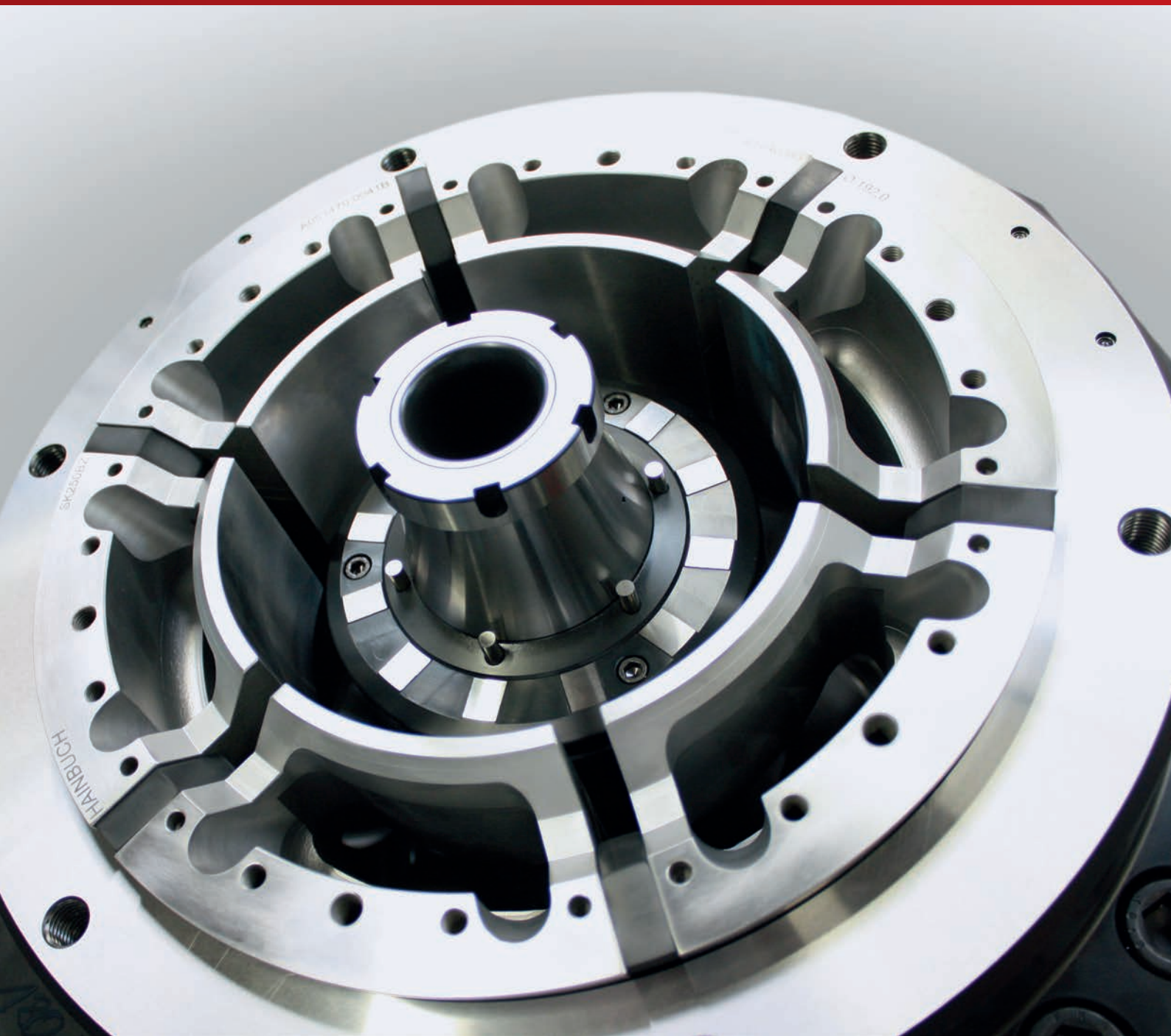


Special clamping solutions



Special solutions

Special chucks	404
Special segmented mandrels	409
Special stationary clamping devices	413
Special test and measurement technology	414
Special clamping elements	415
Special quick change-over systems	416

When standard clamping devices reach their limits, our designers will find the right solution for you. They also develop a solution that is precisely tailored for the most particular requirement. Our experts push the technology to its limits, prefer to leave the beaten paths, think outside of the box, and approach their work with passion, enthusiasm, and inventiveness. The result: an innovative, creative, and completely customized special chuck in the usual HAINBUCH quality.

Key advantages

- Custom solutions optimally tailored to your requirements
- Optimized manufacturing processes
- State-of-the-art manufacturing possibilities due to the latest clamping device technology

SPECIAL SOLUTIONS

Special chucks



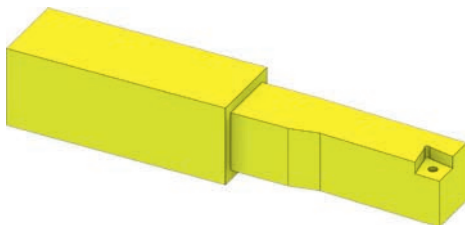
SPANNTOP 2x2

- Secure clamping of rectangular/square profiles with uniform transmission of clamping force from all 4 sides
- Tolerance compensation ± 1.0 mm in width and height
- Standard clamping heads can be used for clamping round material as well
- Rigid clamping from 4 sides

Challenge

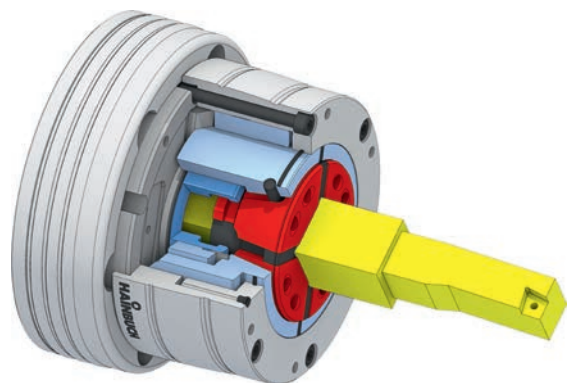
Workpiece Tool holder
Clamping task 4-sided clamping from the outside
Machining Milling of the shank and of the head

- Better workpiece surface
- More rigid clamping



Results / customer benefits

- Better workpiece surfaces in every machining plane
- Higher feed rates



SAVINGS

- Machining time is reduced by 10 %
- Tool life is extended by 5 %



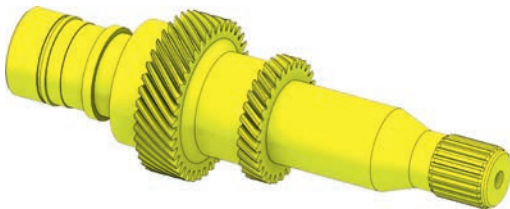
Shaft chuck

- For roughing operations, shafts are clamped with extreme rigidity by the clamping head
- Clamping between centers with the integrated face driver ensures a run-out under 5 µm for finish machining

Challenge

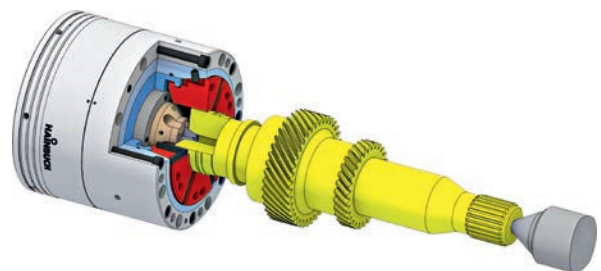
Workpiece Thin shaft
Clamping task With clamping head and between centers
Machining Roughing and finish machining in a single process

- Finishing between centers
- Highest run-out between centers



Results / customer benefits

- Higher speeds and feed rates thanks to extremely forceful clamping
- Run-outs between centers are achieved with process reliability



SAVINGS

- 2 clamping set-ups reduced to only one set-up
- The workpiece is produced approx. 8 % faster

SPECIAL SOLUTIONS

Special chucks



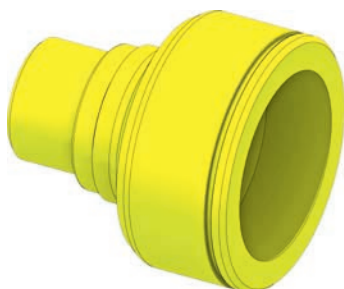
TALEMENT chuck

- Almost deformation-free clamping of thin-walled workpieces
- Major form defects are compensated
- Air actuation
- Can be combined with powerful actuation of the clamping head

Challenge

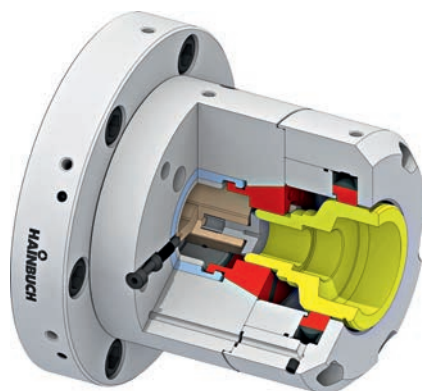
Workpiece CV joint
Clamping task O.D. clamping
Machining Hard machining

- Rigid support at the machining point
- Position errors of the axis of clamping relative to the support axis are compensated
- Form-compensating support



Results / customer benefits

- After hardening, the workpiece remains unmachined on the support surface
- One machining step is eliminated



SAVINGS

- Elimination of the work cycle »hard turning of the bell outer Ø« → Savings: approx. 25 seconds per part
- Increased tool life from 800 to 1,200 workpieces → Savings: approx 30 % of tool costs



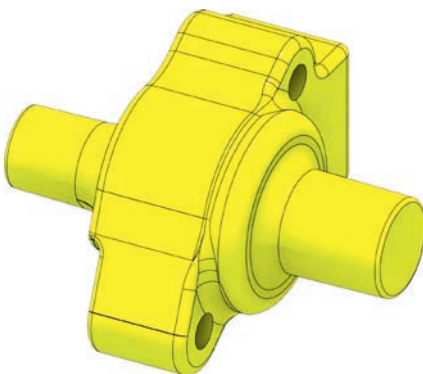
Segmented clamping bushing chuck

- Segmented clamping bushing chuck with balance compensation for significantly unbalanced workpieces
- High dimensional tolerance compensation on the blanks

Challenge

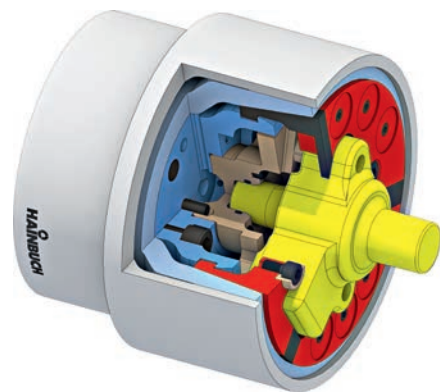
Workpiece Casting
Clamping task O.D. clamping of a blank
Machining Turning and drilling

- Centrifugally stable clamping even at high RPM
- Integrated balancing system



Results / customer benefits

- Thanks to the enclosing clamping device the workpiece remains securely in the clamped position in spite of high RPM
- Highest clamping forces
- Large radial clamping strokes



SAVINGS

- Manufacturing with process reliability
- Scrap reduced to »0«

SPECIAL SOLUTIONS

Special chucks



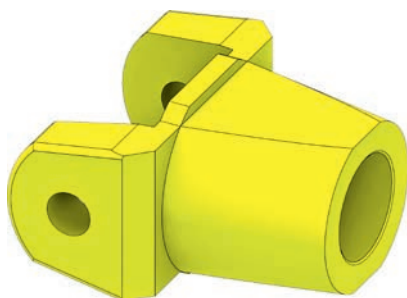
2x2 bolt chuck, centric clamping

- Bolt chuck for raw part centering of a rectangular profile in both axes
- Chip-proof clamping device for mass production

Challenge

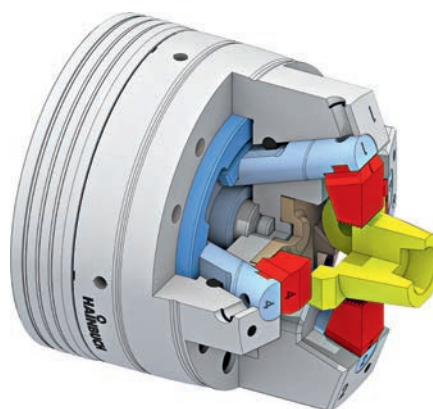
Workpiece **Fork-head**
Clamping task **O.D. clamping**
Machining **Turning**

- Compensation of the blank tolerances of 1.5 mm in both clamping directions
- Interrupted cut during turning



Results / customer benefits

- Low-maintenance clamping device
- Stable and rigid clamping
- Different profiles can be set-up easily



SAVINGS

- The inexpensive pre-process remains the same
- Easy handling of the finished part for further processing thanks to extremely precise symmetry on the component



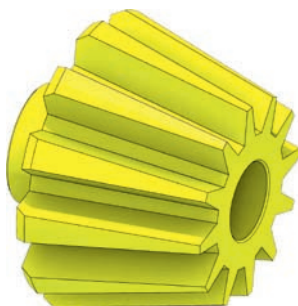
Mandrel for gears

- Slim mandrel for gears
- Workpiece specific interference contour with maximum clamping rigidity

Challenge

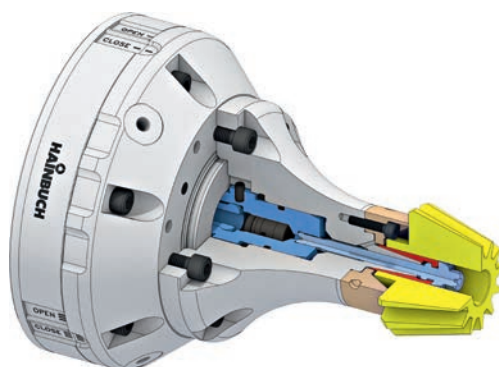
Workpiece Bevel gear
Clamping task I.D. clamping
Machining Gear hobbing

- Generate the maximum clamping forces in the smallest installation space
- Maximum rigidity
- Suitable for mass production



Results / customer benefits

- Stable and reliable process for gear manufacturing
- Large opening stroke to ensure secure loading



SAVINGS

- Tool life is extended by 5 %
- Manufacturing with process reliability

Special segmented mandrels



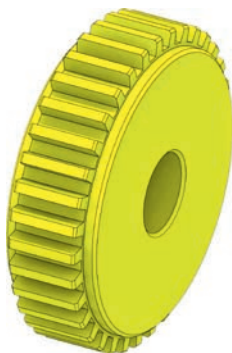
Micro mandrel

- Mandrel for I.D. clamping of extremely small diameters [starts at 5.5 mm]
- Fast change-over to other clamping \varnothing is possible

Challenge

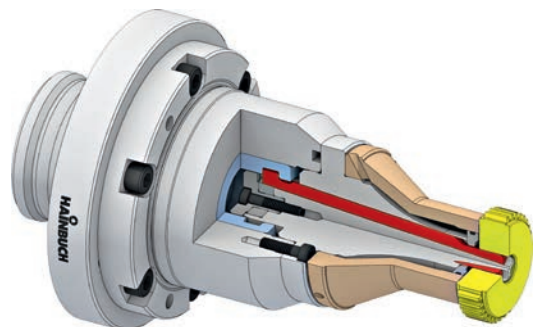
Workpiece **Gears**
Clamping task **I.D. clamping**
Machining **Milling of the gear teeth**

- Mass production of small gears
- Different clamping diameters must be interchangeable
- Long service life of the clamping device



Results / customer benefits

- Service life of the clamping device has been significantly increased
- High-precision change interface provided for clamping device change-over



SAVINGS

- Reduction of the annual total investment for clamping devices by approx. € 10,000.00



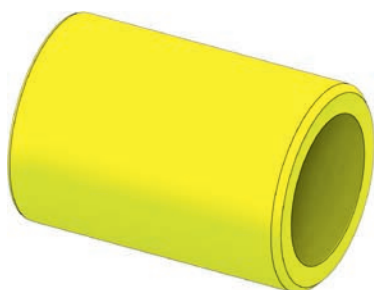
Position-compensating I.D. clamping device

- I.D. clamping device for use as torque
- Run-out error between clamping bore and reference center 0.5 mm

Challenge

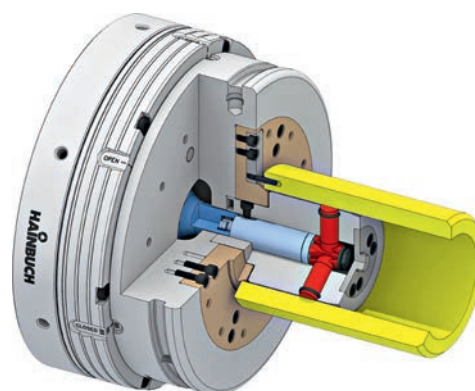
Workpiece Tube shaft
Clamping task Compensating I.D. clamping as torque entrainment
Machining Grinding of the outer contour

- Inner contour as clamping reference with run-out error to the centers
- Run-outs between centers within 5 μm
- Guided rotation must be position-compensating



Results / customer benefits

- Run-outs between centers within 3 μm
- Center must only be aligned once



SAVINGS

- Higher feed rates possible → Time savings: 35 %

Special segmented mandrels



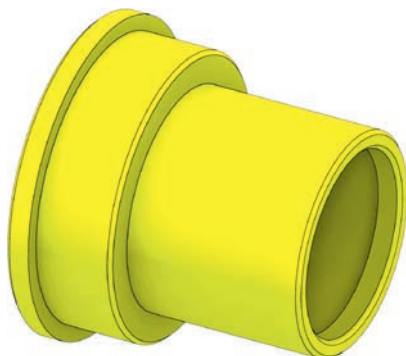
Eccentric mandrel, adjustable

- Mandrel for centric and eccentric machining
- Adjusting process via C-axis of the machine

Challenge

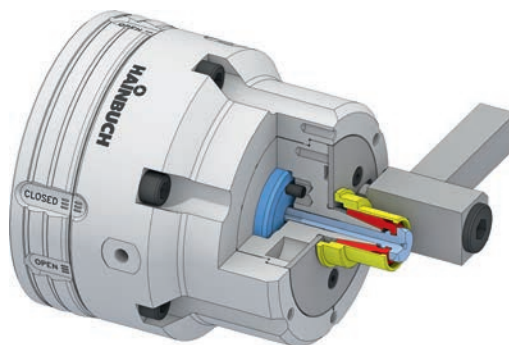
Workpiece Eccentric sleeve
Clamping task I.D. clamping
Machining Turning

- Eccentric mandrel adjustment via the C-axis
- Centric and eccentric machining
- Clamping of different workpieces with one mandrel



Results / customer benefits

- Adjustable eccentric mandrel with maximum eccentric dimension of 1 mm
- Complete machining of the workpiece with one machine



SAVINGS

- Overall process time reduced by approx. 15 %
- Waiting time between the processes reduced to »0«

SPECIAL SOLUTIONS

Special stationary clamping devices



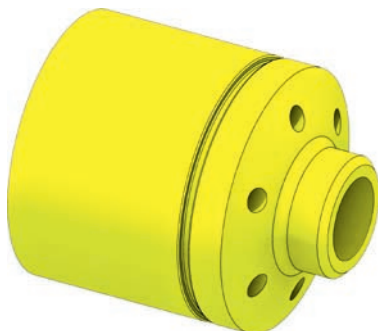
Horizontal stationary chuck

- Hydraulically-actuated stationary chuck that is suitable for 2-sided machining
- High positioning accuracy on the clamping diameter

Challenge

Workpiece **Shaft**
Clamping task **Stationary chuck**
Machining **Milling and drilling**

- Positioning of less than 0.02 mm must be guaranteed
- Accessible from both sides
- High axial machining forces must be safely absorbed



Results / customer benefits

- Manufacturing of both sides of the workpiece in one clamping set-up with process reliability
- Position accuracy of 0.01 mm is achieved



SAVINGS

- Overall manufacturing process time has been reduced by approx. 25 %



TESTit clamping force measuring device

- Special model for axial draw-in force and documentation of the measurement results
- The application area is the testing of zero-point clamping systems

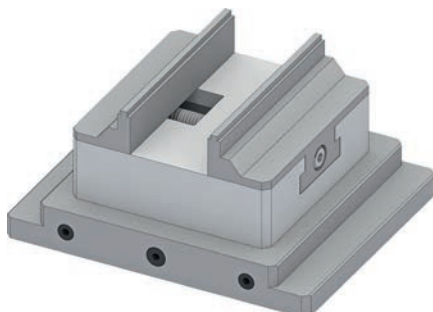
Challenge

Application area Zero-point clamping systems

Application Installation, maintenance, error analysis

Measuring range 0 – 10 kN

- Base plate and carrier pallet [incl. clamping device] of the zero-point clamping system should be tested for function, contamination, and wear on a regular basis
- TESTit simulates the carrier pallet with a draw bolt and measures the axial draw-in force of the base plate



Results / customer benefits

- The actual value of the draw-in force is now known
- Thus timely detection of changes in the draw-in force and the associated contamination or wear
- Active quality monitoring and increased process reliability
- Documentation and archiving of the measurement results



SAVINGS

- Reduction of machine downtimes due to unscheduled maintenance
- No machine crash due to insufficient draw-in force

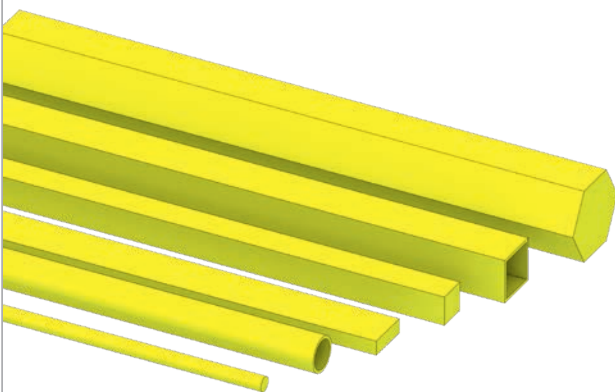


Profile clamping

- For clamping almost every workpiece profile with one clamping head
- With HSW heads the contour is self-producing

Challenge

- Fast availability of profiles is required
- The workpiece should be clamped precisely on its shape



Results / customer benefits

- Fast availability
- Fast set-up
- Inexpensive clamping solution
- Often special clamping devices are unnecessary



SAVINGS

- No special clamping devices are required
- Extremely easy clamping head change-over saves an incredible amount of set-up time



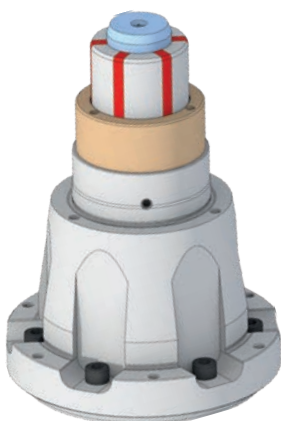
centroteX for gear cutters

- Quick change-over interface for the change of gear mandrels
- Machine adapter is fluid-actuated, mandrels power-actuated via bayonet coupling
- Vertical insert

Challenge

Spannaufgabe **I.D. clamping**
Spannmittel **Mandrels**

- Support height of workpieces: 505 – 515 mm
- Clamping diameter between 15 and 250 mm
- Run-out accuracy on mandrel below 0.01 mm
- Protection against contamination and cooling lubricants



Results / customer benefits

- Fast and versatile change-over of the gear cutter mandrels
- Optimal tension for each workpiece
- Run-out accuracy on mandrel of up to 0.008 mm is possible by alignment
- Central media transfer allows rotation of up to 50 rpm
- Drain holes for dirt and cooling lubricant



SAVINGS

- Greatly reduced set-up time



centroteX for large clamping devices

- Quick change-over interface for the change of jaw chucks up to size 630 and SPANNTOP nova combi deadlength chucks size 100

Challenge

Spannaufgabe O.D. clamping
Spannmittel Jaw chuck & SPANNTOP nova chuck

- Fast and easy change-over of large chucks
- Maximum precision in clamping devices with high own weight



Results / customer benefits

- ROI of quick change-over system < 1 year
- Simplified handling thanks to Monteq mounting aid
- Repeat accuracy ≤ 0.005 mm



SAVINGS

- Set-up time reduced from 100 to 3 minutes