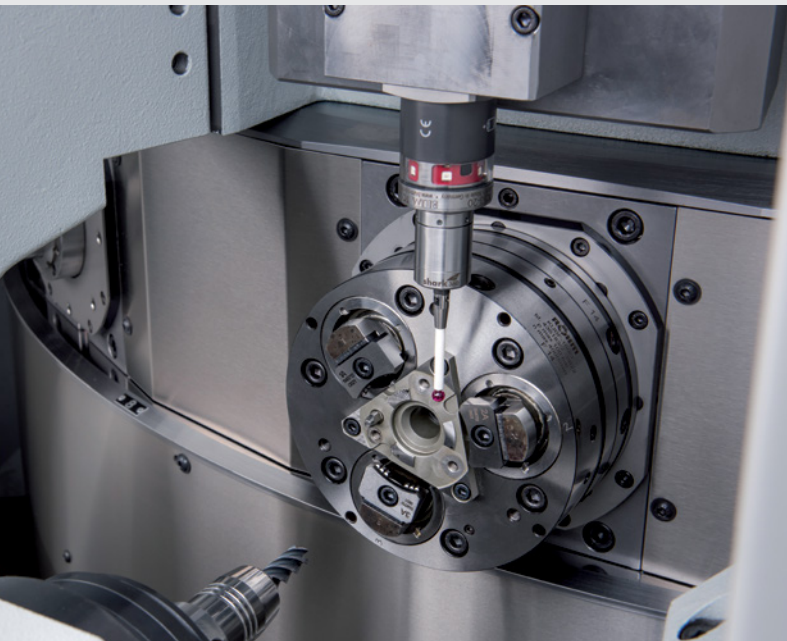




ROTARY TRANSFER MACHINES OF PFIFFNER GROUP

OPTIMAL SOLUTIONS FOR WORKPIECES IN THE HIGH-VOLUME RANGE



IN NETWORK OF GLOBAL PLAYERS

PIFFNER AND WITZIG & FRANK BELONG TO FFG E&A, WHICH IS PART OF THE GLOBALLY ACTING FAIR FRIEND GROUP

It unites 15 German, Italian, Swiss and American traditional manufacturers of turning machines, milling machines and rotary transfer machines. Among other things, the users of FFG products include well-known companies from areas of automotive, aeronautics and aerospace, mechanical engineering, metal machining, energy technology and many other sectors.

UNRIVALLED VALUE FOR MONEY

With the Piffner and Witzig & Frank brands, we have been one of the world's leading suppliers of rotary transfer systems for the volume production of mechanical precision parts for decades. We develop highly automated turnkey solutions for specific parts production tasks that also meet the highest requirements on machine capability. We guarantee our customers long-term success through low operating costs, flexibility and digital integration of our systems. No matter for which application: the Piffner Group has the optimum solution for rotary transfer machines in the high-volume sector.

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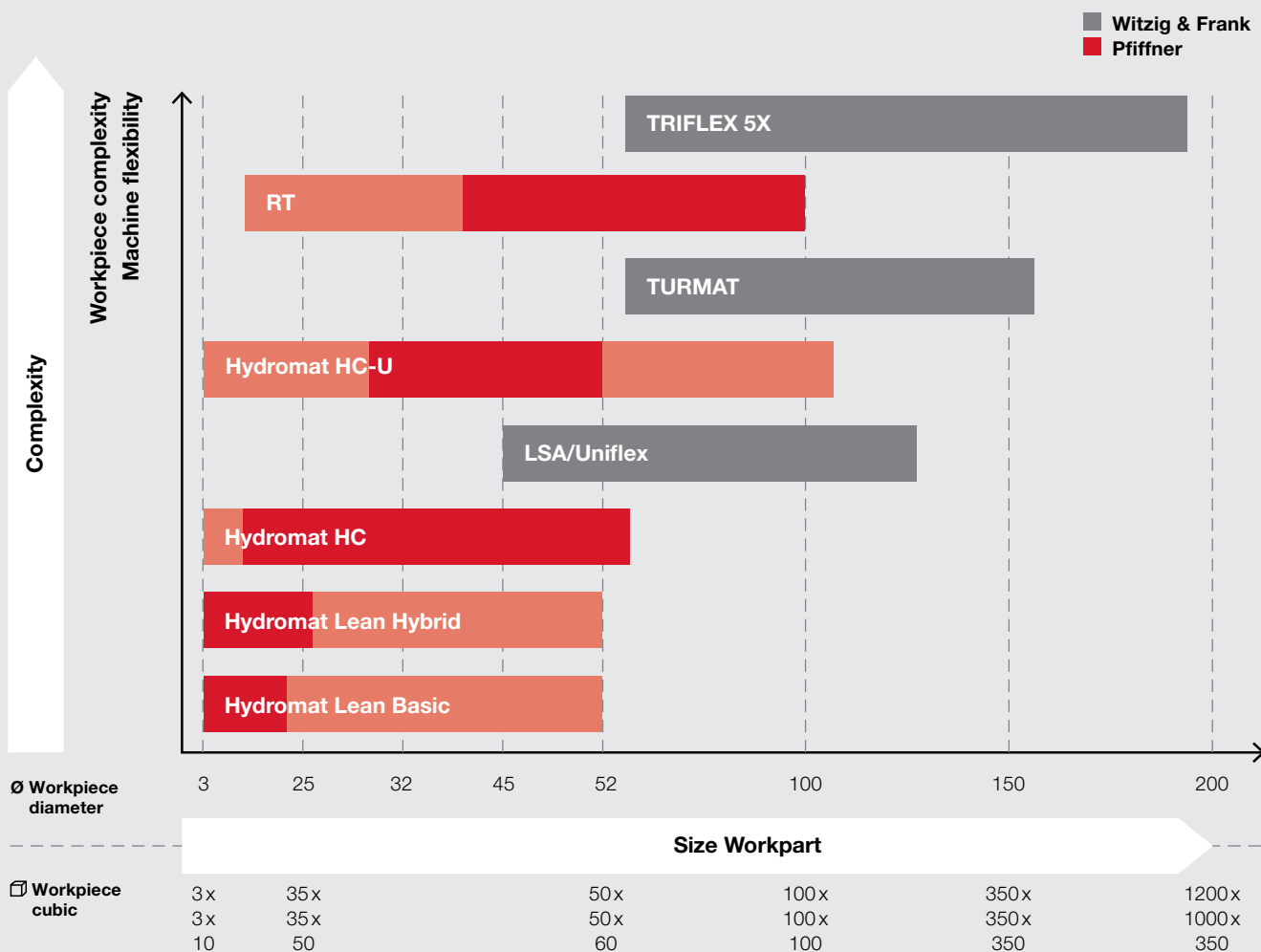
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FLEXIBLE ROTARY TRANSFER MACHINES FOR THE PRODUCTION OF HIGH-PRECISION MASS-PRODUCED PARTS

The rotary transfer machines from Pfiffner and Witzig & Frank offer the greatest possible flexibility.

The range of rotary transfer machines from the Pfiffner Group covers all requirements for the series production of complex workpieces. Our rotary transfer machines are used for machining from bar, from coil or with automatic part feed. They guarantee high-precision, simultaneous machining of the workpieces and consistently high part quality at all stations. The equipment with machining stations in horizontal and vertical arrangement enables machining of large numbers of parts with the highest cycle rates just in time. Thus, 80 % of the applications run with a cycle time of only six to twelve seconds!

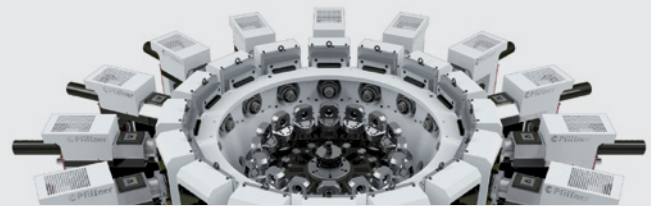


PIFFNER PRODUCT PORTFOLIO



PIFFNER RT Rotary Transfer Centre
Machining of complex workpieces

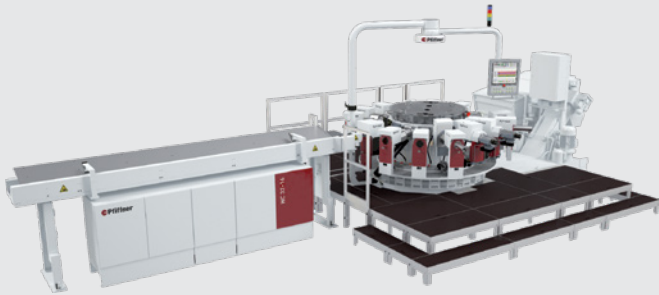
- Uncompromising machining, even of high-strength materials
- 6-side machining
- 12 intelligent workpiece spindles
- Up to 18 machining modules
- Fully CNC-controlled with Bosch MTX
- Machining can be done from bar as well as from blank
- The high modularity of the RT 100-12 offers almost endless configuration options for optimum and most economical production



PIFFNER HYDROMAT® HC-U EPICplus
Flexible multi-way machining

- 5-side machining in one clamping, thanks to swivelling satellite chucks
- 12, respectively 16 stations machine, up to 24 machining units
- Clamping pressure hydraulically infinitely variable
- Completely CNC-controlled with Bosch MTX
- Short cycle times, maximum output, minimum set-up time
- Ideal for workpieces with complex external geometry
- Machining can be done from bar as well as from blank

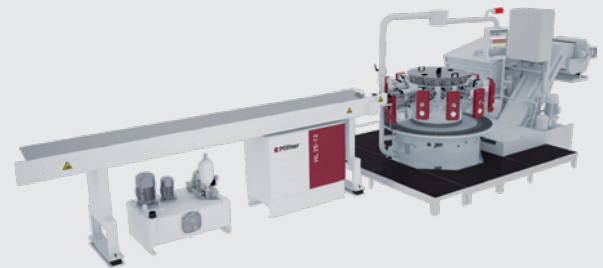




PFIFFNER HYDROMAT® HC EPIC^{plus}

Benchmark for series production

- 5-side machining
- Up to 24 machining units
- For round and cubic workpieces
- Completely CNC-controlled with Bosch MTX
- Short cycle times, maximum output, minimum set-up time



PFIFFNER HYDROMAT® LEAN

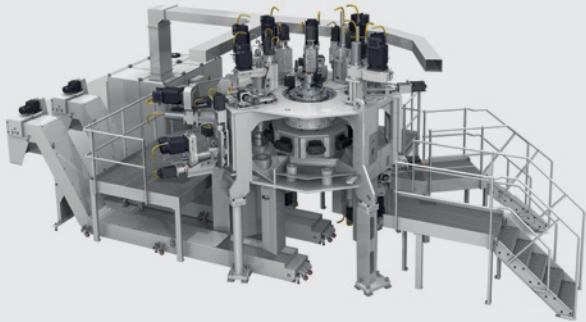
Reduced to the essentials

- Controls for max. 4 machining stations resp. max. 12 CNC axes (LEAN^{hybrid})
- CNC-controlled with Bosch MTX
- PLC control for intuitive operation
- Short cycle times, maximum productivity
- Hydraulic drive technology for rotary indexing table and feed axes
- Highest indexing table precision through Hirth toothing
- Modular machine concept (LEAN^{basic} and LEAN^{hybrid})



WITZIG & FRANK

PRODUCT PORTFOLIO



WITZIG & FRANK TURMAT

Maximum productivity

- 3-/5-side machining with an optional B-axis
- 4-12 machining stations
- Up to 33 machining units working in parallel
- Cycle time parallel loading/unloading
- Pick-up turning unit
- Tool changer
- Face turning heads
- Internal coolant supply

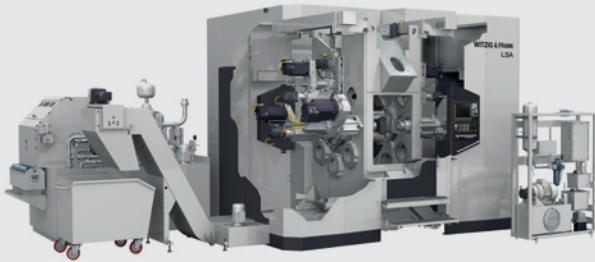


WITZIG & FRANK TRIFLEX 5X

Maximum flexibility

- 6 sequential stations for machining of rotationally symmetric workpieces resp. for cubic workpieces
- Simultaneous 5-axis machining without reclamping
- Five 8-fold controlled crown turrets
- Up to 40 freely assignable spindles
- Cycle time-neutral loading/unloading
- For medium and large quantities
- Standard automation module with robot and drawer magazine





WITZIG & FRANK LSA

Horizontal rotary transfer machine

- Simultaneous 3-side machining in one clamping
- 4-10 stations
- Up to 21 machining units working in parallel
- Machining of demanding materials
- Adaptable to modular individual requirements e.g. by pick-up turning units, tool changers, face turning heads and an internal coolant supply system

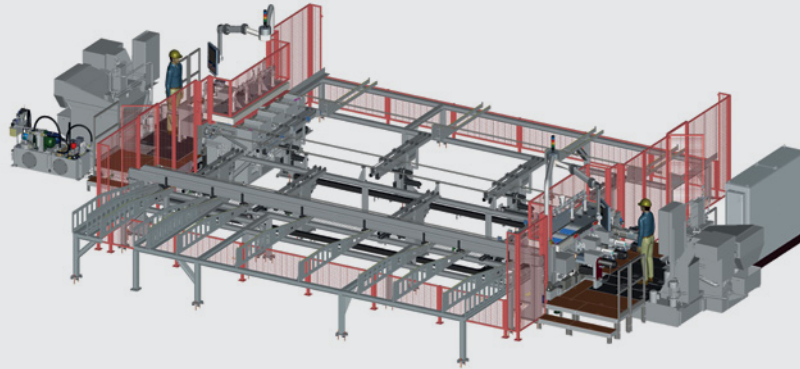
WITZIG & FRANK LSA UNIFLEX

Maximum precision

- 4 stations
- Up to 6 machining units (horizontal and vertical)
- 1-spindle and as a duo in 2-spindle version
- Up to 3 fully CNC-controlled turning units
- As standard rotary indexing centres, they offer high flexibility through modular 3-axis modules with tool changer and up to 3 fully NC-controlled turning units
- High machine availability, even with dry machining of the workpieces



PIFFNER KEY PARTS



SUCKER-ROD – HIGH FLEXIBILITY AND QUICK CHANGEOVER

Endomat 4.0®

The Endomat 4.0® is a customised solution for automatic, clocked processing of the ends of bar blanks.

- End machining of bars on both sides with integrated material transport
- 8 machining stations + 2 alignment stations
- Bar length: 7 500 - 9 500 mm
- Fully CNC-controlled with Bosch MTX
- Automatic alignment of the bars
- Bar handling with the latest linear technology
- Short cycle times, maximum output, minimum set-up time
- In-process measuring
- High flexibility, very quick changeover to different sizes and lengths possible
- Excellently suited for machining pump rods (Sucker Rod)
- Pump rod sizes:
5/8" (15.88 mm), 3/4" (19.05 mm), 7/8" (22.23 mm),
1" (25.4 mm), 1 1/8" (25.58 mm)



All pump rods manufactured to API standard



GASOLINE DIRECT INJECTION (GDI) PUMP BODY

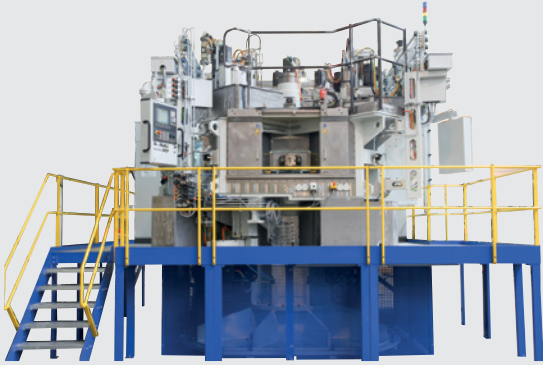
The RT100-12 rotary indexing centre from Pfiffner is the most economical solution for mass production of high-pressure pump housings

- Highest flexibility and mass production in a single machining system
- High-pressure pump housings in a wide variety of versions
- Complete machining from bar or blank
- Over 350 measuring features
- Workpieces made of high-strength and stainless steel
- The RT 100-12 is devised for the shortest possible cycle times
- Automatic feeding of the raw material
- Fully automatic loading and unloading of workpieces
- Highest dimensional accuracy due to IN-PROCESS MEASUREMENT
- Over 50 different tools in operation
- Highest machine availability through customised machining processes



WITZIG & FRANK

KEY PARTS

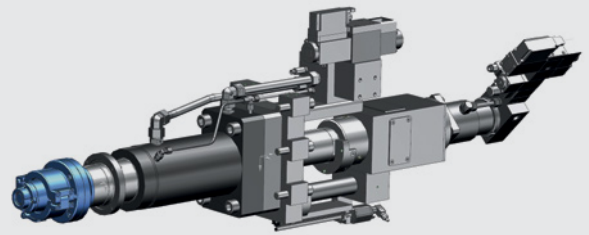
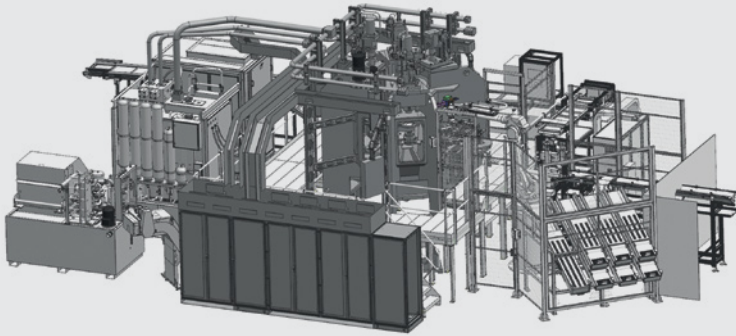


DIFFERENTIAL HOUSING

Productivity and flexibility tailored to your needs

- Only one clamp needed for the most important workpart-features
- Smallest available floor-space requirement
- Highest achievable workpiece quality
- Global reference projects
- Lowest cost per part
- Cycle time per part: ~ 45 seconds





HYBRID MACHINING EVERY SECOND

TURMAT rotary transfer machine with complete periphery

- Sawing device for the raw material
- Fully automatic bulk material feeding
- Complete machining of forming workpieces:
Forming, upsetting, expanding, stretching, roller burnishing,
tube end machining
- Large workpiece variety on one TURMAT
- Production in UNO, DUO and Quattro clamping
- Machining of steel, stainless steel and copper materials
- Piece times $\leq 1s$ realisable
- Workpiece \varnothing up to 4" ($\sim \varnothing 100$ mm) realisable
- Forming forces from 150 kN (15 to) to 1000 kN (100 to) realisable
- Fully NC controlled / Hydraulic linear axes (HLA)
- Standard interface for picking up forming tools
- Tube preparation, end machining, necking
- Forming of solid material



blank



finished part



VDF BOEHRINGER



HESSAPP



MORARA

Pfiffner



TACHELLA

Witzig & Frank

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About FFG Europe & Americas

FFG Europe & Americas unites great traditions of the German, Italian, Swiss and American machine tool industry in one group and offers with its brands VDF Boehringer, Corcom, Digital Factory, Hessapp, IMAS, Jobs, MAG, Modul, Morara, Pfiffner, Rambdaudi, Sachman, Sigma, SMS, Tacchella and Witzig & Frank, an outstanding portfolio of turning, milling, grinding and gear-cutting machines and a unique know-how base. Since 1798, these brands have been contributing to progress in, and today, they are regarded as reliable and innovative suppliers to the automotive and commercial vehicle industries, aeronautics and astronautics, mechanical engineering, metalworking, rail transport technology, energy technology and heavy industry. As an independent unit, the premium manufacturers in the FFG company benefit from the size and possibilities of the worldwide group.

