**Thermal Analysis Of Various Duct Cross Sections Using Altair Hyper works Software**

**Abstract**

In this work thermal analysis and comparison of various duct cross sections is done computationally using Altair Hyperworks Software. Simple Analytical results were obtained for conduction and convection through the ducts which can be used to build up thermal circuit. The inner surface of all ducts is maintained at constant temperature and ambient air is at certain temperature that is less than inner surface temperature of pipe. Due to temperature difference heat will flow from higher temperature to lower temperature. Due to temperature difference heat will flow from higher temperature to lower temperature. The material of pipe provides conductive resistance and air provides convective resistance. Hence this is a mix mode of heat transfer. The heat transfer takes place in one dimension only and properties are considered to be isotropic. The ducts are assumed to be made of aluminium having known thermal conductivity and density. The surroundings of ducts have known convective heat transfer coefficient and temperature. The results are obtained on hyperview which are for heat flux, temperature gradient and grid temperature. The different characteristics can be obtained by varying the material of the ducts.