Automated rivet installation:
- Lockbolt stump (1), Hi-Lok/Hi-Lite (2).

C-frame riveting machine of Fraunhofer IFAM.

Range of services offered:
- Process development and optimization
- Qualification programs – certified and accredited test laboratory
- Materialography – microsection analysis
- FE simulation

C-frame riveting machine:
- C-frame throat depth: 1500 mm
- Max. stack thickness: 32 mm
- Clamping force: 50 to 350 daN, mechanically locked lower tool for pin installation
- Max. upset force: 7000 daN
- Max. bending of C-frame: < 1 mm

All-electric operation with continuous data acquisition:
- Drilling process: Speed, torque, feed range
- Riveting process: Movement and force for drilling, inserting, clamping, and upset operation
- Torque measurement for installing Hi-Lite/Hi-Lok
- X-Y table of size 200 x 300 mm²
- Max. travel speed up to 100 mm/s

Drill spindle:
- Speed range: Variable from 500 to 18000 rpm
- Feed range: Variable from 10 to 5000 mm/min
- Torque:
  - S1 – 4.5 Nm
  - S6 – 6.5 Nm from 300 to 16500 rpm
- Concentricy precision: < 5 μm at 105 mm distance to drill chuck
Drill chuck: HSK E32
- Tribos
- Baby Chuck

Programmable drill spindle – relief stroke, pulse drilling

Drill lubrication
- External: Minimal lubricant
- Internal: With air or with lubricant via aerosol generator

In accordance with the following standards
- EN
- ASNA
- DAN
- PrEN
- ABS

Suitable for fastener diameters of 4.0 mm and 4.8 mm, other diameters and other processes for fitting mechanical fasteners on request.

Automated rivet installation

Fully automatic installing of
- Solid rivets
- Stump type lockbolts
- Threaded fasteners (Hi-Lite)

Automatic sealant application and rivet/collar feed during the process cycle, adjustable process speed.

Other equipment

- X-Y table for rapid, precise, and reproducible specimen positioning.
- High-speed camera system: Upper and lower process zones can be observed via a high-speed camera.

Example applications of the use of the high-speed camera system

A Chip shape: Drilling Al.
B Chip shape: Drilling CFRP.
C Shearing of Hi-Lite threaded collar.
D Driving head formation for solid rivet.