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Static and Dynamical Analysis on Clutch Discs on Different Material and Geometries

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Abstract : This paper presents the static and cyclic stresses in combination with fatigue analysis resultant of loads applied on the friction discs usually utilized on industrial clutches. The material chosen to simulate the friction discs under load is aluminum. The numerical simulation was done by software COMSOL^{TM} Multiphysics. The results obtained for static loads showed enough stiffness for both geometries and the material utilized. On the other hand, in the fatigue standpoint, failure is clearly verified, what demonstrates the importance of both approaches, mainly dynamical analysis. The results and the conclusion are based on the stresses on disc, counted stress cycles, and fatigue usage factor.

Keywords : aluminum, industrial clutch, static and dynamic loading, numerical simulation
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