In this study, analysis studies of the first and second law of thermodynamics are carried out for vapor compressed refrigeration systems using an alternative refrigerant HFO-1234yf to HFC-134a. No important differences between cycle efficiencies were observed for both refrigerants. However, the exergy destruction rate of the compressor obtained with HFO-1234yf is lower than that calculated for R-134a. According to the exergy and energy analysis results obtained with this study, it can be evaluated that HFO-1234yf is a good alternative to R-134a. If the safety requirements (flammability problem of the refrigerant) have been satisfied refrigeration systems charged with HFO-1234yf, this alternative refrigerant can be commonly used in the systems.