

Hardness measurement on sheet metal with SONODUR

Case & solution

Light sheet metal

Sheet metal with a maximum thickness of 1 mm is called thin sheet. These are very flexible sheets that can be cut and bent relatively easily

Thin sheet metal

Slightly thicker sheets up to a material thickness of 3 mm are called thin sheets. They are made from both cold-rolled and hot-rolled metal.

Medium sheet metal

Sheets that are between 3 mm and 5 mm thick are called medium sheet.

Common types of sheet metal in metal construction are:

Ship's plate, Structural sheet metal, Boiler plate, Automotive sheet metal, Forming sheet metal, Battery sheet metal.etc..

The following sheet formats are available in the trade:

- Small format: 1,000 mm x 2,000 mm
- Medium format: 1,250 mm x 2,500 mm
- Large format: 1,500 mm x 3,000 mm
- Maxi format: 2,000 mm x 4,000 mm

Challenge

Measurement of the sheet metal without destroying the metal plates. Measuring at incoming goods area or during production process at the production floor.

Benefits of the solution

- UCI can be used on almost all component shapes in any direction and metallic coating. It allows to be independent from the optical evaluation due to the measurement via frequency shifting.
- Fast measurement due to easy access to the application.
- Non-destructive to the application.



Fig. 1: Hardness measurement on sheet metal

Application solution

- Thin sheets will be measured with less force to reduce resonances.
- Sheets below 2 mm thickness need to be coupled to a stable metallic base plate.
- Clamping with screw clamp or similar.
- Measurement position close to clamping position.
- Coupling fluid is Iso propanol.
- Measurable sheets (best fit according to resonances):
 - Beginning @ ~ 0,3 mm - SONO M3 (2222205)
 - Beginning @ ~ 0,5 mm - SONO M8 (2222213)
 - Beginning @ ~ 1,5 mm - SONO H10/S50 (2214750)
 - Beginning @ ~ 4,0 mm - SONO H50/S50 (2215659)

*Note surface roughness!

Technical setup

- SONODUR 3 Basic Package (2228025)
- Suitable probes:
 - Standard: M3, M8, H10, H50 probes
- Stand for guided measurement and diamond positioning applicable depending on part geometry
 - PS2 (2223406)
 - MS2 (2223422)

