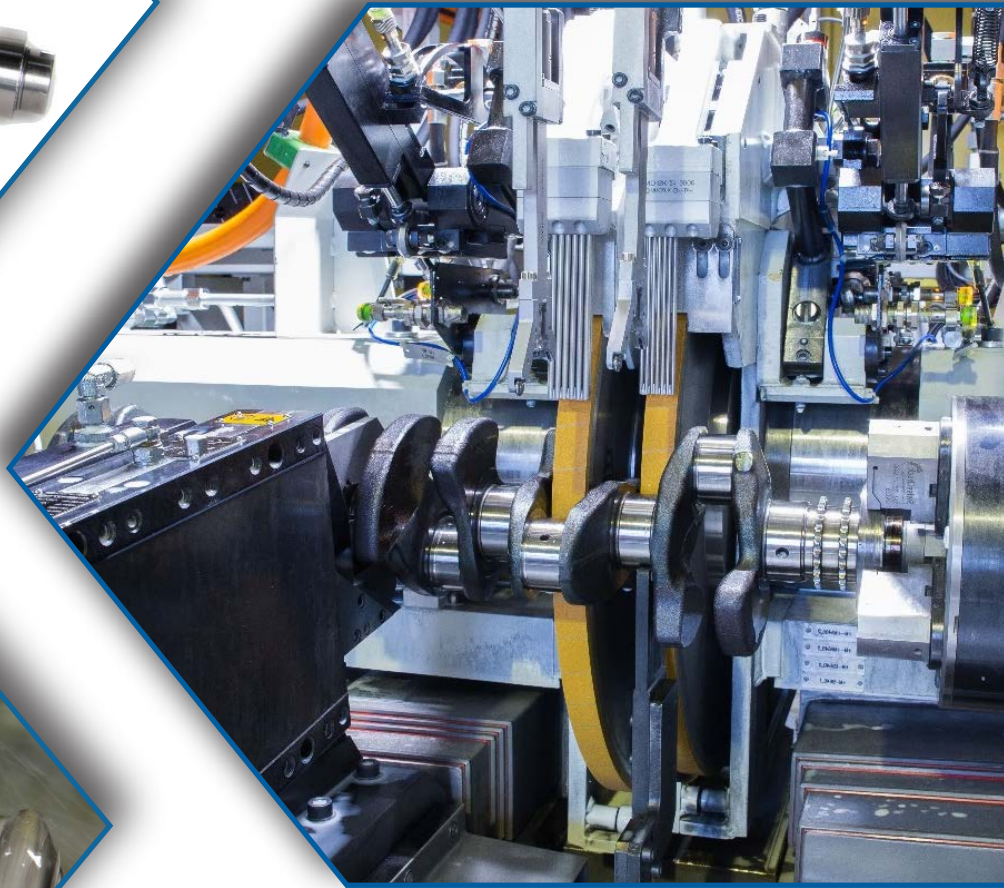




The specialist in cylindrical grinding
**Internal combustion
engine components**



GST has developed a wide range of **highly productive** machines for the **serial** grinding of motor components, entirely **flexible** and focused on customer requirements. Leading manufacturers already use our machines in **continuous operation**.

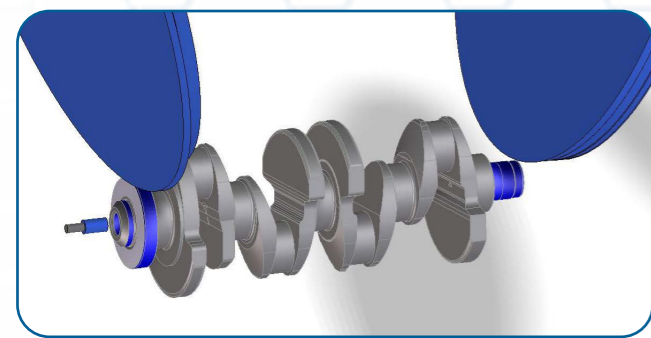
Grinding machines for
Crankshafts | Balance shafts | Camshafts

Crankshaft

Grinding

- Main bearings
- Pin bearings
- Flanges
- Journals
- Flat surfaces
- Polygons

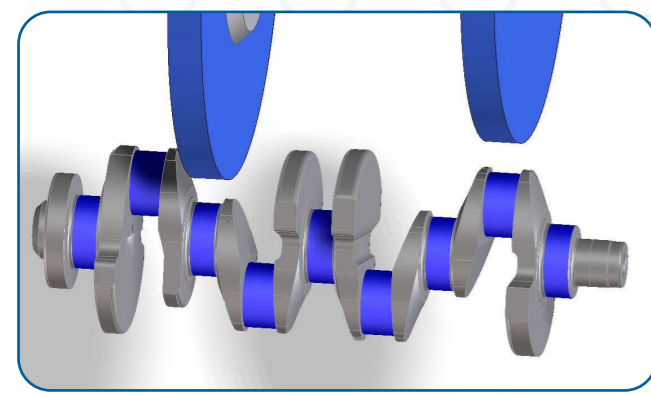
Double-spindle angular infeed grinder - **Double Jet CBN**



- Flange and journal
- Flange, journal and encoder wheel seat
- Flange, journal and bore
- Flange, journal and balance shaft seat

- Grinding with CBN wheels in a single clamping set-up
- Grinding wheel max. Ø 600mm
- 1,200 parts/day in 3-shift operation

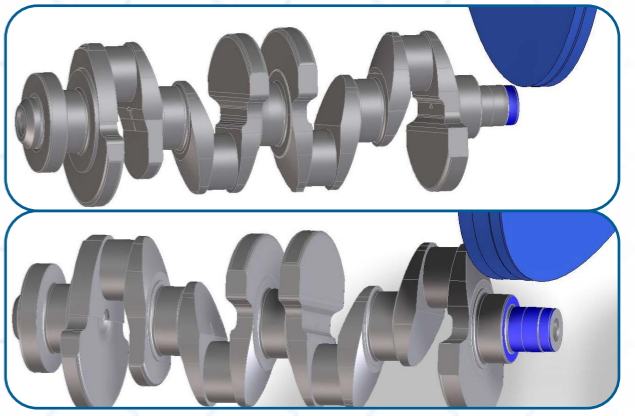
Double spindle orbital grinder - **Double Jet Orbital**



- Rough and finish grinding of main and pin bearings
- Grinding with CBN wheels in a single clamping set-up
- Grinding wheel max. Ø 600mm
- 500 parts/day in 3-shift operation

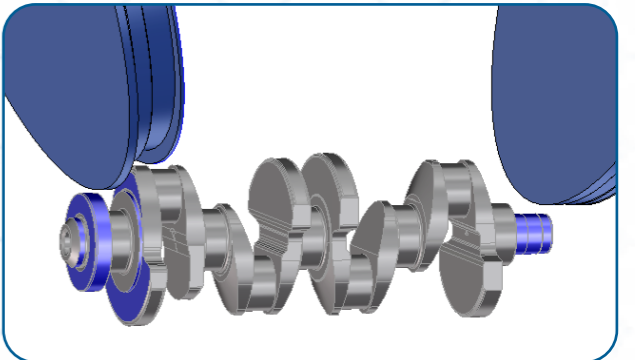
Single-spindle straight or angular infeed grinder - **Single Jet Profile CBN**

- Flanges, journal and encoder wheel seat, balance shaft seats, and encoder wheel seats of crankshafts
- Grinding with CBN wheel
- Grinding wheel max. Ø 600mm
- 1,200 parts/day in 3-shift operation



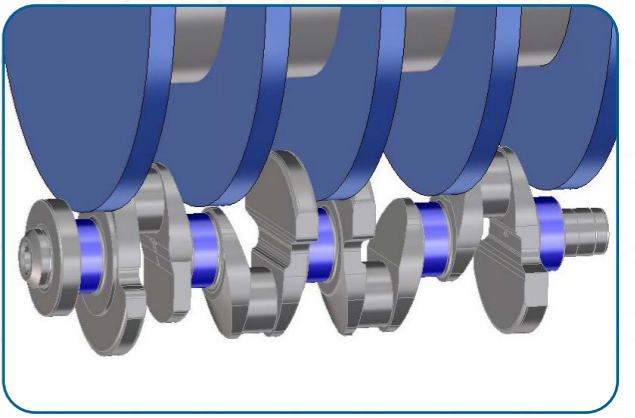
Double-spindle straight infeed grinder - **Double Jet C/2**

- Flange and journal
- Flange, journal and encoder wheel seat
- Flange and journal and balance shaft seat
- Grinding with corundum wheels in a single clamping set-up
- Grinding wheel max. Ø 900mm
- 1,000 parts/day in 3-shift operation



Single-spindle multi-wheel grinder - **Multi-Wheel C**

- Flange-mounted wheel sets
- All main bearings on crankshaft and camshaft
- Grinding with corundum wheels in a single clamping set-up
- Grinding wheel max. Ø 750mm
- Grinding wheel width max. 500mm
- 1,200 parts/day in 3-shift operation



Balance shaft

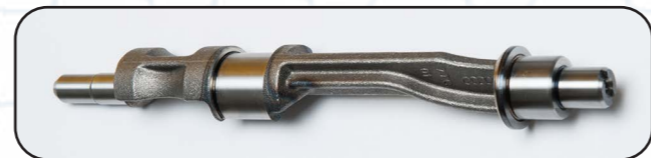
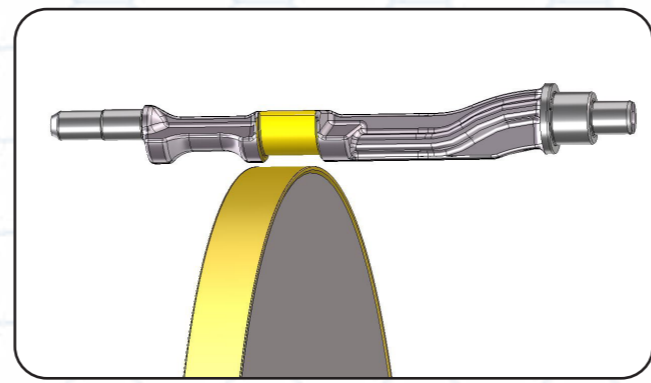
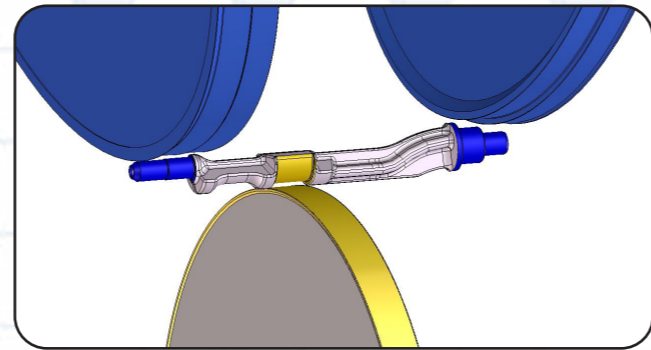
Grinding diameters, flat surfaces & grooves

Double-spindle external cylindrical grinder for shaft production

Double Cycle Complete C/CBN

Complete machining of the shaft in a **single** clamping set-up. Double-spindle external cylindrical grinder with 2 work stations (2 slides on the Z-axis) for the grinding of **diameters, plane surfaces** and **grooves** in a single operation with **0 non-productive times**.

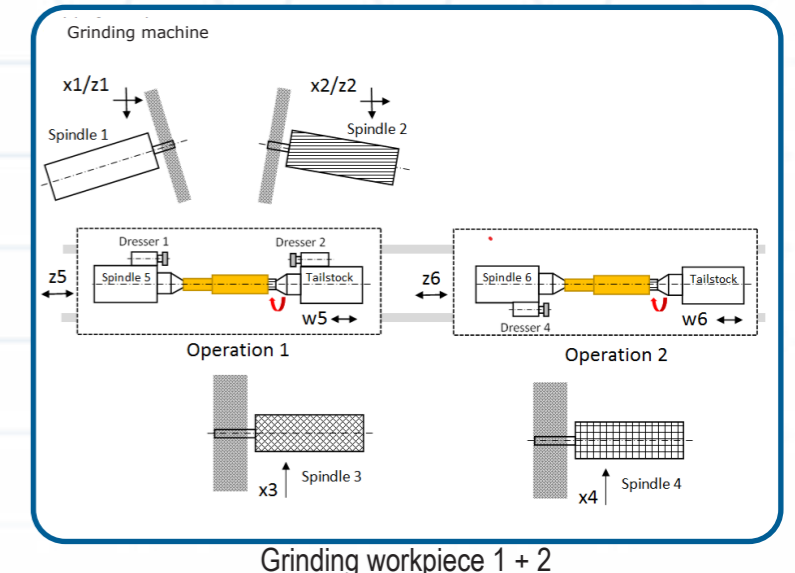
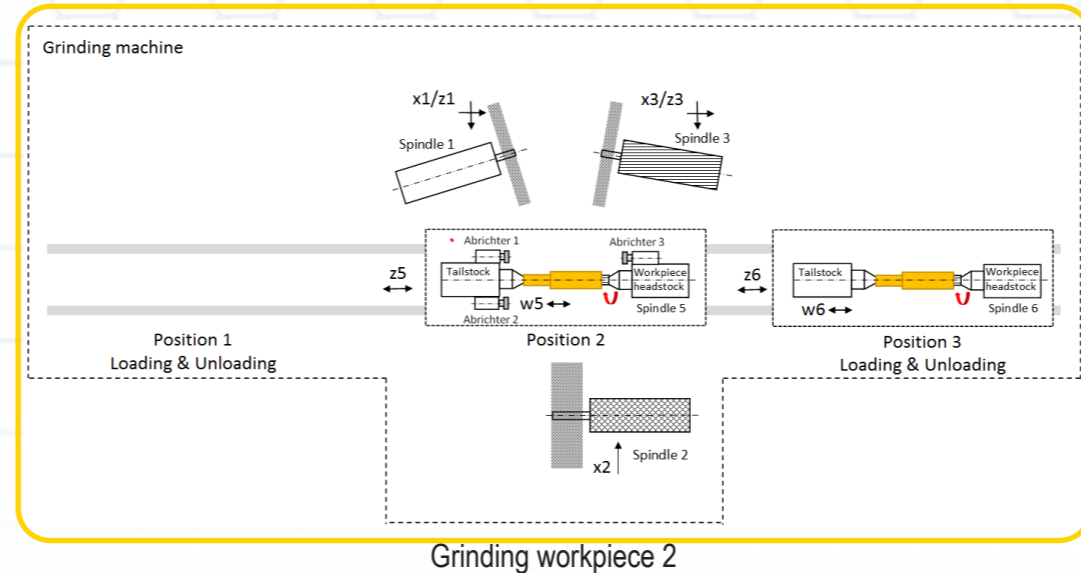
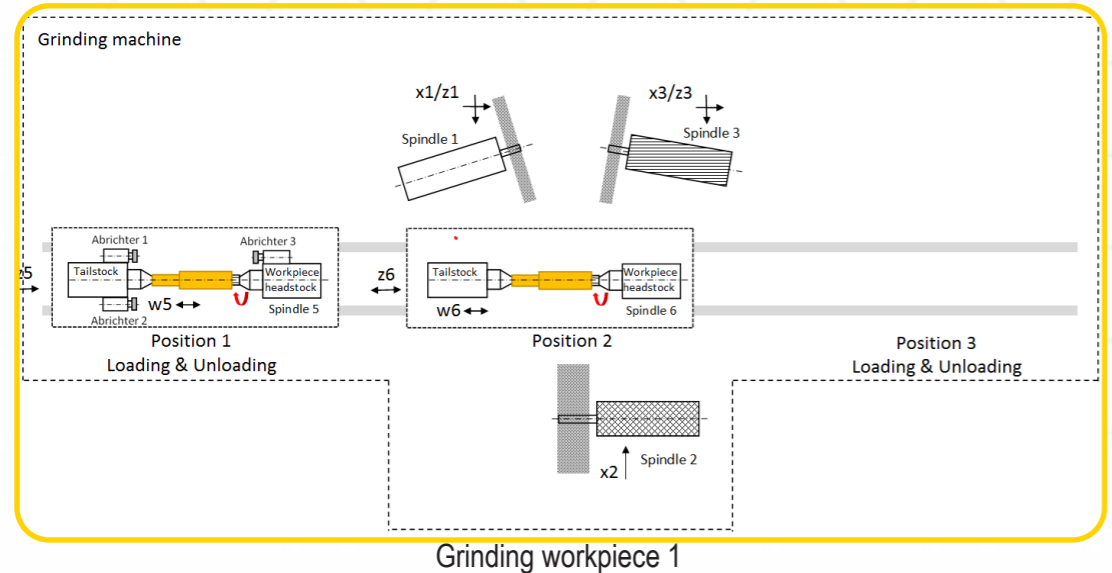
- Cycle time 43" = 0.72 min. = 1,600 parts/day with 80% capacity utilisation
- Non-productive times: 0 sec
- Axes with linear drive
- Machine designed for emulsion or oil
- Corundum or vitrified CBN grinding wheel: for grinding diameters
- Electroplated CBN grinding wheel: for grinding grooves and plane surfaces
- 1 work station, 2x Loading / unloading stations, identical operations
- Simultaneous loading & grinding



Double Cycle Jet CBN

Complete machining of the shaft on 1 machine at **2 separate** working stations. 2 slides on the Z-axis and **4 grinding wheels** for **simultaneous** grinding of **diameters, flat surfaces & grooves** in 1 machine in **2 steps** with **0 non-productive times**.

- Cycle time 52" = 0.87 min. = 1,318 parts/day with 80% capacity utilisation
- Non-productive times: 0 sec
- Axes with linear drives
- Machine designed for emulsion or oil
- Corundum wheel: for grinding diameters
- Electroplated CBN wheel: for grinding grooves and plane surfaces
- 2 different work stations
- Advancing by loader

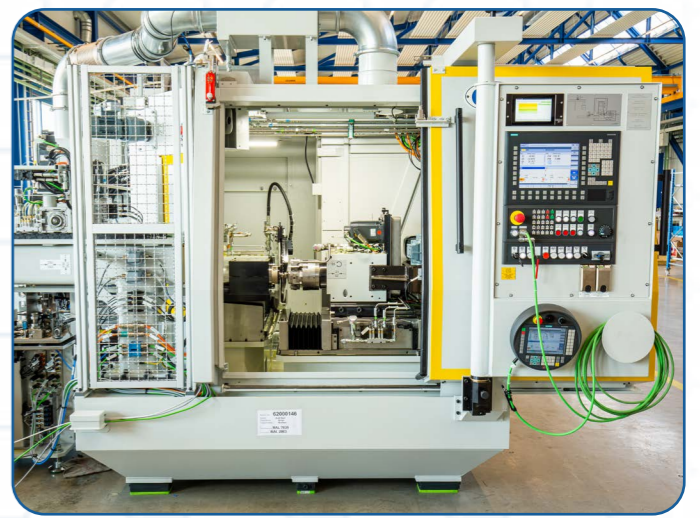
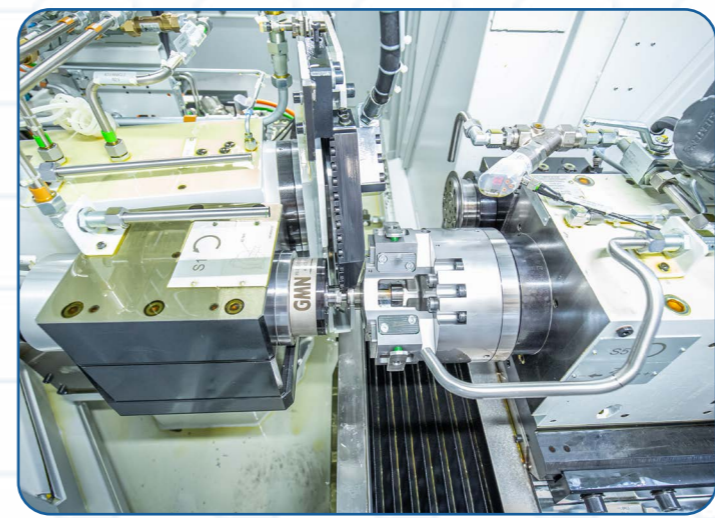
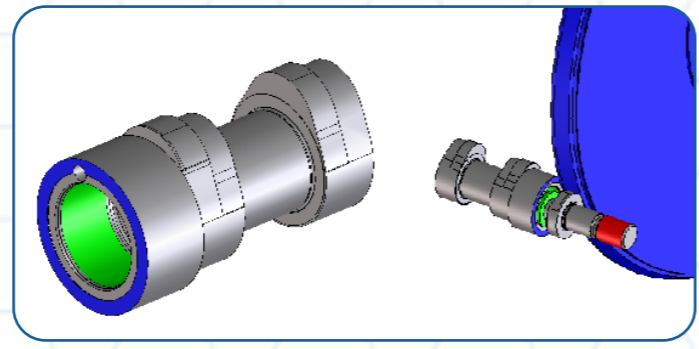


Cam piece



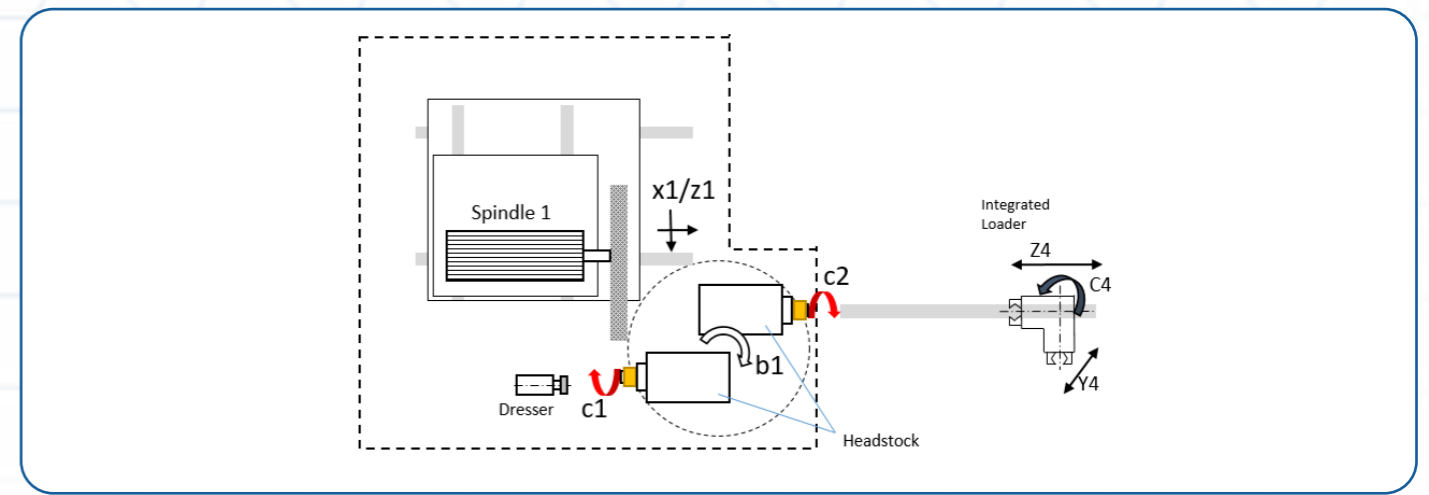
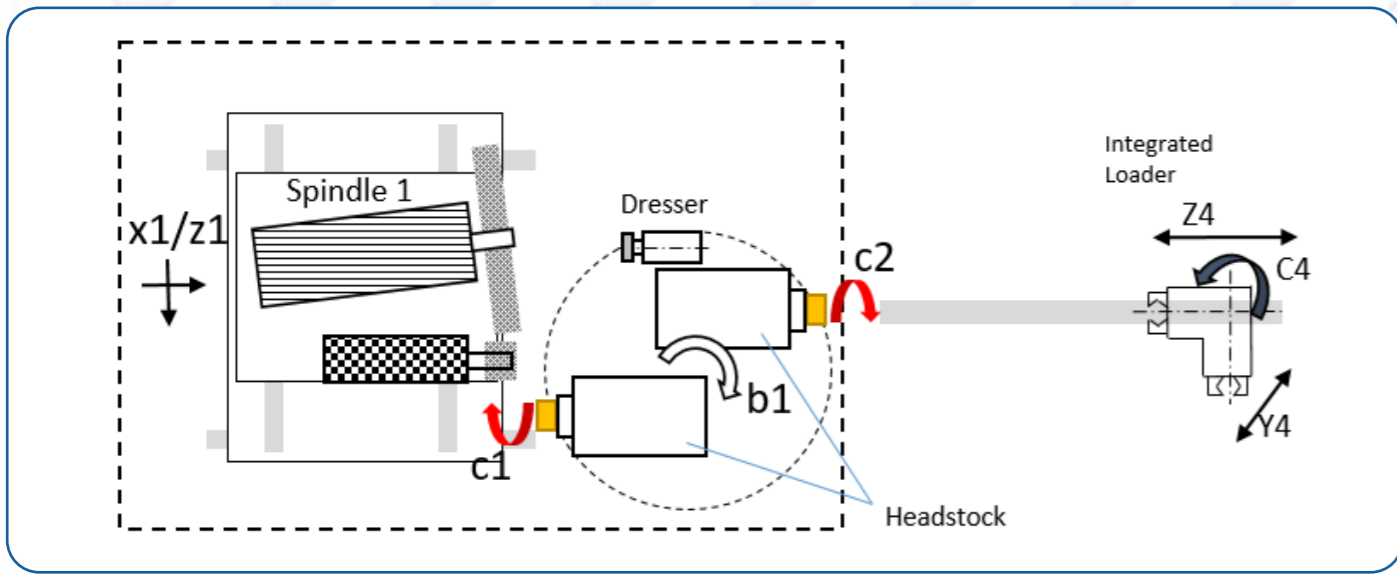
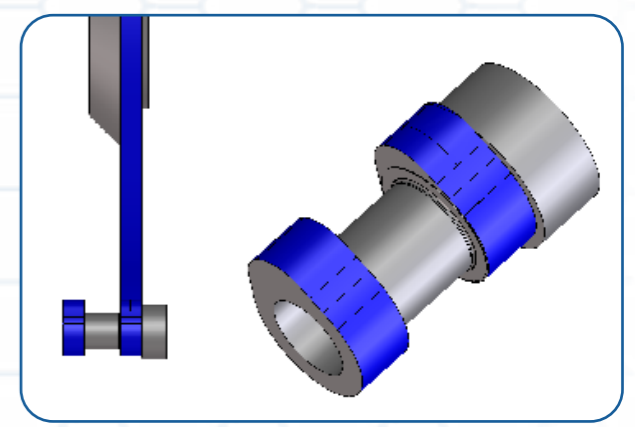
Complete Ex/In CBN

- Simultaneous machining of front face and bore in 1 step
- Complete grinding of the camshaft in 1 setting with CBN grinding wheels
- Cycle time 22'' 0.37 min. = 3338 parts / day at 80% capacity utilization, in 3-shift operation
- Axes with linear drive



Complete Profile CBN

- Machining of cam pieces
- Machining the cam shape
- Complete grinding of the camshaft in 1 set-up with CBN grinding wheels
- 3-shift operation
- Axes with linear drive



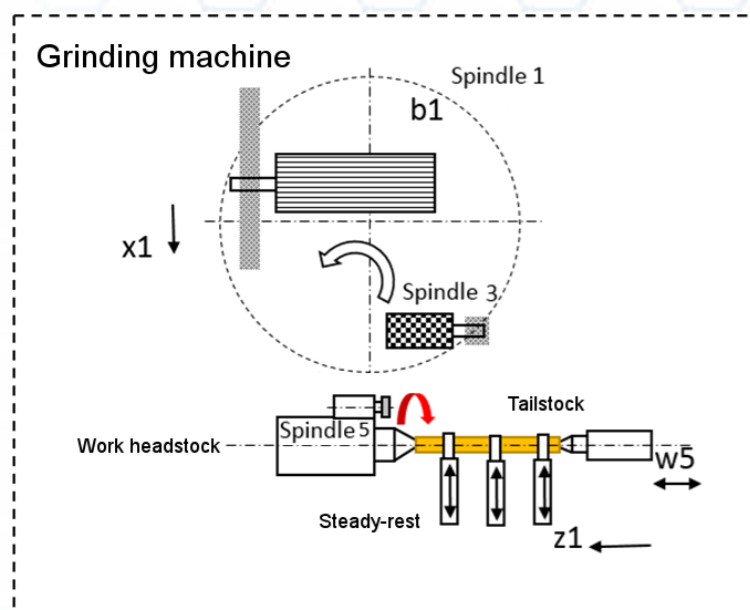
Camshaft

Grinding

Diameters

Plane surfaces

Cam shape

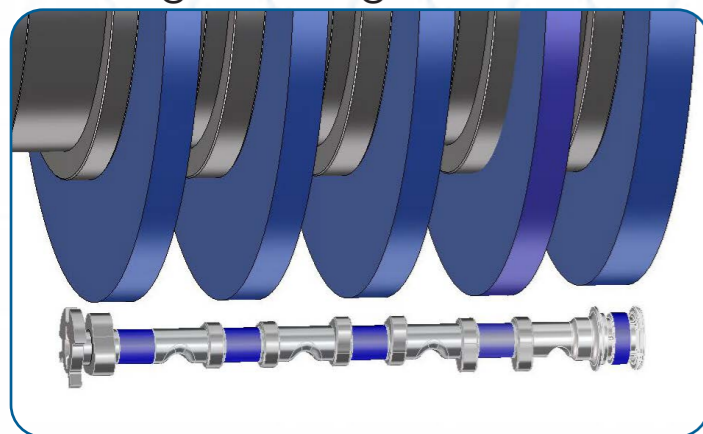


Machining:

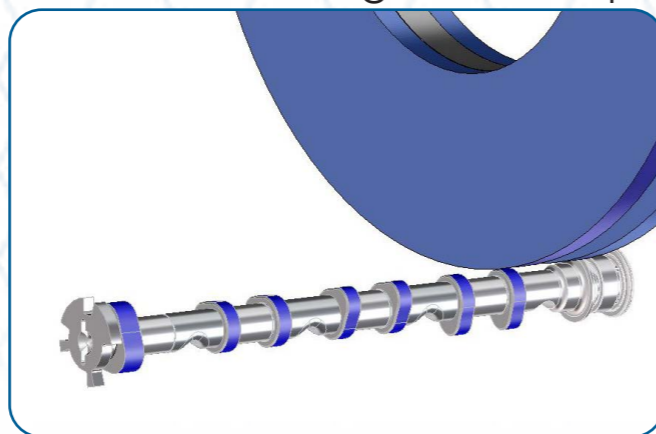
- One spindle with X-axis
- Table used as Z-axis
- Grinding of cams and bearing seats is possible



Grinding - bearing seat

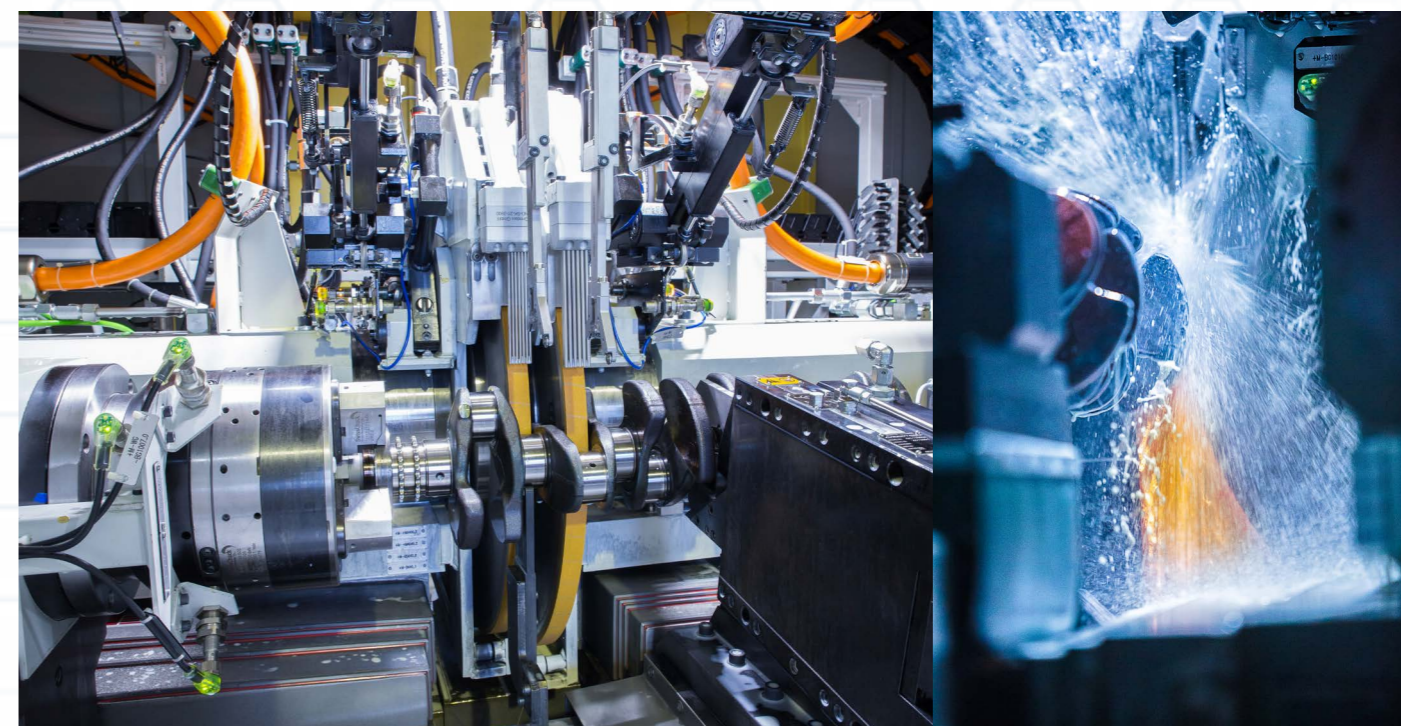


Grinding - cam shape



GST Machine features

- Complete machining in a single clamping set-up
- Full CNC control of all axes
- Automatic process measurement incl. roundness compensation
- Solid GST grinding spindles with roller bearings
- Linear drive technology of the highest precision
- Workpiece spindle or center drive for workpiece driving with speed control
- Compound-slide configuration (depending on requirements)
- Feed slides with recirculating roller guides or hydrostatic guideways
- Self-centering steady rests
- Additional compound slide with internal grinding spindle for simultaneous grinding of the needle bearing bore (optional)
- Coolant: emulsion or oil
- High energy efficiency due to compact design
- Short set-up times due to wheel changing devices, automatic set-up and automatic adjustment of table assemblies
- Stand-alone solution with GST loader and workpiece magazine, or integration into an interlinked system

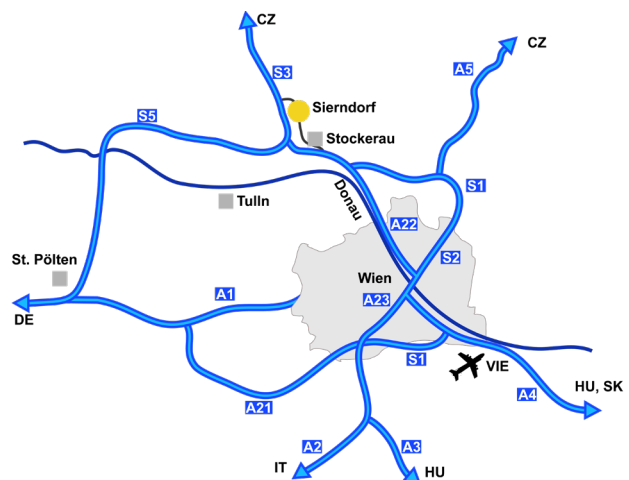




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