In the summer of 2007, Freedom Lifts will begin offering a wheelchair loading system that blends Star Wars technology with available lifts and transfer seats. In the process, it will turn your power wheelchair into an R2D2 robot prototype that finds its own way home.

The concept, called Automatic Transportation and Retrieval System, is built around minivans and sport utility vehicles. The wheelchair user accesses the van from the driver's side sliding door and externally activates a power transfer seat, called the Freedom Seat. This seat base moves the driver's seat back, then out the side door and down to transfer level.

Once the user transfers into the driver's seat, he or she uses a remote-control touch pad to direct the power wheelchair to the back of the van. There, a visual guidance system takes over and directs the wheelchair onto the platform of a Tracker lift. A latching device locks the wheelchair in place, and the lift retracts into the van. The rear power hatch door is closed to finish the loading procedure.

Two key components of the ATRS are radical new concepts for the mobility industry. The first is the manual remote control system, which guides the wheelchair to the back of the van. An electronic interface is attached to the wheelchair to receive and interpret radio frequency signals from the touch pad in the van. Freedom calls it "smart wheelchair technology" and it is adaptable to many power wheelchairs.

But manual guidance does not have the accuracy to park the wheelchair on top of the platform, so a second unique concept was invented. Using a video camera, a computer in the vision-based control system interprets the wheelchair's position, and then directs it to center itself on the lift platform. This is all done without input from the user, so the wheelchair is a robot at this point.

This technology was developed through a cooperative effort by Lehigh University, Carnegie Mellon University, and Freedom Sciences LLC, a sister company of Freedom Lifts.

"We wanted to provide a freedom of choice," said Tom Panzarella, of Freedom Sciences LLC. He noted the ATRS can be installed on many different vans and sport utility vehicles. Also, unlike a lowered floor van conversion, the equipment can be moved from one vehicle to another.

Bob Smith, Freedom Lift's vice president of sales and marketing, calls the ATRS an "alternative to a van conversion" because it does not permanently alter the vehicle. Once the ATRS is removed, the vehicle can be sold or traded just like any other vehicle. Smith thinks this will help increase the resale value.

Along with several of the researchers involved in this project, Smith stresses the safety of the ATRS over that of a standard lowered floor van conversion. By eliminating the use of wheelchair tie-downs and not allowing the user to ride in the wheelchair when the vehicle is in motion, major risk factors for injury during an accident are removed. Also, the Freedom Seat has been crash-tested to meet the Federal Motor Vehicle Safety Standards.

The ATRS was introduced to the public at the World Congress on Disability in November of 2006. After additional testing, Freedom Lifts plans to begin marketing it in the summer of 2007. Retail price with all of the features mentioned will be approximately $25,000, although that figure has not yet been firmly established.

A future version may include "round trip technology" according to Panzarella, where touching one switch will take the wheelchair from the front of the lift in back, and finally to the inside of the vehicle. Also, the ATRS will eventually be available in passenger or driver versions and will fit in vehicles other than the prototype DaimlerChrysler minivan.

Although this is a unique product, it will compete against several existing products. For wheelchair users who can transfer, it could be an alternative to the comparably priced lowered floor minivan conversions. These conversions are made by several different companies. It also will compete against the power transfer seat and wheelchair lift combinations offered by companies like Bruno Independent Living Aids.

Resources