In this study, an experimental system for the vacuum drying of timbers is designed. Experiments in the different temperature, pressure and the residence time in vacuum are carried out. The drying experiments are conducted at three different drying temperatures varied between 40°C and 60°C. The drying experiments are conducted at three different pressures varied between 60 kPa and 80 kPa. The residence time in vacuum is varied between 5 min and 15 min. In addition, Programmable Logic Controller (PLC) system to drying system is added. Energy and exergy analyses of vacuum drying process of pine timbers are carried out.