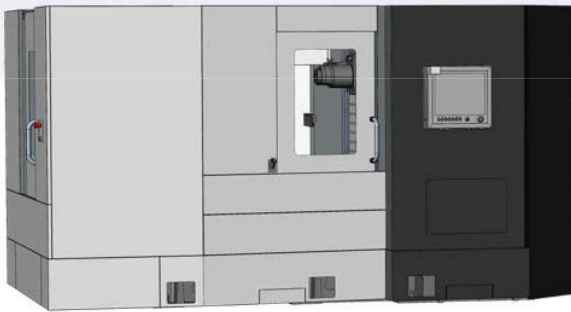


Accessibility, tool life, surface quality ...

Horizontal machining centers



Plus points for horizontal

- Capacity very high from the start
- Automation from the factory
- High level of automation

5-axis machining center

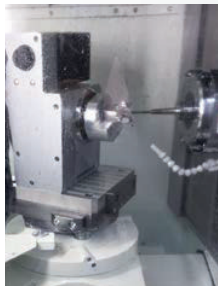


Plus points for 5 axes

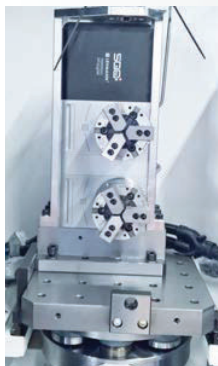
- Large parts can be machined
- Difficult 5-axis machining possible
- Easier commissioning

Alternatives

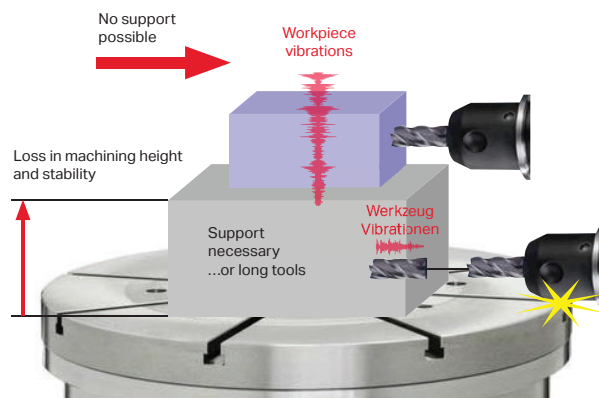
Make a 4 axis horizontal machining center into a 5-axis machining center: increase use and degrees of freedom



5-axis, one spindle, on horizontal machining center



5-axis, two spindles, on horizontal machining center



In the case of small workpieces, the workpiece must be mounted further out or a long tool must be used – both result in vibrations and loss in accuracy and surface area



6th side machining not possible



Counter bearing for support not possible



Intelligent automation (see pp. 44/45)