

## Unmanned Vehicles – Darpa Challenge

**Application Challenge:** The DARPA Urban Challenge is an autonomous vehicle research and development program with the goal of developing technology that will keep warfighters off the battlefield and out of harm's way. The Urban Challenge features autonomous ground vehicles maneuvering in a mock city environment, executing simulated military supply missions while merging into moving traffic, navigating traffic circles, negotiating busy intersections, and avoiding obstacles.

An autonomous ground vehicle is a vehicle that navigates and drives entirely on its own with no human driver and no remote control. Through the use of various sensors and positioning systems, the vehicle determines all the characteristics of its environment required to enable it to carry out the task it has been assigned.

From the United States Congress: "It shall be a goal of the Armed Forces to achieve the fielding of unmanned, remotely controlled technology such that... by 2015, one-third of the operational ground combat vehicles are unmanned."

DARPA conducts the Urban Challenge program in support of this Congressional mandate. Every "dull, dirty, or dangerous" task that can be carried out using a machine instead of a human protects our warfighters and allows valuable human resources to be used more effectively.

**Exlar Solution:** Exlar's compact linear actuators and rotary motor provided the ideal solution to keep the weight down and consume as little space as possible in the SOLO Autonomous Ground vehicle designed by SoftThought Inc. for the DARPA challenge. With standard products that pass the rigorous requirements of military shock and vibration testing, Exlar's actuators and motors also had the reliability required for this arduous challenge.

**Exlar Products:** GSM20 linear actuators from Exlar provided the actuation for acceleration and braking.

With the industry's most compact form factor in a linear actuator, the GSM20 fit easily in to the application without consuming the large amount of space of a competitor's actuator. Exlar's SLM090 rotary motor serves as the rotary steering actuator. With the highest torque density and the highest power efficiency available on the market in a brushless motor, along with the reliability of military



grade applications, the SLM was also ideally suited for this challenging application.

Optimize your application with linear or rotary actuators from Exlar. Inquire about our Tritex Series which contains all of the items for a complete Motion system - actuator, motor, power and control electronics all in one compact sealed housing.

Visit [www.exlar.com](http://www.exlar.com), call us at 952-500-6200, or email us at [info@exlar.com](mailto:info@exlar.com) for complete product information on all of Exlar's electric actuation solutions.