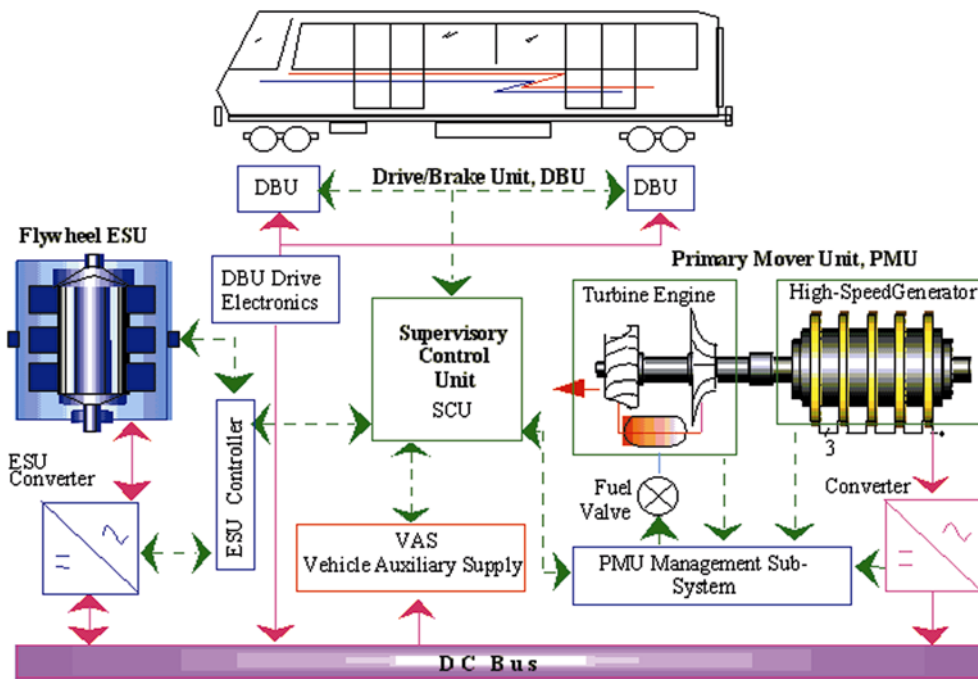


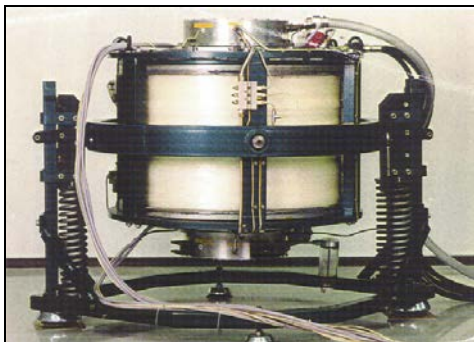
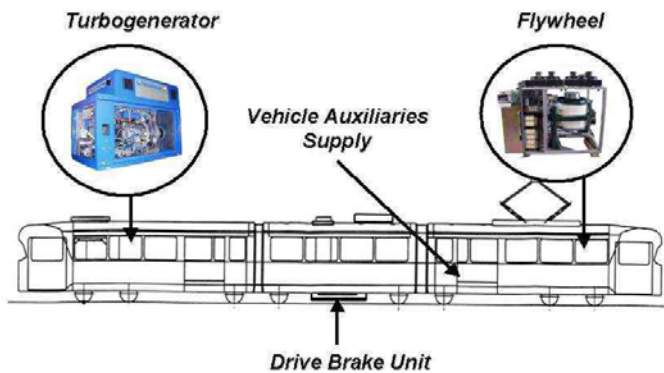
# ULEV-TAP (1)

## Ultra Low Emission Vehicle – Transport using Advanced Propulsion (1)

**Research, vehicle technology**  
 Client: EU  
 Partners: Alstom DDF, Reichshofen / Alsace, several European industrial partners, several European universities  
 End: 2001



The ULEV-TAP concept



Flywheel



Prototype

It was the task of this EU project to develop an autonomous propulsion system for public transport vehicles.

As a result of the need to minimise pollution in cities by reducing the demand for personal transport, regional passenger transport is a rapidly growing market in Europe. Persistent requirements for mass transport include: reduction in investment cost, minimisation of emissions, reduction of maintenance costs, and improvements in energy efficiency.

The objective of this project was to develop a hybrid powertrain, comprising a gas turbine engine directly coupled to a high speed generator, a flywheel and power electronics for traction and regenerative braking. The complete system, under the authority of a supervisory control unit for safe and efficient operation, would be installed in a suitable test vehicle. The components were tested in the prototype vehicle for their safety, environmental acceptability, performance, functionality, operability, maintainability, and reliability.

The series electric hybrid configuration allows a much smaller prime mover unit for the vehicle, operating at peak performance. The benefits of lower emissions, higher system efficiency and bi-modal operation are the main advantages of the ULEV-TAP system. Furthermore, this technology, when applied to fixed route vehicles (rail and trolleybus) enables pure electric drive flywheel/overhead catenary as well as hybrid propulsion, dispensing the need for electrification, important to tram/rail opportunities. The project showed clear performance benefits which makes this drivetrain an attractive and practical solution for a wide range of mobile applications in addition to urban transit vehicles.

[www.prosper.ttk.de](http://www.prosper.ttk.de)

**Links to other projects/clients:**  
 Crossrail  
 ULEV-TAP 2