

Reduction of Thermal Stress in Disc Brake Rotors

- Overview -

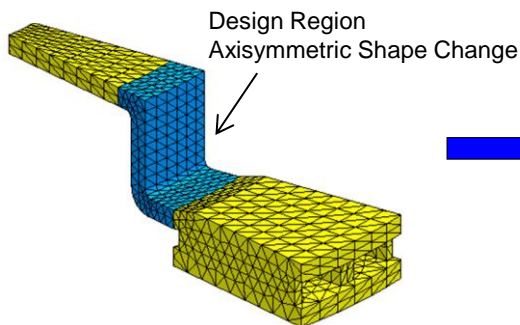
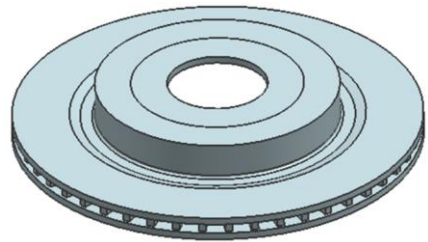
Determine a shape to reduce thermal stress below the target value while simultaneously achieving weight reduction. The analysis model has been scaled to 1/24th of its actual size.

This example focuses solely on thermal stress analysis, but OPTISHAPE-TS can perform steady-state heat conduction analysis and thermal stress analysis consecutively.

*Non-parametric Shape Optimization:Determines the shape by adjusting the nodes of the FEM model

- Non-parametric Shape Optimization -

● Analysis Model



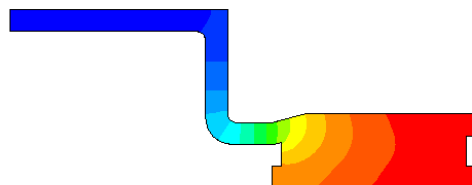
1/24 model All Solid

● Requirements

Total Mass Minimization

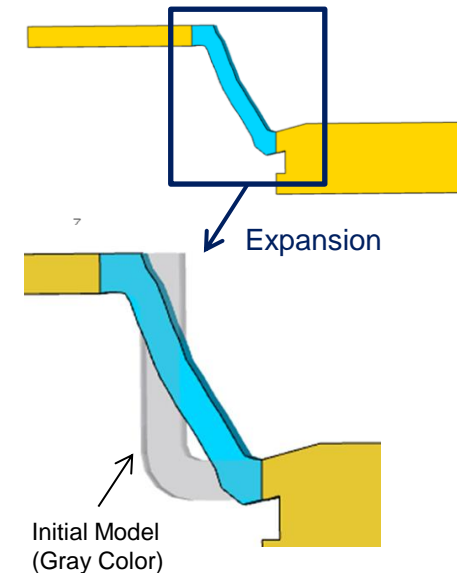
Thermal Stress

Shape Restriction



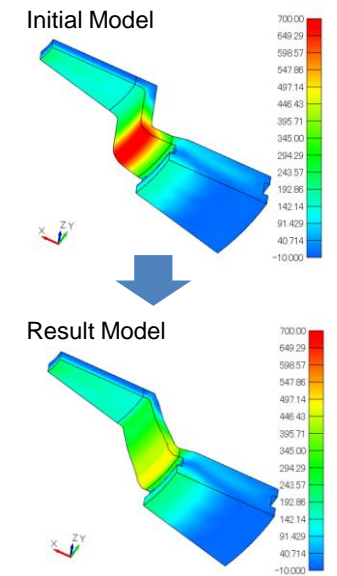
Temperature Distribution

● Result Model



Initial Model
(Gray Color)

● Thermal Stress Contour



Thermal Stress : 30% down