

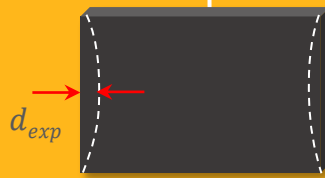
Ansys Additive Distortion Calibration Quick Start Guide

Use this Quick Start Guide to calibrate Ansys Additive software to match your machine/material scenario. The goal is to determine a calibration factor, called a Strain Scaling Factor (SSF), that compensates for the difference between a measured distortion and a simulated distortion. This guide describes the process for performing an Assumed Strain simulation type using either Linear Elastic or J2 Plasticity stress mode.

Step 1

Build & Measure

- Design or choose a calibration part that is easy to build and yields high distortion
- Build the calibration part with the same process parameters you plan to use for your part
- If possible, build the part directly on the baseplate to minimize support structures
- Allow enough room to make measurements while the part is still attached to the baseplate
- After fabrication, measure displacement (d_{exp}) at location of interest



Step 2

Simulate

- Run Assumed Strain simulation type with the same geometry and material
 - Import your calibration geometry
 - Choose your material
 - Set stress mode = Linear Elastic or J2 Plasticity
 - Set Strain Scaling Factor (SSF) = 1 (default)
 - Use default output options
- Start the simulation
- Export On-plate stress/displacement
- Obtain displacement (d_{sim}) at same points and same directional component (X, Y, or Z) as measured



Step 3

Calculate & Compare

- Calculate new SSF: $SSF_{new} = \frac{d_{exp}}{d_{sim}} SSF_o$
where SSF_o is previous SSF
- Compare difference between d_{sim} and d_{exp} to see if acceptable
 - a) If acceptable, stop here and record SSF_{new} as SSF_{cal}
 - b) If not acceptable, run new simulation as in Step 2 using SSF_{new} . Continue until it converges toward zero or an acceptable level.
- Create custom materials with final SSF_{cal} values in Additive Print (one for $SSF_{cal LE}$ and one for $SSF_{cal J2}$)