HAWK RIDGE SYSTEMS

# 15 APPROACHES TO THERMAL STRESS ANALYSIS

Depending on the conditions and the results that you're interested in, there are as many as 15 approaches with SOLIDWORKS Simulation and SOLIDWORKS Flow Simulation tools. Here are the assumptions and considerations for each method along with the required software package.

| Assumptions and Considerations | Method | Software Package Needed |
|---|---|---|
| • Materials are linear isotropic<br>• Temperatures are uniform through all bodies | Linear Static Stress Analysis | **SOLIDWORKS Simulation Standard** |
| • Materials are linear isotropic<br>• Temperature gradients can be obtained<br>• Temperature dependent material properties can be considered | Thermal Analysis (Steady State) > Linear Static Stress Analysis | **SOLIDWORKS Simulation Professional** |
| • Materials are linear isotropic<br>• Stresses at a specific time can be obtained<br>• Temperature gradients can be obtained<br>• Temperature dependent material properties can be considered | Thermal Analysis (Transient) > Linear Static Stress Analysis | |
| • Nonlinear materials can be used<br>• Temperatures are uniform through all bodies | Nonlinear Static Analysis | **SOLIDWORKS Simulation Premium** |
| • Nonlinear materials can be used<br>• Stresses over a period of time can be obtained<br>• Temperatures are uniform through all bodies | Nonlinear Dynamic Analysis | |
| • Nonlinear materials can be used<br>• Temperture gradients can be obtained<br>• Temperature dependent material can be considered | Thermal Analysis (Steady State) > Nonlinear Static Analysis | |

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| • Materials are linear isotropic<br>• Temperature gradients can be obtained<br>• Fluid flow effects can be considered<br>• Temperature dependent material properties can be considered | Flow Simulation (Steady State) > Linear Static Stress Analysis | **SOLIDWORKS Flow Simulation**<br><br>**SOLIDWORKS Simulation Standard** |
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