

A Study of Durability Analysis Method Considering Various Contact Conditions

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During the process of developing automobile parts, So many tests and analysis evaluations are conducted to prevent field problems. Among them, durability performance directly related to safety is an item that must be satisfied. Because endurance testing requires a lot of cost and time, it is very efficient to evaluate simulation before testing. Unlike nonlinear analysis methods using the Newton-Raphson method, durability analysis is performed as a linear analysis considering efficiency. Linear analysis has the advantage of reducing analysis time and model size, but it has limited methods for applying boundary conditions because the stiffness matrix is calculated only once. In particular, the application of contact technology was delayed in chassis component durability analysis using Nastran. In this study, we examined the application of Nastran's recently developed Glue contact technology to the durability analysis of chassis components. And we developed a method to apply residual stress such as bolt pre-tension and pipe interference fit. Since the method implemented in this study can be used to study various boundary conditions in durability analysis, it is expected that test correlation evaluation will be possible.

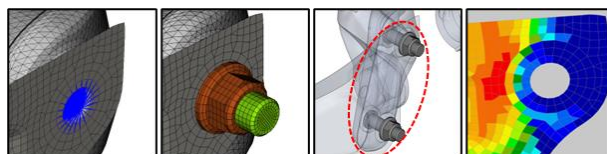


Fig.1 Rear Trailing Arm Joint

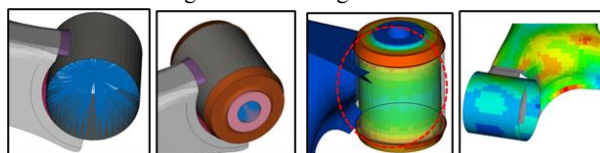


Fig.2(a) Front Lower Arm Point A

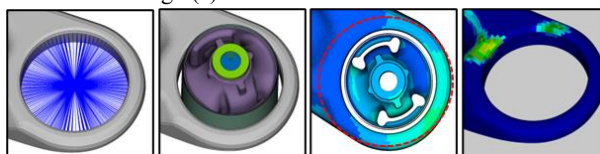


Fig.2(b) Front Lower Arm Point G