

AIM Bike Crank - Numerical Results, Verification & Validation

Author: Madison Hill, ANSYS

[Problem Specification](#)

[1. Pre-Analysis & Start-Up](#)

[2. Geometry](#)

[3. Mesh](#)

[4. Physics Setup](#)

[5. Numerical Results, Verification & Validation](#)

Numerical Results

The following video shows how to plot the deformed shape and use it to check if the displacement constraints have been applied correctly. We next take a look at

!T,

variation in the model. We interrogate

!T,

variation in the interior of the model using a plane.

Verification and Validation

- Check that the solution agrees with the mathematical model
 - Are the boundary conditions on displacement and traction satisfied?
 - Is equilibrium satisfied?
 - Do the reaction forces balance the applied load?
- Check that the numerical error is acceptable
 - Are the ANSYS results reasonably independent of the mesh?
 - We can refine the mesh by reducing the Size Controls and updating the solution. We can then compare the results to the original mesh.
- Compare with hand calculations for the bending stress and maximum displacement

[Go to all ANSYS AIM Learning Modules](#)