

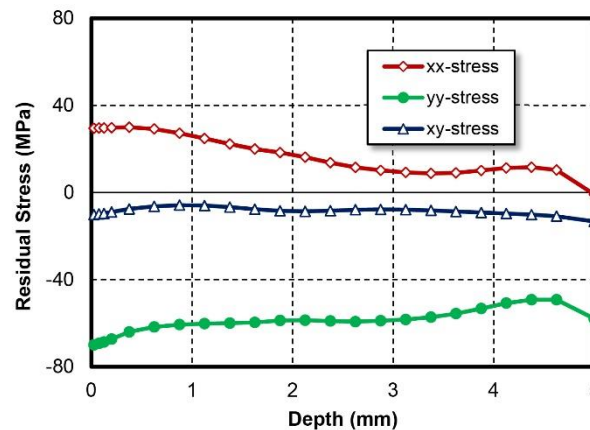
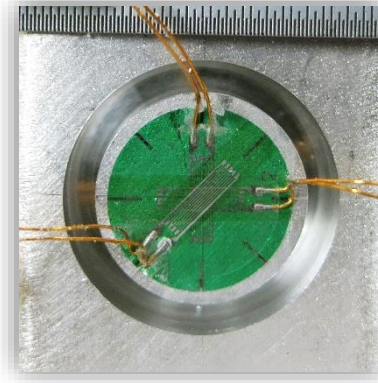
Ring core residual stress measurement

Ring core overview

Ring coring is a method for determination of near-surface to bulk residual stress in a material. The method can be applied to quantify the residual stress over the depth of a drilled core (typically 3.0 to 5.0 mm). Ring coring is a useful method for measurement of residual stress that can be applied under a variety of circumstances.

Ring coring is based on the principle that residual stress causes a body to deform when it is cut and drilling a core into a body while measuring its deformation (using strain gages) allows calculation of the initial (pre-cut) residual stress distribution.

Ring coring is realized through careful cutting of a core into a part while monitoring cut-induced deformation using metallic foil strain gages. The record of strain and cut depth are then used to compute the pre-cut residual stress distribution using the principles of elasticity.



Hill Engineering has a reputation for using the ring core method to provide accurate, repeatable results.

Ring core applications

The ring core method is well-suited for a wide range of conditions. The following are examples where ring coring excels:

- Near-surface to bulk residual stress (to depth of 5.0 mm)
- In-situ measurements on structures, large parts, and assemblies
- When cost and throughput are a priority
- Multiple residual stress components (in-plane principal stresses)

Why Hill Engineering?

Hill Engineering has a reputation for providing high-quality residual stress measurement data suitable for engineering analysis. Our in-house laboratory performs residual stress measurements using a variety of techniques to meet the needs of industry.

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