



HOLE DRILLING METHOD WITH  
STRAIN GAUGES ACCORDING TO ASTM E837-13A

# Residual Stress Measurements

**RESIDUAL STRESS IN MATERIALS  
(PROVOKED BY HEAT TREATMENT OR  
MACHINING) CAN ADVERSELY AFFECT THE  
LOAD-CARRYING CAPACITY AND SAFETY OF  
MECHANICAL COMPONENTS.**

**HBK OFFERS RESIDUAL STRESS ANALYSIS  
OF COMPONENTS USING THE HOLE  
DRILLING METHOD.**

Procedure using the example of a residual stress measurement in steel in accordance with international standard ASTM E837-13a:

Using a specially developed high-speed drill, a small hole ( $\varnothing 1.8 \text{ mm} \times 1 \text{ mm}$  deep) is drilled in the component next to the three grids of a strain gauge hole drilling rosette.

This takes place fully automatically in depth increments of 0.05 mm, with a measurement of each of the strains that have now relaxed.

Based on the strain values measured in this way, the principal stresses and associated angle (Mohr's circle) are then calculated with analytical software and presented both in a table and graphically.

*Requirements: Compressed air 6 bar, mains voltage 230 VAC*

**Most common applications:**

- Determining residual stresses in welded constructions
- Determining residual stresses after heat treatment

Further information is also available at:

<https://www.hbm.com/de/3324/sint-technology/>

Contact us:

measurement-engineering@hbkworld.com

or +49 6151 803 1333



Fig. 1: High-speed drill

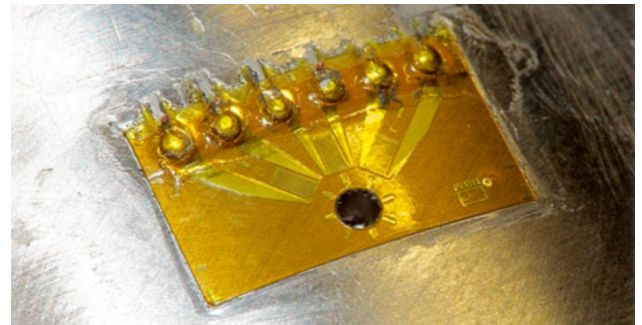


Fig. 2: Strain gauge hole drilling rosette