



GROB-WERKE GmbH & Co. KG

Competence in advanced technology worldwide

Experience in Aerospace

5-Axis Universal Machining Centers



5-Axis Universal Machining Centers (milling/turning)



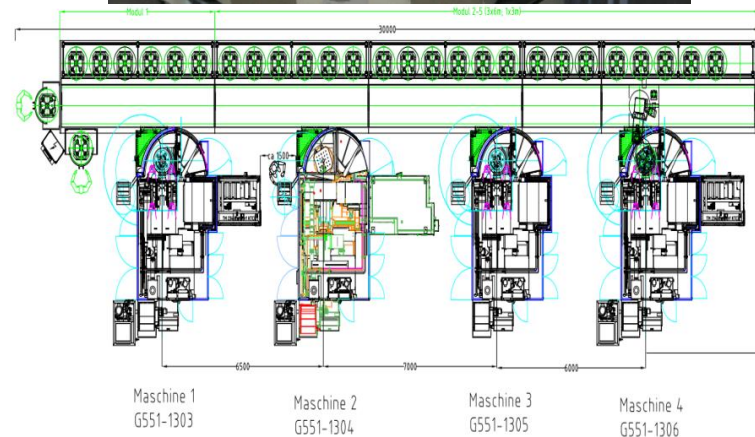
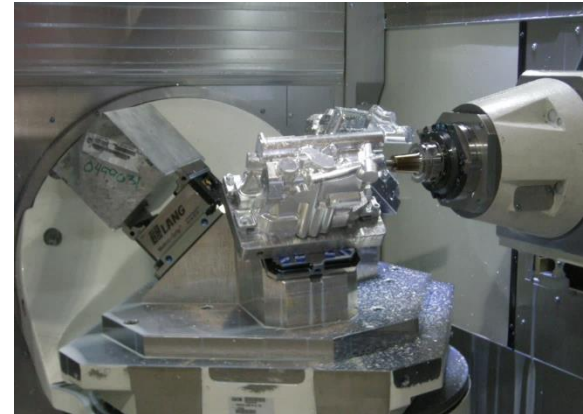
Production LINE 1

- 3 X G550 HSK-A63 18.000 min⁻¹
- 1 X G550 HSK-A100 10.000 min⁻¹
- Direct load version
- PSS – Load Master 900 - 52 pallets



Production LINE 2

- 2 X G550 HSK-A63 16.000 min⁻¹
- 2 X G550 HSK-A100 10.000 min⁻¹
- Direct load version
- PSS – Load Master 900 - 52 pallets



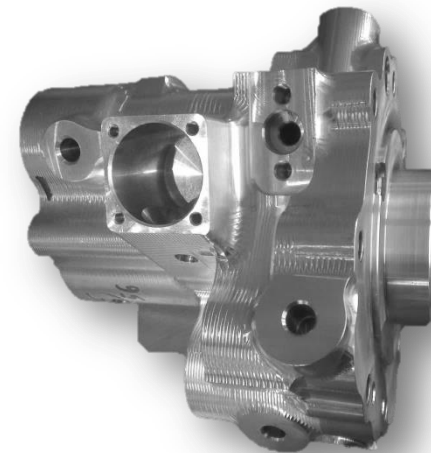
Manifold machining

- Component:** Hydraulic control block
- Material:** aluminium
titanium (TiAl6-4V)
- Dimension:** 300 X 200 X 200 mm
8 different workpieces
- Setup:** 3
- Cycle time:** 1,5 – 2 h (aluminium)
- previous time:** approx. 4,5 h on HMC
- Setup:** fixture with 3 mechanical center vices in 120 deg. layout.
Vices are tilted 40 deg.
- Strategy:**
- Setup-1
 - 5 sided pre- machining stockmaterial, fitting bore for setup-2
 - Setup-2
 - bottom surfaces (6th side)
 - Setup-3
 - finishing, high accuracy drilling operations



Highlights:

- high grade of automation
- unmanned work shifts
- 1 finished workpiece each pallet
- less intermediate storage of partly machined workpieces
- 3 times faster machining time than previous process on HM's
- higher output and less required machining centers, because of 5X technology
- perfect chipfall and cleaning fixture through overhead machining
- undercut until -45 degree allows smart fixture design
- less interference counters at the spindle and Z-axis allows the clamping of 3 workpieces



**Thank you
for your attention**