

ABSTRACT

When the non-condensable gases load is higher than the process gas load of the ejector, the operating parameters of the ejector will change due to choking effect. Consequently, the condenser's conditions will change vitiating the overall steam power plant performance. In such cases, modeling the ejector mathematically is a suggested method to relate its operating parameters and its design conditions with the relevant assumptions. Thus, this study developed a mathematical model for the steam jet ejector then validated the model with the available literature data / case study. An error less than 5% has been reached when comparing the mathematical model data with the actual results. The model has been used for parametric analysis suggesting the best operating conditions as a temporary solution until the scheduled maintenance. It has been concluded that the efficiency of the ejector will reach its maximum when the compression ratio are kept within a range of 0.5 to 1.5 and the driving pressure ratio to be controlled within the range of 5 to 8. Nevertheless, considerations must be taken with respect to the area size of the operating ejector when deciding the appropriate working pressures. Otherwise, it might fail if the resulted area ,due to the pressures ratio selection, is above the ejector's capacity. The study has also concluded that the efficiency of the ejector will be maximized at an inlet temperature ratio of a small fraction over one.