ETH
Eidgenössische Technische Hochschule Zürich
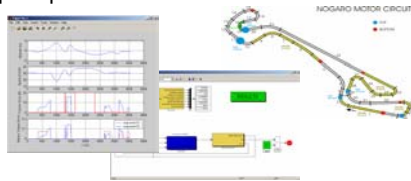Swiss Federal Institute of Technology Zurich

pac car II

course strategy

An optimal speed profile has been derived to minimize the consumption of hydrogen. The driver follows this optimum speed profile to the extent possible.


fuel cell system

The power board of the fuel cell system furnishes the electricity required by the motors. At 12 V it is able to deliver up to 900 W.
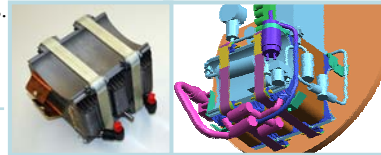
on-board electronics

Two microcontroller boards are in fiber-optical communication. The main board supervises the system function of the fuel cell and the propulsion system. The power board supplies the energy required by the motors and the auxiliaries.

«tank-to-wheel» efficiency
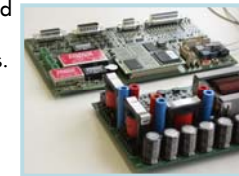
hydrogen storage

Two cartridges of one liter each contain 1 g of hydrogen, pressurized at 11 bar. This is equivalent to 8 ml gasoline.

- **weight: 29 kg**
- **length: 2.78 m**
- **Width: 0.57 m**
- **height: 0.61 m**
- **Cx: 0.075**
- **front surface: 0.254 m²**
- **maximum speed: 32 km/h**

propulsion system

The propulsion of the vehicle is based on two DC motors via a gear mechanism. Either or both is decoupled whenever low power is demanded.

wheel train

By design, the rear wheel drives the vehicle. As a compromise between rolling resistance and aerodynamic resistance the two front wheels are rolling at an angle.

the shell

The form of the shell has been optimized for a speed of 35 km/h. The shell weighs only 10 kg because it is made from carbon fiber materials.