



Motion Solutions That Change the Game



5 Ways Medical Motors Are Improving Our Lives

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Surgical robots, powered prosthetic limbs and exoskeletons, handheld precision surgical handpieces and even consumer CPAP machines are some of the modern medical marvels that are helping an increasing number of people achieve mobility, function and better health.

These technologically advanced medical products have become a reality in part thanks to advances in the medical motors and electronic drives used to power them.

Here are five important ways medical motors and drives used in these advancements are improving the lives and health of all of us.



1. Mobility

Gearmotors help enable wheelchair-bound people to enjoy their freedom and get off the normal path. The [Action Trackchair](#), for example, a unique, all-terrain wheelchair, isn't your ordinary wheelchair. It uses treads instead of wheels, which opens up an array of off-roading mobility solutions through fields, forests and even small streams — all powered by a gearmotor.

Our RAD36 right-angle gearmotor powers the Trackchair. It enables the Trackchair to safely carry up to a 350-lb. person at speeds up to 5 mph — while allowing movement through inclines, depressions, debris and other obstacles.



2. Medical Pumping

Medical motors are essential to power the pumps used in many modern medical devices to provide cooling and accurately meter fluids, gases and medications.

CT scanners. Computed Tomography scanners enable fast, high-resolution scanning and 3D imaging of the inside of the human body. Many CT scanners require a centrifugal pump to circulate coolant to maintain the temperature of the scanner's x-ray system. Typically, a brushless DC motor with integrated drive, like Allied Motion's EnduraMax, reliably powers the pump.

Dialysis: Hemodialysis systems require reliable peristaltic pumps to accurately pass the patient's blood and the dialysis solution through the machine's dialyzer. Our [KinetiMax™](#) precision brushless motors provide reliable, quiet operation for these life-giving machines.

CPAP: CPAP machines have solved sleep apnea issues for millions of people who suffer from this debilitating condition. Modern CPAPs are very compact, very quiet and some are even battery powered. The heart of the CPAP is a highly dynamic blower normally powered by a brushless DC motor.

Allied Motion engineers developed a special brushless motor, called the ResMax™, with high dynamic performance capability and a high top speed of 90,000 RPM for a supplier of blower assemblies used in CPAP machines. The ResMax runs quietly at high speed, has a very low inertia rotor for high dynamic performance and has an extended bearing life of over 30,000 hours.



3. Robotic Surgery

What is commonly called robotic surgery should actually be called robot-assisted surgery, as a surgeon remotely guides the robot to do the surgery. This allows for less invasive, more comfortable patient experiences.

The rate of robotic surgeries is increasing by 25 percent annually. Robotic surgery has proven benefits in reducing the risk and complications associated with open surgical procedures, extending the benefits of minimally invasive surgery to more patients. The surgical robot is able to make much smaller incisions and use smaller surgical instruments than the surgeon can use.

“These precise surgical systems advanced frameless torque motors of various diameters to power them,” Phillip Lucia, business development manager for Allied Motion in Tulsa, remarks. “We’ve been helping our customers for over a decade to develop custom motion solutions for surgical robotics, resulting in more power delivered where it is needed most, more efficiency to enable longer-lasting procedures and cooler devices, and enabling innovative mechanical design with our flexible and customizable packaging to free surgical robotics engineers to dream big and change the way surgeries are done, all with the end goal of improving patient outcomes.”



4. Advanced Powered Prosthetics

Artificial limbs are applied in a variety of cases: accidents, disease, congenital defects, combat injuries and more. Today, powered bionic limbs have been developed that can interact with human muscle, skeleton and nervous systems to assist human motor control in ways that are becoming increasingly natural.

Our engineers have worked with the developers of these amazing prosthetics—like the [Power Knee™](#) and fully functional prosthetic arms for amputees—to apply our motors.



5. Compact, High-Powered Surgical Handpieces

Surgical handpiece motors are high-powered devices, but also must be small, light and efficient – which is difficult to achieve in most motor designs.

Allied Motion has developed miniature slotless and slotted brushless motors to power these handpieces. These motors meet and often exceed surgical industry requirements, delivering precision and efficiency at high speeds to 100,000 RPM and above.

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An example is Allied Motion's slotless PerformeX series that delivers twice the power of same-size competitive units. The patented PerformeX slotless motors incorporate special winding configurations, lamination materials and proprietary construction techniques to achieve two to three times the torque at speed compared to a slotted type motor of similar construction. These units can be provided with special sealing features that enable up to 1000 autoclave sterilization cycles, leading to more cost-effective reusable handpieces.

More on our Medical Motors

Allied Motion's medical motors are designed to meet the exact requirements of medical applications. If you have an application that needs one or more medical motors, we'd be pleased to work with you to help select one of our standard designs or to develop a custom motor that matches your unique requirements.

Have questions on respirators or the ResMax motor? Contact us or connect with us on [Twitter @AlliedMotion1](#).

To find out which motor is right for you, contact the Allied Motion application engineering team today

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About Allied Motion Technologies Inc.

Allied Motion (NASDAQ: AMOT) designs, manufactures and sells precision and specialty motion control components and systems used in a broad range of industries within our major served markets, which include Vehicle, Medical, Aerospace & Defense, and Industrial/Electronics. The Company is headquartered in Amherst, NY, has global operations and sells into markets across the United States, Canada, South America, Europe and Asia.

Allied Motion is focused on motion control applications and is known worldwide for its expertise in electro-magnetic, mechanical and electronic motion technology. Its products include brush and brushless DC motors, brushless servo and torque motors, coreless DC motors, integrated brushless motor-drives, gear motors, gearing, modular digital servo drives, motion controllers, incremental and absolute optical encoders, and other associated motion control-related products.

Allied Motion Solution Centers



Allied Motion maintains Solution Centers in three geographically strategic locations to assist our customers with all aspects of their product selection and buying decisions. These three facilities assure you of local support no matter your location around the globe.

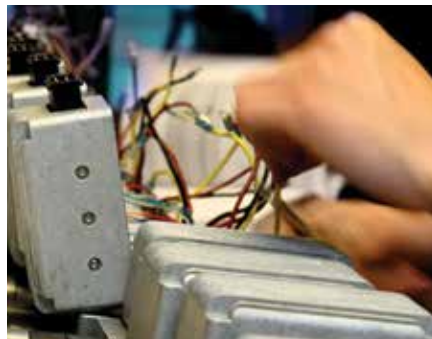
Each Solution Center is manned by experienced application engineering and customer service teams, which are available to provide:

- Application analysis assistance
- Detailed product information and documentation

- Standard product selection
- Product customization and options guidance
- Specification development assistance for custom-design products
- Price quotations
- Ordering, order status and shipment information
- Logistics assistance

For assistance with all of your motion applications, contact us at one of our continental Allied Motion Solution Centers.

Allied Motion also has a global network of factory trained selling partners to serve you. Call us; we'll put you in touch with an Allied Motion sales partner near you.



Allied Motion Solution Center NA



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