

CONTOUR METHOD

Technical summary:

The 2D contour method for residual stress measurement is useful for quantifying the distribution bulk residual stress in 3D bodies.

The contour method builds upon the principle that a body containing residual stress will deform as a result of sectioning, and that the tractions required to restore the deformed part to its original shape are equivalent to the residual stress released by sectioning (as illustrated in the a-b-c sequence at right).

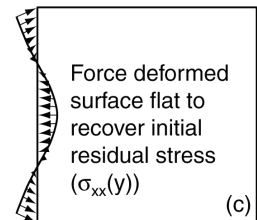
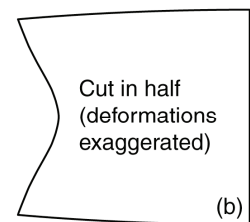
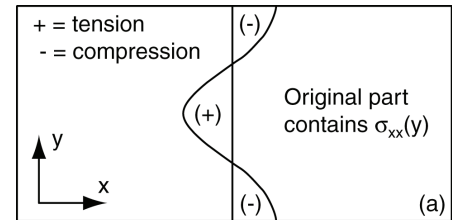
Through careful sectioning and precision inspection techniques, combined with a novel software package, it is possible to map complex 2D residual stress fields in a wide range of part geometries and materials.

Hill Engineering continues to make improvements to the contour method, which enable rapid and reliable measurements that are schedule and cost effective.

The contour method is useful for:

- Bulk residual stress distributions
- Resolving 2D residual stress variations
- Parts with large or complex geometry
- Wide range of material types (e.g., metallics, plastics, FGMs, and single crystals)
- Materials with variable microstructure or large grains

Measurement principle:



Example measurements:

