

## **Experimental investigation of the performance of a triple concentric pipe heat exchanger**

### **Abstract**

The performance of a triple concentric pipe heat exchanger is studied experimentally under steady state conditions for two different flow arrangements, called N–H–C and C–H–N, and for insulated as well as non-insulated conditions of the heat exchanger. The three fluids being considered are hot water, cold water and the normal tap water. Under N–H–C arrangement, normal water flows in the innermost pipe, hot water flows in the inner annulus, and the cold water flows in the outer annulus. All fluids flow parallel to each other. Cold and normal water are interchanged in the C–H–N arrangement keeping hot water flow unchanged. The results are presented in the form of the temperature variations of the three fluids along the length of the heat exchanger for their different flow rates. It is found that the temperature variation along the length of pipe differs substantially for the two arrangements. Temperature of cold water increases rapidly in the non-insulated condition of N–H–C arrangement. Cross over points are found in N–H–C arrangement for higher volume flow rates of the three fluids.

**Keywords** — Triple concentric pipe heat exchanger, experimental analysis, cross over point