In this paper, the thermodynamic assessment analysis of geothermal energy based hydrogen production and liquefaction system is detailed investigated to show integrated system performance. This integrated system is consisted of a double flash geothermal power system, a hydrogen production process and a hydrogen liquefaction and storage subsystem. The exergy destruction rate, exergy destruction ratio and exergy efficiency of integrated system components and whole system are calculated by using balance equation, energy and exergy efficiency equations. Finally, the effect of some design parameters and other indicators on the integrated system exergy destruction rate and exergy efficiency are analyzed.