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Bert Hobein and Roland Krüger

Introduction

The shortage of fossil energy resources demands new energy carriers and energy carrier technologies in the future. Therefore, one of the major challenges currently in the automotive industry and research institutes worldwide is to develop and realize alternative fuel concepts for passenger cars. Physical hydrogen storage systems, that is, compressed and liquid storage, are currently the most mature technology to store hydrogen onboard road vehicles. A combination of compressed and liquid hydrogen storage is so-called cryo-compressed systems, which are currently under development. Since the first hydrogen vehicle generation demonstrated insufficient cruising ranges, new physical storage technologies, such as the 70 MPa technology, can increase vehicles' cruising ranges significantly. This chapter gives an overview of different physical hydrogen storage technologies with regard to their design and their operating and refueling capabilities.

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