker. Since then, she's worked nearly every job in the metalcasting facility.

"It's been a hard road to climb," she said, crediting the financial support offered by the company's board of directors together with the AATC employees that have been critical to the move—the relocation team of Ellis, Art Abbey, Larry Bredengerd, Steve Mattas, Carlos DeLeon, Stephen McCaskill and O'Shea, as well as the entire production team. "We have hung in there, and now it's time for the reward. It's been a long time coming." **MC**