

## **EVALUATING THE CRITICAL RADIUS OF INSULATION IN A PIPE FLOW** **USING COMPOSITE MATERIALS**

A pipe flow with the thermal fluids in it will always have the insulation around the pipe. This is to avoid the injuries to people working around the system. This insulation is mainly provided to avoid the loss of heat from the pipe flow to the atmosphere because of the convection heat transfer effects. This insulation is done using the ropes and in some places using the non-metal coatings. This insulation must accomplish the basic engineering needs like critical radius / critical thickness of insulation to get better efficiency of the system.

To ensure the efficiency of critical radius of insulation, this project will deal with the analysing a thermal system of a pipe flow used in transfer of water from hot end to cold end. For this purpose, the system will be modelled and initially analysed under without insulation and the properties of fluid at outlet will be tabulated. Later, the same system will be analysed using the insulation materials and the readings will be tabulated and compared. The insulation thickness will be calculated using the formulas available in the text books. To ensure the need of critical thickness of insulation, this project will also analyse the thermal system with insulation thickness below and above the recommended value and using a composite materials and reduce the heat losses. It is very useful for Food industries, Chemical industries, Oil and gas industries.