

ENERGY FOR SUSTAINABLE ROAD TRANSPORT – INNOVATION FOR FUTURE DRIVE-TRAIN TECHNOLOGIES.

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ABSTRACT

Since fuels based on petroleum (mineral oil) first came into use over 100 years ago, they have assumed a position of undisputed leadership in the transport sector throughout the world. However, the increasing economic dependence of many nations on the geological and political availability of oil, the fact that the supply of fossil fuels is finite and the greenhouse emissions associated with the combustion of fossil energy carriers all serve to emphasize the drawbacks of fossil fuels more and more strongly. This is why all over the world automobile manufacturers promote the search for other fuels and forms of propulsion.

In order to illustrate these worldwide efforts of the automotive industry the concept of BMW EfficientDynamics serves as an example. This concept is sub-divided into three steps:

1. In the short term, the fuel consumption of vehicles will be reduced by new, highly efficient engine generations, active aerodynamics, the use of innovative lightweight materials and intelligent energy management within the vehicle.
2. In the medium term, the automotive industry is working on achieving additional consumption benefits through various measures such as increasing the electrification of the drive-train and hybridisation.
3. The most sustainable technology in the long-term is the use of hydrogen in the combustion engine, since hydrogen can be produced from various regenerative energy sources with practically no CO₂ emission.

This comprehensive approach allows for the necessary flexibility, technically and time-wise, which is a prerequisite to achieve the most efficient combination of different technological measures in each case. This way it is possible to find the right solution suiting different model series, market and sector-related customer expectations, statutory regulations and time of launch.