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PHOTO CAPTION:  
 Prototype MISTER  
 podcar and suspension  
 system on display in  
 Opole, Poland, site of  
 future test track.

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## Polish Podcar Progress

By Bill Moore

### Polish PRT inventor Ollie Mikosza keeps pushing for a more perfect podcar system

As Heathrow Airport's Terminal Five nears completion, so does the formal ribbon cutting of the world's first personal rapid transit system, or PRT. Small, four-passenger electric vehicles known as Pods will shuttle passengers between the terminal and parking areas.

In North America, the city of Ithaca, NY is seriously considering funding one to link the downtown district and its two academic institutions: Cornell University and Ithaca College. Out on the West Coast, the city of Santa Cruz is contemplating a solar-powered podcar system.

As part of its pledge to be fossil-fuel-free by 2020, some dozen communities in Sweden are planning a network of PRTs and in Abu Dhabi, designers of Masdar City, the zero-carbon, zero-waste desert city of the future, are following suit.

One of the companies developing a PRT system is Mikosha MISTER, Ltd. in Opole, Poland. Its founder, Ollie Mikosza, recently provided EV World with a progress report since first appearing on the web site in May 2006 in [Meet Mister PRT](#).

Back then, MISTER was just a concept. Today, it has real hardware and its first customer, his hometown, as well as a second Polish city, Rzeszow, where the city fathers are looking into ways to fund a pilot system.

Opole, Poland is providing Mikosha with six acres on which to build a test track. The city has already laid out the plans for a pilot 4 km pilot project, to be followed by a citywide, 34 km system.

What sets MISTER apart from other PRT systems is its suspended and asymmetric guideway concept, patented cross over system and very light design. Mikosza believes that his vehicle is the lightest among its competitors and has the best payload to vehicle ratio. While it is electrically-powered, it doesn't carry its batteries with it, helping reduce its weight and simplify the system.

While some PRT designs rely on guide rails and track systems, the Polish design utilizes a very light overhead truss that weighs under 100 kg per meter, the lightest of its type.

In order to provide frequent and convenient service, MISTER podcars can be separated by as little as 10 meters, or just 0,7 seconds apart during peak rush hours if needed. The distributed software control system, which is a critical part of the design, must be absolutely fail safe. Mikosza writes, "the ability to change the destination station while en route and automatic re-routing of the traffic in case of any congestion or problem on any of the network nodes, are just some of the other benefits" of his approach.

He adds, "Having an overhead guideway structure gives MIKOSHA MISTER several other advantages over the supported systems. For example, the cars have the ability to climb and descend over 45 degree inclines while maintaining a level floor inside the pod. Steep inclines also reduce the ground footprint of the stops, as they do not need long ramps.

"There is also no need for seatbelts in case of emergency braking, because cabin will tilt upwards, countering the breaking force. No need for super elevation of the track to counter centrifugal forces either, since the cabin can also tilt 20 deg. sideways during banking."

As depicted below, on reaching a station, the podcar will leave the main guideway, descend steeply to street level and allow the passenger to get off. If a passenger is waiting, they can use this car. If not, the MISTER pod will remain at the stop, unless more vehicles with passengers are coming to this particular stop. In such case empty pod be moved to an overhead "buffer rail" and if this is full, it will rejoin the stream overhead vehicles stopping at some other stop with empty spaces or will be stored in the nearby garage.



Mikosza and his associates envision that a PRT system could serve as much as 80% of most people's mobility needs as long as a sufficiently dense system is constructed over time. They calculate that the system will have an average speed of 40-50 km/hr, which is about half the between stops speed of many subway metro systems, but when walking and waiting time, as well as intermediate stops are included, the metro's average speed can drop to 20 km/hr. For MISTER riders, there are no intermediate stops, travel is point-to-point, only stopping at the rider's selected destination.

Since his first report in 2006, Mikosza has added a new "wrinkle," a patent for a "dual mode" system.

He reports the MISTER will be able to offer door-to-door service by having the pods leave the aerial guideway and be automatically mounted on electric car platforms, somewhat akin to a golf cart. These will deliver or pickup the passenger at their doorstep and return to the nearest podcar station. There the pod will decouple and rejoin the guideway. At the other end of the trip, the process is repeated.

"Of course this will only become possible when the 'robocars' systems of safe automated driving within city traffic become available. It may happen in 5 or 15 years from now, but it will happen," he notes.

He lists some of the advantages of his system:

- There will be no need for elevated platforms (as in some other designs). A street level stop will be standard, unless we want to place it inside malls, offices etc.
- Five seats (2 business class + 3 standard, foldable)
- 400 kg payload (Eurocontainer carrying capability in the standard vehicle)
- 300 kg vehicle weight
- 50 kph (30 mph) max and average speed

Of course, as with any new and different idea, it's not easy to sell, especially without full test track to demonstrate the system to potential customers. He needs \$10 million for that effort and has had a hard time raising it without giving up control of the business.

He points out that the city of Toronto, Canada is talking about a \$50 billion renovation of its transportation system. For that amount of money, he estimates it could erect a 10,000 km MISTER network that would cover the entire city and carry as many as 1.2 million people at any one time. The hourly capacity of such a system would be over 50 million passenger kilometers. Not that it is necessary, but it shows the power of MISTER solution, which he believes could solve similar problems on virtually any other city for much less than Toronto is ready to spend on traditional solutions with doubtful benefits..

The economics look even more compelling. He calculates it could generate \$5 billion in annual revenue. Even at 10% capacity and rides costing just \$3 per average 10 km trip, the system would be profitable.

Ollie Mikosza remains hopeful that the right investors will come along who understand the environmental necessity of PRT and appreciate its economic potential. The current volatility in oil prices, ecology issues and financial crisis could speed it up.

More information on his efforts can be found at <http://www.mist-er.com>.

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