

The UNiMO continuous-track electric adventure wheelchair

By [Mike Hanlon](#)



The UNiMO Grace is a stylish Apple-esque armchair-on-wheels, while the Adventure model is designed for going places you cannot normally go in a wheelchair

[Image Gallery](#) (42 images)

Japanese company Nano Optonics Energy displayed its caterpillar-tracked UNiMO (UNIQUE MObility) micro EV drive train at the [International Robotics Exhibition](#) in Tokyo last week, promising new levels of personal mobility for wheelchair users.



[View all](#)

There are two models of the UNiMO: the US\$18,000 Unimo Grace which is now available for purchase and the US\$10,000 UNiMO Adventure which will be available by the end of this month (November 2013).

Even more importantly, the 400 W drivetrain designated E-001 is being made available to other manufacturers to create their own micro EVs.

The UNiMO Grace



The UNiMO Grace is a stylish armchair-on-wheels that looks like it comes directly from the drawing board of Sir Jony Ive, with clean minimalist Apple-esque lines and such digital niceties as a USB port for charging your smartphone.

Though it comes in black or white livery, the brushed aluminum model is so reminiscent of a MacBook Pro that it would not look out of place in an Apple Store. It will encounter zero resistance from the aesthetically-appreciative.

There are several other features which set the UNiMO apart from the competition. One is its seat which has a 30 degree power tilt-up function to assist the mobility handicapped to get into and out of the driving seat independently. It also has a lockable trunk.

The UNiMO Adventure



It's the Adventure model, which looks likely to generate the majority of retail sales for the company as it will sell for little more than half the price of the Grace, has an identical power-train and marginally better performance. Though the Grace is no misnomer, that elegance comes at a hefty premium.

The 85 kg Adventure model is only a few kilograms lighter than its stablemate, but without the designer panels to get scratched, and without restricted ground clearance due to the low skirts of the Grace, it will no doubt become a beloved workhorse for those outward-bound spirits who are restricted to wheelchairs.

Both models use the same 400 W powertrain and rubber caterpillar-style tracks and have the same top speed of 6 km/h (3.7 mph).

Both models have regenerative braking and use the same 15 Ah phosphate lithium ion battery for a range of approximately 20 km (12 mi) – it's just the body that is different.

They can climb kerbs, go through ditches, up slopes, traverse a 15 cm (6 in) gap, tackle open ground, lawn, snow, mud or even take you across the beach to the water's edge – almost all the places where you wouldn't go with a traditional wheelchair without a sizeable entourage.

The combination of robotics and electric power is about to bring a revolution to personal mobility on all fronts, but for the handicapped, it will offer a range of capabilities well beyond anything currently available, with perhaps the exception of the far-more-expensive, but much faster off-road EV known as the [Zeisel](#).

While the UniMO Adventure can tackle all those relatively extreme environments, it's the machine's ability to tackle everyday mobility issues that will most endear it to users. Scenarios like getting on and off the train, steep gradients, cobblestone roads, travel in third-world countries, traversing public spaces that were created before wheelchair access were considered in the design, plus all those minor footpath irregularities which regular users don't see but wheelchair users most definitely do.

UNiMO's enabling tractor-type drivetrain has a length of 100 cm (39 in) with a width of 69.5 cm (27.4 in) and a turning radius of 60 cm (23.6 in). This means you can get into a narrow elevator and move around without knocking things over in stores or at the supermarket.



The UNiMO also has independent suspension, which is far more forgiving than the rock hard pneumatic tires of a regular wheelchair and the driving controls are simple and logical, and it can spin 180 degrees in its own footprint, so there's not much that a user will encounter that will bring proceedings to a halt.

Nano-Optonics Energy works closely with a number of Universities in Japan, many of them involved in deep level EV and robotics development, and as company spokesperson Takashi Tauchi phrased it, "we are deeply engaged in finding e-mobility solutions that are dedicated to enhancing the quality of life for the handicapped, disabled and elderly."

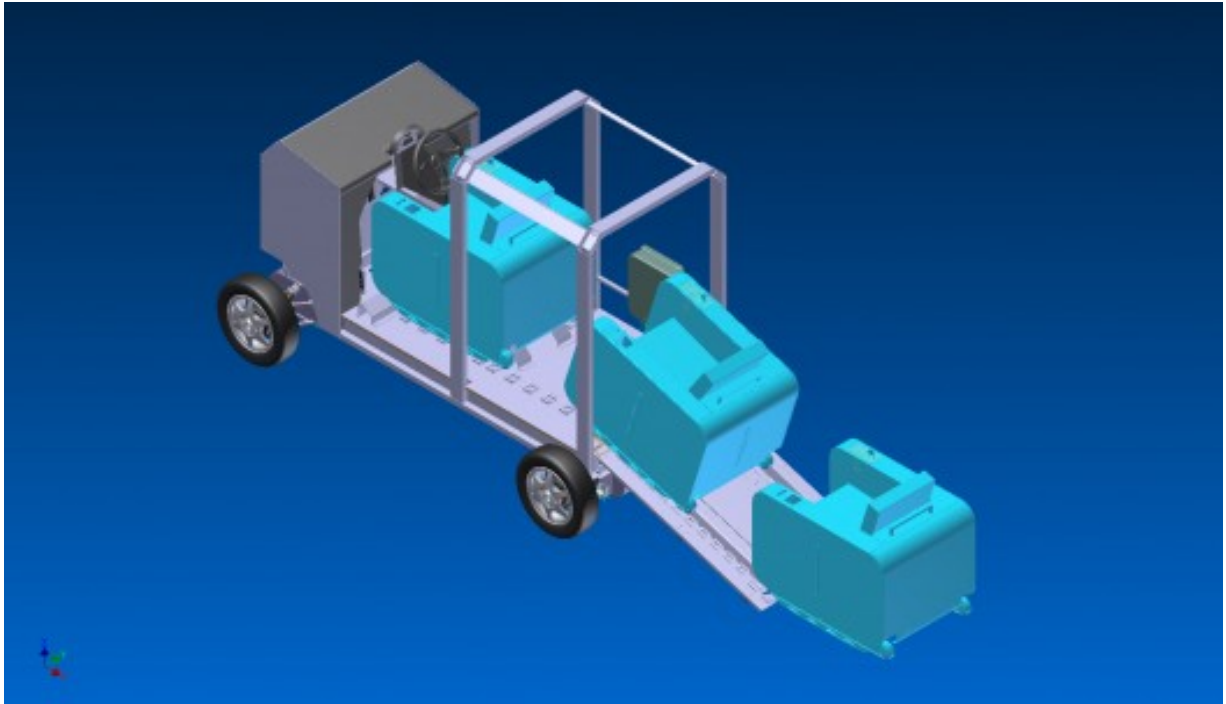
The UNiMO far surpasses the traditional power wheelchair, mobility scooter or power cart and is likely to create its own niche market. It's not hard to see celebrities and athletes in rehabilitation mode using something as stylish as the UNiMO, and similarly with people who would not normally consider a wheelchair – the independently wealthy elderly in our aging society for instance, who might wish to get around with more manoeuvrability and less pain.

It's clear that there are many more micro EVs on the way from Nano-Optonics Energy and that the entire home energy eco-system is being considered.



One adjacent mobility solution currently being developed into prototype form at Nano-Optonics Energy is the micro EV above.

When we began asking about transporting the UNiMO, we were told of a more all-encompassing EV system which incorporated the UNiMO and the ability to transport more than one at a time.



Normally such details of future technology and concept development would never be seen by a technology writer, but I saw enough to recognize that considerable thought and effort were being applied to future micro mobility solutions, and that the company is allocating considerable resources towards a broader product offering.

Nano Optonics Energy is keen to hear from any manufacturers wishing to incorporate its go-anywhere 400W E-001 drive-train in their own micro EVs.

Potential purchasers of either model will be able to order them directly from [Nano Optonics Energy](#) by the end of the month.

.

About the Author



After Editing or Managing over 50 print publications primarily in the role of a Magazine Doctor, Mike embraced the internet full-time in 1995 and became a "start-up all-rounder" – quite a few start-ups later, he founded Gizmag in 2002. Now he can write again. [All articles by Mike Hanlon](#)