

## ABSTRACT

Heat losses and pressure drop are common things that happen in the piping system, this is caused by several things. Among the fluid flow that flows in the piping system will be friction along the surface of the pipe and also when passing through several pipe connections, curves, valves and other components installed in the piping system. Steam flowing in the piping system must be maintained at a temperature and pressure to avoid condensation because it can reduce enthalpy so that the input power to the turbine will be reduced. The piping system is coated with insulation which serves to prevent the transfer of heat from the steam coming out of the pipe into the environment, the insulation in the piping system must be considered whether it has a low thermal conductivity or not. This analysis is carried out using the Aspen Hysys software simulation by first collecting pipe parameter data and fluid parameters from each production well. The analysis carried out is a variation in the diameter of the pipe and variations in insulation material. The results obtained after conducting the simulation are that the Heat losses and Pressure Drop affect the turbine input power so that it can reduce the potential for electricity production. Simulation model that can be used as an alternative is the replacement of pipe insulation material into cotton wool with thermal conductivity of  $0.029 \text{ W / mK}$  and enlargement of the pipe diameter to 24 "so as to get an increase in steam production by 46,748 watts and 10,284 watts for electrical energy in the path after WELL 5 east line, enlargement of the diameter to 32 "so as to get an increase in steam production by 62,191 watts and 13,682 watts for electrical energy in the entire west line.

**Keywords: Heat losses, Pressure Drop, Fluid Flow, Enthalpy, Thermal Conductivity, Power**