

Risk Assessment on Hydrogen Refueling Station Using Chemical-based Hydrogen Storage Method

채혜진, 배상현, 계혜리, 이철진[†]

중앙대학교

(cjlee@cau.ac.kr[†])

In order to commercialize hydrogen fuel cell vehicles (HFCV), which are drawing attention as eco-friendly transportation, it is essential to build infrastructure that includes hydrogen refueling stations (HRFS). Currently, most HRFS store hydrogen in high-pressure tanks and charge it. In this case, there is a limit to safely store large amounts of hydrogen due to storage capacity and the high pressure of the storage tank. Therefore, chemical-based hydrogen storage methods that enable high storage capacity are actively being studied to replace this. In this study, we design processes for HRFS using ammonia and MCH (Methylcyclohexane) as hydrogen storage materials, respectively, and conduct quantitative risk assessment. In addition, compared to the results of the risk assessment of the existing gas-based HRFS, we discuss the safer form of HRFS.