Due to increasing energy consumption of humankind new technologies start to be necessary in order to meet increasing needs. The multigeneration systems offer high performance and efficiency compared to traditional energy systems. Because of the importance as future energy carrier of hydrogen, it is selected for the main product of proposed multigeneration system. The useful products of proposed multigeneration system are hydrogen, electricity, heating and cooling, drying and hot water. The aim of this study is to investigate the performance assessment of geothermal power system targeting hydrogen production and liquefaction. To determine the performance of the proposed multigeneration system, thermodynamic analysis and parametric analyses have been performed to multigeneration system and its sub-systems. The overall energy and exergy efficiencies of multigeneration system have been found as 38.41% and 42.57%, respectively. Moreover, parametric analyses show that how variables affect the system performance. Keywords: Geothermal energy, hydrogen, liquefaction, thermodynamic.