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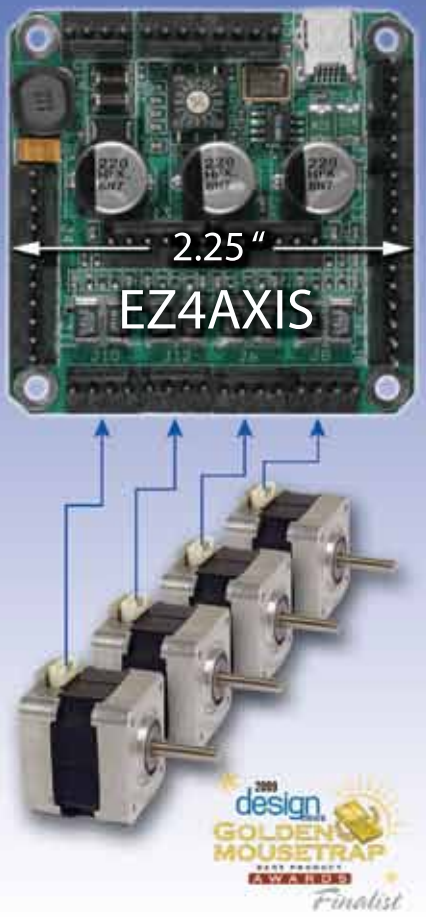

2008 design GOLDEN MOUSETRAP AWARDS Finalist

Full featured 4 Axis motor controller with power drivers

- Four 1 Amp chopper (PWM) drives
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Springing for our vets

I'm a sucker for a good human interest story. Throw some creative engineering into the mix, and I'm completely hooked.

Such is the case with the tale of Justin Rokohl, a marine who lost both of his legs to an IED in Afghanistan. Justin had always wanted a motorcycle, but never had the funds for one before his tour in the service, and figured he would get one after his time in the military. But after the explosion, he doubted his dream would become a reality.

Enter LegUp LandinGear, a product created by Chopper Design Services, mainly for Harley touring bikes. LegUp is a computer controlled, motorcycle stabilization system created for those who are concerned about—or unable to—hold up their 850-lb motorcycles when they come to a stop. This could include new riders, or people with bad knees, bad hips or other physical issues. A set of small wheels retracts and deploys based on vehicle speed to help riders balance their motorcycles at slow speeds. The motorcycle is fully capable with the wheels retracted, unlike three wheel conversions.

The computerized system uses an electric linear actuator that lowers the legs with wheels and a spring mechanism from Brooklyn-based Lee Spring Co. The system allows the wheels to lower only under speeds of 10 mph, and balances the bike completely on level terrain. The onboard computer senses speed and wheel position—upon acceleration, if the operator does not retract the wheels, LegUp will raise them automatically.

Evan Guest, an application engineer with Lee Spring, worked with Chopper on this project. The ¾-in. diameter, custom designed torsion spring (manufactured in Lee's North Carolina facility), allows the LegUp system to be leaned while the wheels are deployed (down). This permits the operator to steer the bike as usual with the wheels down—and when the bike is returned to upright, the springs lock the wheel holder back into their normal position. This articulation feature eliminates the tendency for the extra wheels to steer the vehicle.

The team that created LegUp had been wanting to do something to give back to a serviceperson, and they were connected with Justin, who needed just that sort of solution. Numerous companies contributed to the cause, even down to the transportation service that gave a reduced rate to get Justin's bike from Texas to CDS' Florida headquarters for the installation.

In this era of increasingly negative media coverage, seeing this project come together to benefit one of our brave service members makes me proud to be covering the design engineering space—and I'm glad to share it with you all. DW

See the video of Justin on the Engineering Exchange, www.engineeringexchange.com.

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Weigh in on where you get your inspiration on Paul's blog on the Engineering Exchange, www.engineeringexchange.com.

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