**62. Design of tractor front axle**

**Abstract**

Front axle carries the weight of the front part of the automobile as well as facilitates steering and absorbs shocks due to road surface variations. The front axle must be rigid and robust in construction. It is usually steel drop forging having 0.4 % carbon steel or 1 to 3% nickel steel. The front axles are generally dead axles, but are live axles in small cars of compact designs and also in case of four wheel drive. Front axles can be live axles and dead axles. A live front axle contains the differential mechanism through which the engine power flows towards the front wheels. For steering the front wheels, constant velocity joints are contained in the axle half shafts. Without affecting the power flow through the half shafts, these joints help in turning the stub axles around the king-pin. The front axles are generally dead axles, which does not transmit power. The front wheel hubs rotate on antifriction bearings of tapered-roller type on the steering spindles, which are an integral part of steering knuckles. To permit the wheels to be turned by the steering gear, the steering spindle and steering knuckle assemblies are hinged on the end of axle.

 In this project work front axle will be design in solidworks2016 software analysis to find out stress strain and deformation will be perform in ansys work bench software.