

Michelin Hy-Light, Michelin's concept-car to promote clean mobility



On the occasion of Challenge Bibendum 2004, Michelin will unveil a concept-car embodying its vision of safer as well as more environment-friendly mobility. Michelin Hy-Light features the full array of state-of-the-art environment protection technologies.

Michelin Hy-light key assets

No pollution: emissions are 100% steam

- Acceleration: 0 - 100 km/h in 12 s; top speed 130 km/h.
- Range: 400 km at 80 km/h cruising speed.
- mass: 850 kg.
- Wheel-borne suspension: active electric suspension and chassis stability control device to absorb shocks and monitor braking behavior and cornering stress.
- Switch from 2- to 4-wheel traction

Michelin Hy-Light will anticipate its driver's needs for it has sensors to relay the data to a central processor. The processor in turn controls the electric motors which are powered by a fuel cell and connected to supercapacitors which store the energy and regenerate it during braking.

Michelin Hy-light: How it works

- Engine

Leave out the gear box, clutch, universal joint, anti-roll bar and transmission shaft and build an engine into awheel active suspension system.

What you get is Michelin Active Wheel technology.



Engines featuring an outstanding mass/power ratio are lodged in Michelin Hy-Light's two front wheels.

- Energy is generated by a fuel cell using hydrogen and oxygen stored on-board. A fuelling station made up of solar pannels connected to an electrolyzer produces both gases. Michelin Hy-Light thus uses 100% renewable energy..

SUN + WATER = RENEWABLE ENERGY

Hydrogen generation by electrolysis yields 75% efficiency. It requires deic current from photovoltaic panels.

Electrolysis produces hydrogen and oxygen to be combined in the relevar cell.

Less than 1 liter of water will produce of 1 Nm³ of hydrogen per hour. The electrolysis are at 30 to 200 bar pressure and following compression they Hy-Light.



Why chose hydrogen?

To date, hydrogen accounts for a mere 1.5% of world energy consumption with 1,800GWh equivalent production. It is used for ammonia and methanol production rather than as a source of energy. Oil refineries also use it as does the space industry, although more marginally so.

Hydrogen is extracted from natural gas (48%), oil (30%), coal (18%) and the electrolysis of water (4%).

As a fuel it is not more dangerous than gasoline but owing to its characteristics it creates specific safety issues: being lighter and volatile it evaporates faster. Hydrogen transportation and refueling operations are quite similar to those for compressed natural gas. Today hydrogen is widely used in certain industries. Hydrogen therefore, is a valid alternative fuel to drive automobiles.

A suitable background for Michelin Hy-light

The world automobile fleet should jump from 700 million to an estimated 1.6 billion vehicles by 2030 and world population will grow from 6 billion to 7.5 -10 billion.

Against a background of increasing individual mobility expectations and the likely consequences in terms of global warming and oil price increases due to dwindling reserves, Michelin Hy-Light stands out as a valid alternative. It addresses both social needs and environmental issues. Its fuel cell powered engine produces no local pollution. And Michelin Hy-Light is a full-fledged passenger car, combining world-class comfort and safety. Michelin's project clearly upholds a sustainable development approach designed to reduce the greenhouse effect and leave a healthy planet for future generations..