

A train on the street

December 15 2006



The AutoTram® can carry as many passengers as a streetcar, but is as versatile as a bus. © Fraunhofer IVI

Streetcar or bus? The AutoTram® offers the best of both: Up to 36 meters long, it can carry as many passengers as a streetcar while being as versatile as a bus. A flywheel energy storage system absorbs part of the braking energy and cuts operating costs.

The advantages of a train and a bus are united in the AutoTram: It has the transportation capacity of a streetcar and the versatility of a bus. Fraunhofer researchers (Germany) have cooperated with Hübner GmbH to devise a new concept for a modular vehicle that, depending on the volume of passengers, can either be operated as a single bus or assembled to form a uni-directional or bi-directional high-capacity vehicle.

The AutoTram needs neither rails nor an expensive system of overhead

lines. The articulated train trundles through the streets on rubber wheels like a bus. The Fraunhofer Institute for Transportation and Infrastructure Systems IVI in Dresden presented a prototype of this novel transportation system to industry specialists a year ago. In collaboration with Hübner GmbH, the scientists have now taken the concept further.

An active multiple-axle steering system with integrated guidance ensures a safe journey. Based on video and differential GPS, the system assists the driver of the AutoTram and enables him to steer the vehicle accurately, even round sharp bends. The 24-meter bi-directional vehicle consists of two low-floor modules, joined back-to-back by a symmetrical articulated coupling made by Hübner – a design that allows flexible operation. On routes with a low passenger volume, the two modules are separated and used as single buses. If a particularly large number of passengers are expected, an additional module can be inserted, extending the AutoTram into a high-capacity vehicle 36 meters long.

Another special feature of the AutoTram is its hybrid drive concept. It draws its power from a 180-kW diesel engine and a flywheel energy storage system (4 kWh/200 kW). The storage system absorbs part of the braking energy, enabling the AutoTram to travel short distances – up to two kilometers – completely without noise or emissions. The technology evolved by the IVI is also deployed in other vehicles. RailwayService GmbH (RWS), for example, recently announced that the Eberswalde trolley-buses are to be equipped with flywheel energy storage systems. The technology helps to reduce operating costs and is kinder to the environment. The AutoTram is of interest to public transport operators. The system is between 30 and 50 percent cheaper than conventional railway systems.

Source: Fraunhofer-Gesellschaft

Citation: A train on the street (2006, December 15) retrieved 27 April 2024 from <https://phys.org/news/2006-12-street.html>

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