**ABSTRACT**

It is proposed to conduct stress analysis of a thick walled cylinder near the radial hole on the surface. The literature indicated that there will be a ductile fracture occurring in such cases. The radial holes canot be avoided due to various piping attachments . Hence the stress analysis of cylinder and its ultimate failure under internal pressure beyond elastic limit is an appropriate scenario. The plastic zone appearing in vicinity of internal surface of cylinder propagates more fastly along hole side . When cylinder is unloaded it will cause reverse plasticity . Therefore it is proposed to obtain numerical solution using Finite Element analysis of cylindrical segment to obtain the radial & hoop stress distribution by including elastoplastic conditions. In the present work the stress analysis of thick walled cylinders with variable internal pressure states is conducted Elastic analysis of uniform cylinder & cylinder with holes is predicted both from theory (lame’s formulae) under & Finite element method. Also elasto plastic analysis with bilinear kinematic hardening material is performed to know the effect of hole sizes. It is observed that there are several factors which influence stress intensity factors . The Finite element analysis is conducted using commercial solvers ANSYS & Solidworks.