Deep-Hole Drilling residual stress measurement

HILL ENGINEERING
Predict. Test. Perform.

Deep-Hole Drilling

Deep Hole Drilling (DHD) is a method for determination of bulk residual stress in thick sections. The method can be applied to generate a residual stress profile through the thickness of large parts. Deep Hole Drilling is typically performed in the laboratory, but can be applied in the field.

Deep-Hole Drilling is based on the principle that residual stress causes a body to deform when it is cut, and drilling a hole into a body while measuring its deformation before and after the release of residual stress allows calculation of the initial (pre-cut) residual stress distribution.

Deep-Hole Drilling is realized by drilling a reference hole through the component and accurately measuring its diameter before and after residual stress release by trepanning coaxially around it. The measured deformation of the reference hole (before and after residual stress release) enables the original residual stresses to be calculated using elasticity.

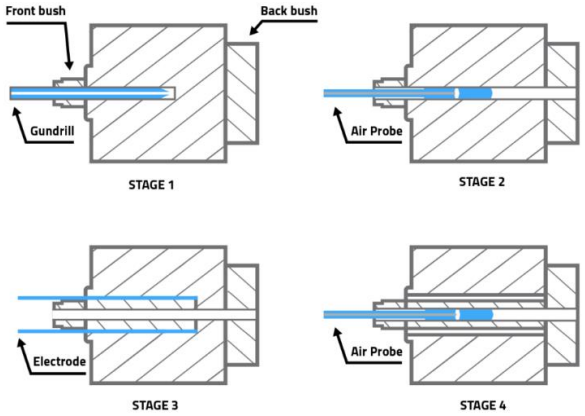


Figure provided by VEQTER Ltd.

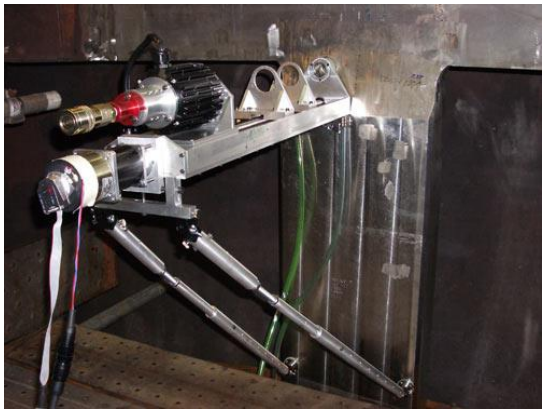
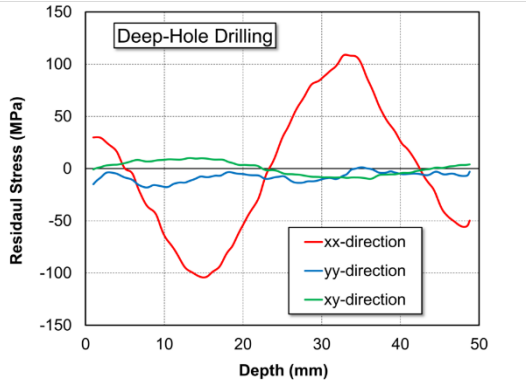


Image provided by VEQTER Ltd.



Deep-Hole Drilling applications

Deep-hole drilling is well-suited for a wide range of conditions. The following are examples where deep-hole drilling excels:

- Bulk residual stress measurement in specimens up to 750 mm thick
- Multiple residual stress components (in-plane principal stresses)
- Parts with large or complex geometry

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.

Contact information

sales@hill-engineering.com
+1 (916) 635-5706
hill-engineering.com