**Abstract**

Rapidly growing rate of industry of earth moving machines is assured through the high performance construction machineries with complex mechanism and automation of construction activity.An excavator is a typical hydraulic heavy-duty human operated machine used in general versatile construction operations, such as digging, ground levelling, carrying loads, dumping loads and straight traction.In this design of bucket is critical task in context of digging force developed through actuators during the digging operation. This paper focuses on the evaluation method of bucket capacity and digging forces required to dig the terrain for light duty and heavy duty construction work. This method provides the prediction of digging forces and can be applied for autonomous operation of excavation task. The evaluated digging forces can be used as boundary condition and loading conditions to carry out Finite Element Analysis of the Excavator mechanism for strength and stress analysis. An analytical approach provided for static force analysis of mini hydraulic excavator attachment. The objective of this paper is to design an excavator bucket to get smooth flow of material and to get effective digging forces.