



***ADVANCED***  
**MOTION CONTROLS**

**IN MOTION**

FOUNDED BY TWO AMBITIOUS ENTREPRENEURS IN 1987, ADVANCED MOTION CONTROLS RAPIDLY EVOLVED FROM A MODEST STARTUP TO A WORLD-CLASS SERVO DRIVE MANUFACTURER. DAN HARVEY EXAMINES HOW THE CALIFORNIA-BASED COMPANY BECAME A MAJOR GLOBAL PLAYER.

**O**N NOV. 23, 2005, ADVANCED MOTION CONTROLS (AMC) reached an impressive milestone. That's when the Camarillo, Calif.-headquartered company built its one-millionth servo drive. The landmark is indeed remarkable, and for two reasons in particular. For one, it helped solidify AMC's reputation as a world-leading manufacturer of servo drives, which are essential components in motion control systems utilized throughout a wide range of industries. Second, it was accomplished when the company was only a little more than 17 years old. Thus, in a very short time, AMC experienced head-spinning growth, rapidly evolving from a two-person startup enterprise into a major player in the global arena.

The foundation for AMC was formed in 1987 by Sandor Barta and Daniel Schoenewald, partners driven by their shared desire to design, manufacture and sell better servo drives. "They both possessed the necessary entrepreneurship and ambition to start a company that would then endure," relates AMC Marketing Manager Karl Meier. "One had the engineering know-how and the desire to build a 'better mousetrap,' while the other had the business acumen and the desire to bring this improved mousetrap to the market."

What they came up with was a lower-cost, low profile, high power-density servo drive that took up very little space and had decent power delivery capabilities, according to Meier. "It proved better than what was available at the time," he indicates.

In other words, AMC's "better mousetraps" efficiently produced maximum power output in the smallest packages possible. Potential customers immediately recognized the value, and AMC was well on its way to becoming one of the fastest growing servo drive providers in the world.

#### INTEGRAL ENGINEERING SUPPORT

Subsequently, those potential customers converted into true believers, and AMC became known for supplying reliable and cost-effective motion control solutions – for brushed and brushless servomotors – that are built to customer specification and delivered on time.

Today, AMC provides customers with hardware and software products as well as engineering support. "Our forte is working from engineer to engineer. Essentially, we become part of our customers' engineering staff," explains Meier. "If they deliver a specification, we make sure it's complete."

As Meier indicates, AMC designs affordable custom products optimized for any OEM's specific needs. The company's engineering team thoroughly understands system integration and boasts the skills and experience to optimize customer performance and, in turn, maximize their productivity. Capabilities it can provide on a single board include multiple axes, wide power range, extended feature sets, broad functionality, comprehensive diagnostics, creative packaging, various I/O, small size, pre-specified connectors, additional machine/process control circuitry, and more.

AMC's approach, which fostered customer loyalty and the ensuing company success, works so well because the engineer-to-engineer relationship benefits both parties. "By becoming part of our customers' engineering staff, we can allow them to concentrate on the other parts of their machinery, platform and system. In turn, it allows us to serve as the experts on the motion control side," says



Meier. "That puts us in a unique position that's beyond the reach of the standard suppliers."

Customization involves a prototyping cycle, which is completed in house at AMC's Camarillo manufacturing facility. "Once the prototyping is completed, we take it back to our customers and integrate it into their system, making sure that what we've built is what they initially wanted. After that, we make any necessary modifications," informs Meier.

#### FROM CAMARILLO TO THE WORLD

While AMC does produce standard products, those products very often serve as a launching pad for customized servo drive solutions for diverse motor technologies. In fact, customization is the larger part of AMC's business. "About two thirds of our products are custom-built to OEM specifications," reveals Meier. "The other third is a standard product, where it is acceptable as-is for those customers who would rather purchase product off the shelf."

To be able to turn out the highest quality standard product as well as optimally engineered customization, AMC has equipped its production site with powerful manufacturing capabilities. "For example, we employ batch processing, and we have two complete parallel production lines," says Meier. "If one line is running flat out or needs to be taken down, we are backed up by the other. Thus, we make sure customers are always taken care of and we can get product to them in a time frame that challenges industry standards."

The company's commitment to excellence is evident in this investment to facilities and capital equipment as well as in its quality con-



trol processes. To ensure highest possible product quality and consistency, AMC strictly complies with ISO 9001:2000 standards.

The Camarillo site serves as the company's world headquarters. "We have nearly 90,000 square feet of manufacturing, engineering, sales and support, and warehousing space," says Meier.

In addition, AMC conducts research and development at its European headquarters located in Budapest, Hungary. "That site also provides engineering and sales support for Europe," adds Meier. "We also have an independent sales force located throughout the United States, as well as sales agents that import and sell our products in major markets throughout the world."

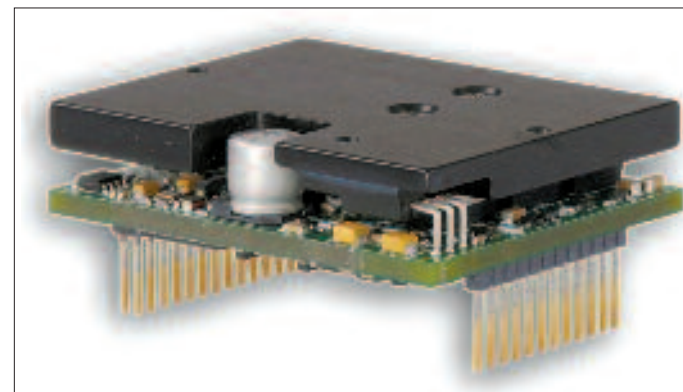
#### AT CUSTOMERS' COMMAND

AMC currently offers hundreds of standard and customized servo drives and amplifiers. "Basically, these are controllers that position motors, based on what the control system dictates what the motor must do," explains Meier.

The company's servo drive and amplifier models accept many command signals, can communicate over several networks and operate in many different modes. The wide selection can fit into any customer application. As such, AMC's customer base is quite diverse and extends across a number of industries.

"Motors requiring servo drives exist in robotics, assembly, material handling, medical devices, semi-conductor machinery, and military and homeland security products, such as automated guided vehicles," says Meier.

With such broad-based applications, AMC has adapted to cus-



Actual size. 1.6 kW peak delivery!





Pictured: Digiflex® Performance™ Series. AMC's business model covers both market driven standard products and custom-built OEM specific products.

tomer needs revolving around high-current/low-voltage and high power, small size, and unique fit-form-function installations, according to Meier.

In particular, AMC meets the requirements of the medical industry, which has application needs in areas ranging from critical care to diagnostics to patient comfort. Motion control devices are necessary for items such as patient beds, operating tables and treatment tables. Servo controls help tables and beds rise, lower and tilt. Further, diagnostic medical technology such as magnetic resonance imaging and computed tomography equipment utilizes automatic tables that slide in and out of imaging tunnels and rotate the transmission/detection rings.

In the automated guided vehicles (AGVs) segment, AMC supplies drives for the unmanned vehicles deployed in environments and circumstances too dangerous or impractical for human operators. AGVs can be land-based or aerial-based or operate underwater. Increased homeland security needs have driven the development of such vehicles, and AMC's high power-to-size ratios keep weight down while enhancing performance.

In the industrial robotics segment, AMC supplies servos necessary to the repetitive processes performed by robotic equipment. Such processes may include arc welding, coating and paint spraying, product assembly, and packaging, among many others. Servos

reside at the core of these processes, and AMC products offer the requisite velocity and position control.

For the semi-conductor industry, which has some of the most demanding applications in motion control, AMC products provides high speed and extreme accuracy and precision.

AMC also serves various elements of the entertainment industry, as motion control devices are used in motion pictures, theaters, museums and, most especially, theme parks.


#### ENHANCEMENTS, INNOVATIONS AND ACCESSORIES

As far as new product development, AMC has developed a digital product line that supports several different interface options including analog input, step and direction, encoder following, RS-232/485, CANopen or SynqNet. These same interfaces can be found on servo drives with power output capabilities ranging from 20W up to 40KW of peak output, according to the company.

To enhance its capabilities, AMC has embraced the universal drive concept, informs Meier. "We've brought in more universal drive elements," he says. "Universal drive relates to the operation of multiple motor types. For instance, from the same amplifier, we can operate motors such as brushed or brushless permanent magnet types, voice coils, and AC induction motors. This allows customers to select one drive in the same platform, to carry through multiple motor technologies. In this way, they don't have to learn how to use different software tools or buy a different products from a different vendors."

Beyond universal drive, AMC is moving into soft-motion controls. "Instead of needing a unique, dedicated controller, customers will soon be able to acquire from us software they can install on a generic computer," reports Meier. "This will provide them with a less expensive, more flexible control system that resides at the heart of the controls or machinery."

Along with its servo drives and amplifiers, AMC also provides the accessory components that complement a servo system, such as power supplies, shunt regulators, and filter cards, among others.

Since 1987, AMC's mission has been to be the world's best servo drive supplier. In terms of both standard and customized product, it has continually strived to provide solutions that aren't available anywhere else in the market. That is the challenge that the company established for itself, and meeting that challenge is what has allowed the company to grow at such a rapid clip. 



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