Fraunhofer Institute for
Transportation and Infrastructure Systems IVI

Prof. Dr. Matthias Klingner
Zeunerstraße 38 | 01069 Dresden
Phone +49 351 4640-800 | www.ivi.fraunhofer.de

Göppel Bus GmbH

Bernhard Schmidt
Mittelweg 4 | 04503 Nobitz OT Ehrenhain
Phone +49 34494 86-0 | www.goeppel-bus.de

Fraunhofer
IVI

FRAUNHOFER INSTITUTE FOR TRANSPORTATION AND INFRASTRUCTURE SYSTEMS IVI

the world's longest bus

250 passengers

The AutoTram® Extra Grand carries over 250 passengers, is flexibly operable on any route and features the option of fully electric driving over a longer distance. Additionally, its procurement and operating costs are approximately half as high as those of conventional trams, which is one of its most important advantages.

Another particular highlight is the excellent maneuverability of the tripartite, over 30 meters long vehicle. Novel articulation joint and gangway systems combined with an electronic multi-axle steering system enable cornering with a minimum turning curve, both in forward and in reverse drive. Having a turning radius of only 12.5 meters, which is extremely narrow in view of its length, the AutoTram® Extra Grand fulfils all homologation requirements for road vehicles operated in public transport.

Due to its high passenger capacity, its comparably low costs, and great application flexibility, the AutoTram® Extra Grand is especially well-suited for operation in metropolitan areas and megacities with rapidly growing transport needs, but it is also recommendable for integration into existing BRT or public transport systems.

The foundations for this intermediate vehicle concept were established at Fraunhofer IVI over the course of several years of development. Together with Göppel Bus GmbH, these technologies were implemented in a fully operational premium vehicle of the go4city bus family.

Bus vs. tram –

AutoTram® Extra Grand

30.73 meters

The longest and today one of the most innovative buses combines the advantages of conventional trams with those of buses.

- high passenger capacity
- great operation flexibility
- environmentally friendly
- lightweight vehicle construction
- modular vehicle body
- excellent maneuverability
- small vehicle gauge
- low lifecycle costs

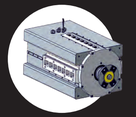
New perspectives for tomorrow's mobility!

Dual storage system

The combination of supercaps and lithium-ion batteries guarantees a long life cycle for the electric traction storage. While the supercaps buffer peak loads during braking and acceleration, the high energy density of the lithium-ion battery provides enough current for about 8 kilometers of fully electric driving.

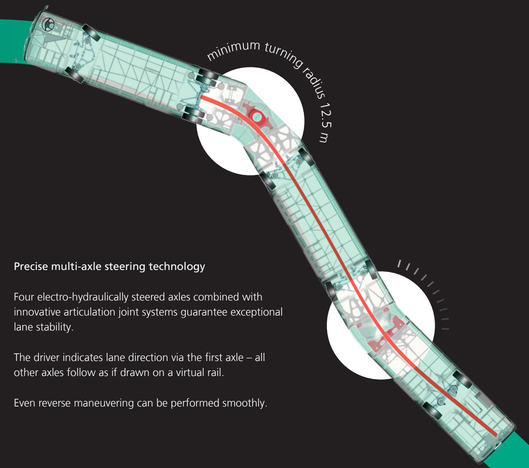
Powerpack

Two diesel-electric generator units supply the necessary backup power for demanding route profiles. While the diesel-electric main propulsion system is able to accelerate the fully loaded vehicle on normal routes, the secondary powerpack automatically supports the intermediate circuit voltage, if required, when driving uphill or to recharge the battery storage.



Electric motors positioned close to the wheels

Two of the five axles are driven by permanently excited synchronous motors with a peak power of 240 kW each. Its compact lightweight construction and its efficient air-cooling system characterize the motor developed especially for the AutoTram® Extra Grand.



Precise multi-axle steering technology

Four electro-hydraulically steered axles combined with innovative articulation joint systems guarantee exceptional lane stability.

The driver indicates lane direction via the first axle – all other axles follow as if drawn on a virtual rail.

Even reverse maneuvering can be performed smoothly.