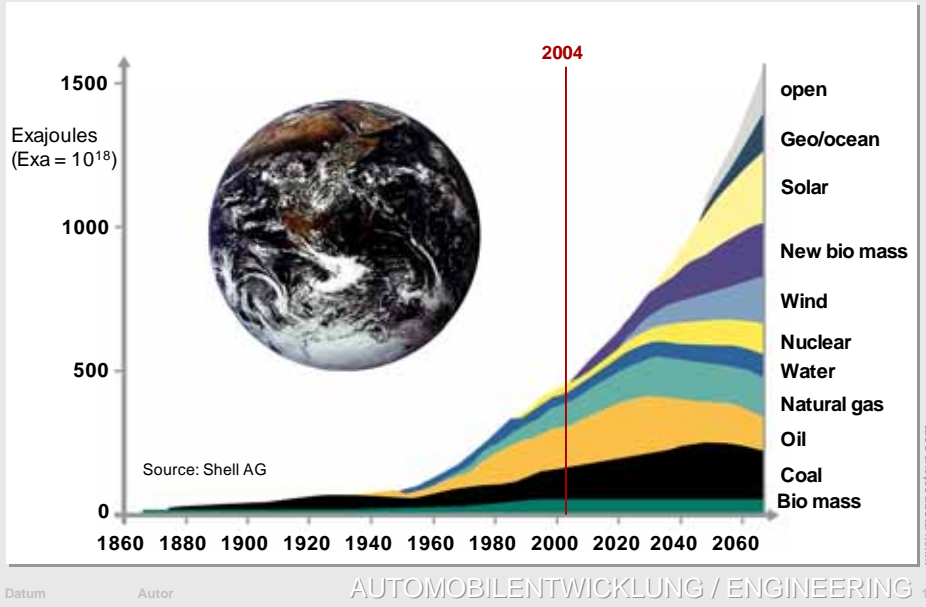


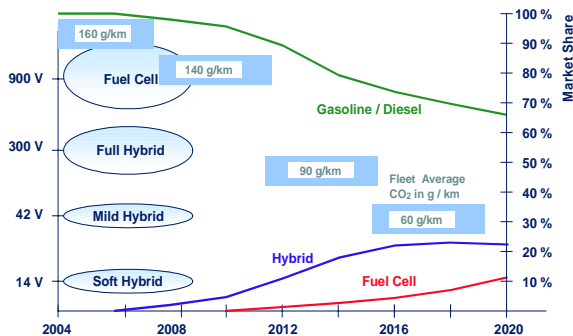
### Energy Supply Evolution – today's view



### Market Forecast (Passenger cars and LD Vehicles)

Worldwide 2010	Units
Total vehicles	70 Mio.
Hybrid vehicles	3,5 Mio.
Fuel Cell vehicles	50.000

Source: R. Kalmbach, Mercer Management Consulting (2001)



## Components/Systems for new Vehicle Concepts

### SITUATION

A large number of components/systems in future vehicles will be new or change essentially

➔ **Many of these components/modules and systems are not developed yet and therefore not available for serial automotive application**

- Electric motor drives, specific transmissions, control units
- Safety and diagnostic equipment
- Cooling and heating systems, air supply and water supply
- (Hydrogen)storage systems and refueling hardware
- Valves, valve trains, valve gears
- Cryogenic composite lines, filler pipes
- Different sensors (capacitive level, temperature, pressure, etc)
- Heat exchanger, condensers
- Detectors, fittings, connectors, signal lines, membranes, seals, filters
- (Ultra)capacitors, batteries
- System integration

www.magnasteyr.com

Datum

Autor

AUTOMOBILENTWICKLUNG / ENGINEERING

## Alternative Propulsion History at Magna Steyr

- 2001 Liquid hydrogen storage tank
- 1999 Fuel-cell project
- 1996 BMW E1G gear box
- 1996 E-Taxi field test
- 1992 VW Golf Electric Test Vehicle
- 1989 Fiat Panda Elettra
- 1988 Engine feed-lines for ARIANE main stage



www.magnasteyr.com

Datum

Autor

AUTOMOBILENTWICKLUNG / ENGINEERING