

Prediction of Fatigue Failure Location on Lower Control Arm using Finite Element Analysis (Stress Life Method)

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Abstract. Analyzing a structure early in the design cycle give an industrial the huge advantages which can reduce the development time and cost. Before prototype can be built and tested, determination of the critical region of the structure should be achieved and thus the design can be improved. The method involves study of the fatigue failure location and structural integrity of the lower control arm subjected to the load applied mimicking the real condition of the lower control arm operation. The 3D geometry of finite element model are simulated in Autodesk Mechanical Simulation. The finite element analysis (FEA) results are well compared to critical distance approach which prediction of the fatigue failure is focused on critical location of curve near bushing. Finally, it is concludes that this approach can be considered as an initial process for the design of the high life lower suspension arm.

Keywords: Fatigue Analysis, Fatigue Failure, Life Cycle