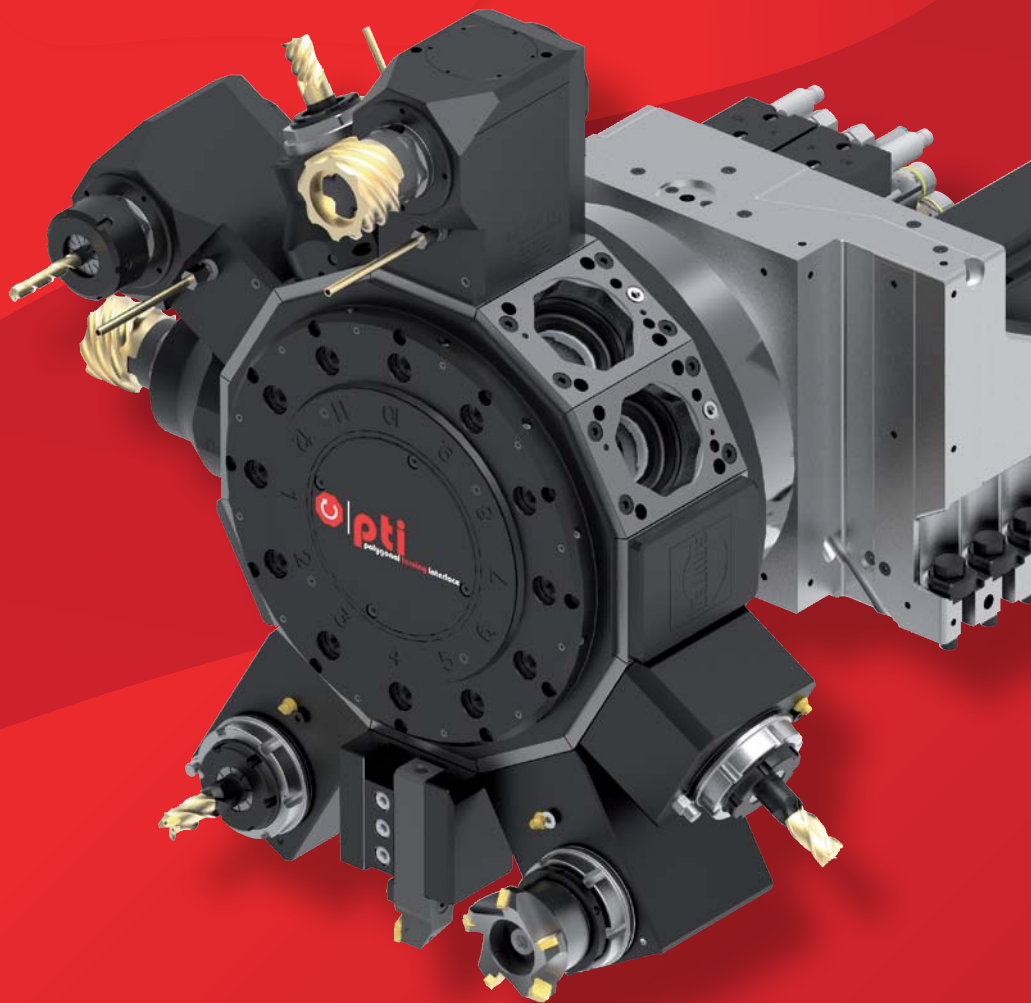


The pti working group presents

8-fold polygonal tool interface for
turning machines



Turret interface pti

meets the requirements of flexible production

Uniformity, performance and flexibility are the prominent features of the new turret interface pti (polygonal turning interface). As a unified mechanical interface, this solution provides the preconditions for the flexible equipment of modern turning machines with precise, high-performance tool holders and driven tools. The media supply (coolant, air) and the data and energy transfer complete the pti interface.

Merkmale

Positive locking (polygon)

- **torsional rigid**

Face contact and clamping system

- **bending rigid**

Tapered polygon shank

- **repeatable**

Large shaft diameter DTH

- **powerful coupling**

Supply of coolant and sealing air

- **technologically comprehensive**

Tool holders are 180° convertible

- **function expanding**

Data and power transmission

- **equipped for i4.0**

Small dimensions

- **compact**

Manual quick change

- **cost-saving**

Automatic clamping possible

- **suitable for lightly-manned operation**

Consideration of tool adapters

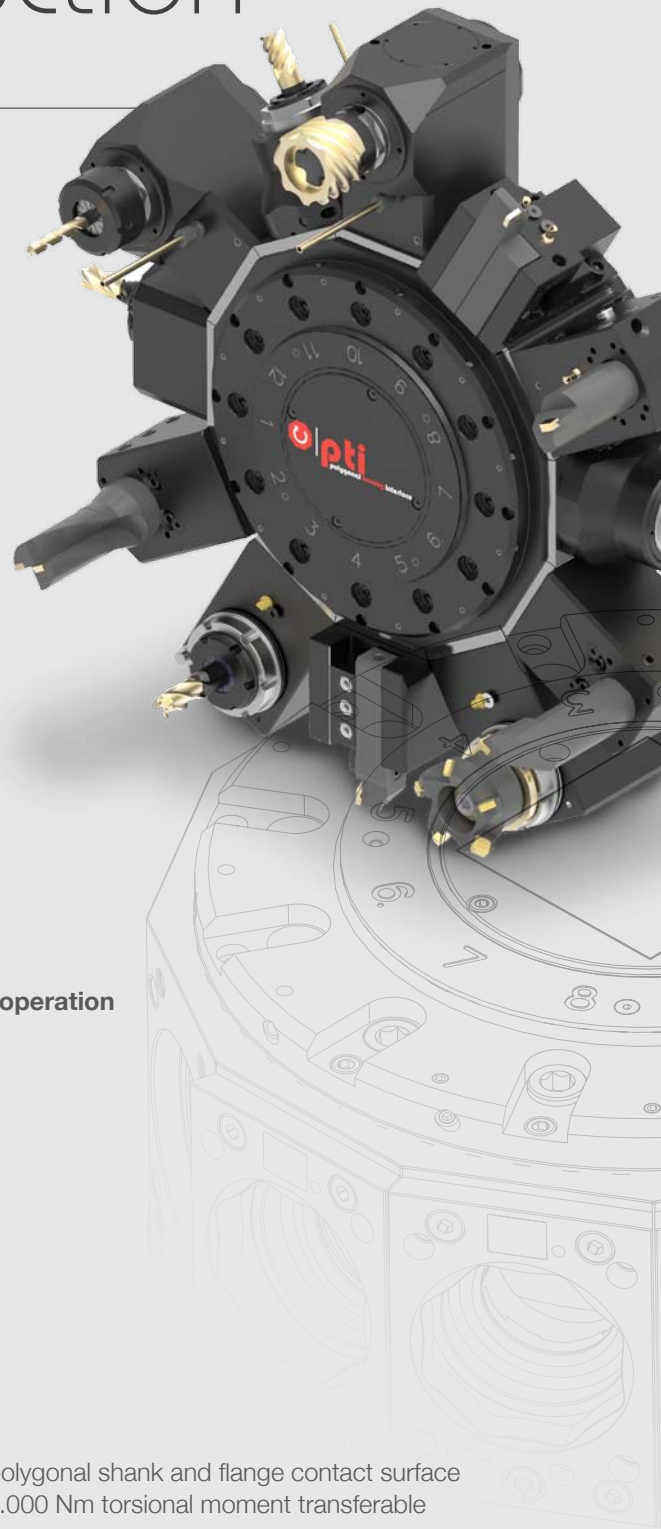
- **universal**

Envisaged for standardization

- **uniform**

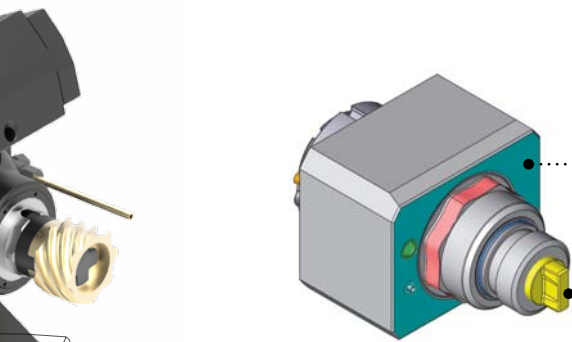


8-fold polygonal shank and flange contact surface
pti65: 3.000 Nm torsional moment transferable





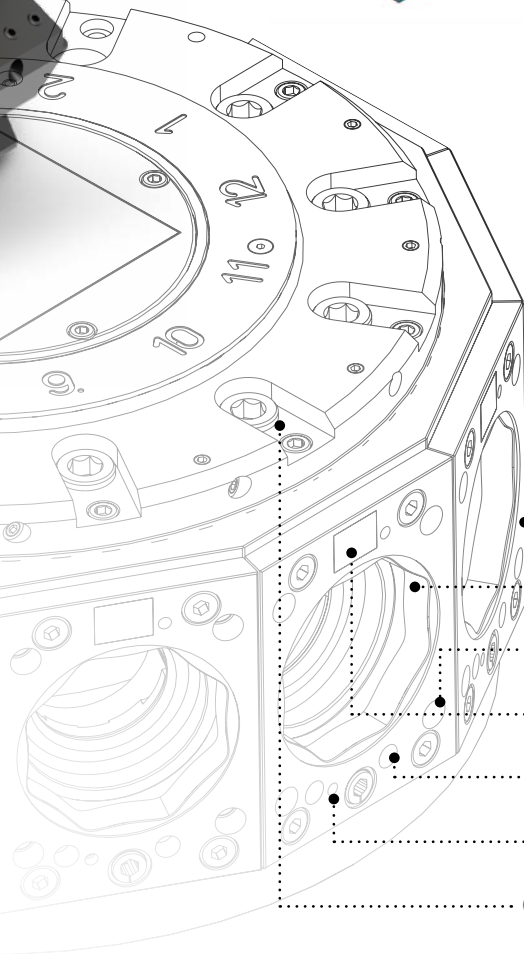
Three pt-i-sizes



Face contact

25° Clamping cone at the shank end

Coupling with wedge-shaped dihedron



Elements of the interface

SW 340/280/220 for pt-i 65/54/42

8-fold tapered polygon

4x mounting thread

Data and power transmission

Coolant bore

Sealing air bore

Quick-clamping system

Leading-edge technologies

united in pti-interface



WTO – holds tight precisely and rotates

WTO has developed toolholders with the new pti interface and introduces a program for static tool holders and driven tools in the pti-sizes. Based on the design of the interface polygon, the pti shank and holder body form a precise unit with all the necessary elements for mechanical power transmission and media supply. The tool receivers of the precision tool holders are matched to the pti sizes and make the outstanding performance of the pti interface technologically feasible at the cutting edge.

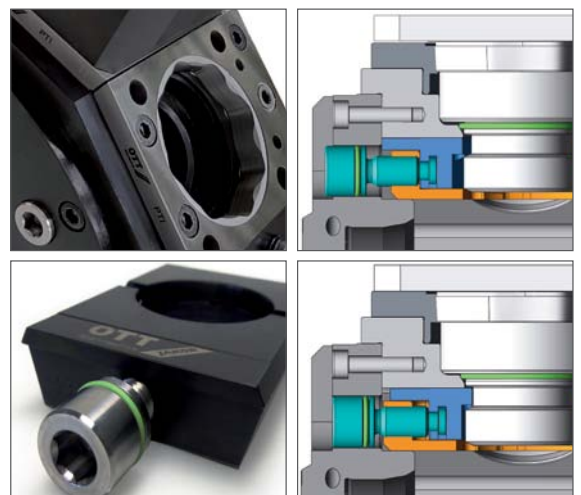
Features of the driven pti-toolholders are the large drive shaft and the wedge-shaped coupling, with which 85 Nm torque (pti65) can be transmitted.



Ott-Jakob – clamps powerful and accurate

The simply constructed, compact pti clamping system from Ott-Jakob clamps the tool shaft centrally with high precision over a 25° clamping shoulder. The high pull-in forces (80 kN with 40 Nm actuation torque at pti65) give the pti system a high bending load capacity and the polygon a tight fit for high torque transmission. The quick change system with manual operation on a screw can also be used for automatic clamping.

Ott-Jakob completes the range of pti products with the manufacturing of the polygon flanges. They are fitted with a friction-enhancing coating technology that provides power transfer from the polygon flange to the turret disk.





Sauter – receives and drives

Sauter has designed the pti radial turret with a front cover which allows easy mounting of the pti clamping system. The compact design results in a width across flats of only 340 mm for pti65 with a 12-fold turret disc.

The turret construction allows both the use of Speed-Drive® and Torque-Drive® technology. Despite the installation of the components in a confined space, a stable turret design has been created, with which the performance of the pti interface can be implemented to 100%. All pathways required for the media supply are integrated as well. A strong drive for DTH (85 Nm) gives the pti65 turret a unique milling performance.

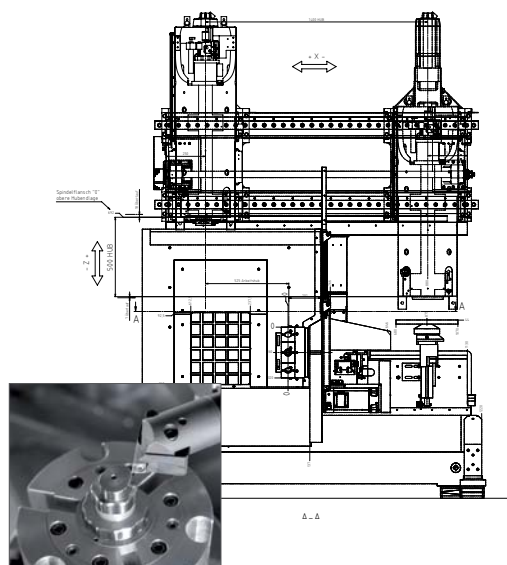
In addition to the tool turret, the Sauter product range also includes tool holders and driven tools with a pti interface.



Weisser – turns faster and out of round

Weisser completes the team of the pti-working group and is the first manufacturer to integrate a turret in a turning centre. With a power of up to 80 kW and a torque of 1,250 Nm, the used machine is the basis for a solid implementation of the performance of the pti65 interface.

As a pioneer of non-circular turning technology Weisser is a manufacturer of pti parts. Both semi-finished tools with pti shank and pti receivers are produced on Weisser non-circular turning centres.



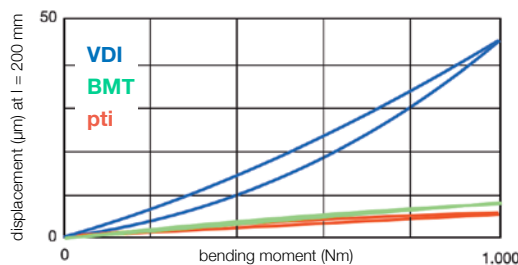
Peak performance

powerful, accurate and
cost-efficient

Scientific certificate of performance

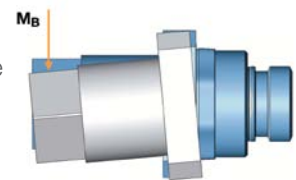


BENDING

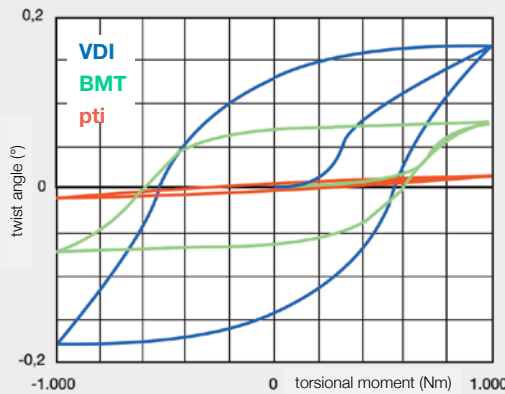


pti

- 10x higher bending resistance than VDI
- higher bending resistance than BMT

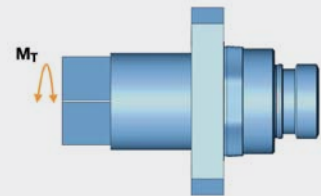


TORSION

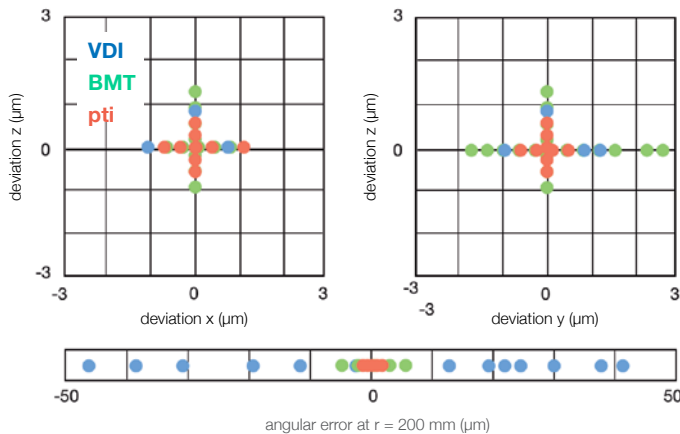


pti

- 10x higher torsional stiffness than VDI
- 5x higher torsional stiffness than BMT

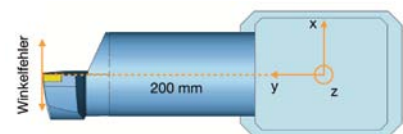


REPEATABILITY



pti

- with $\pm 2\mu\text{m}$ at 200 mm projecting length
- more than 10x as accurate as VDI
- double as accurate as BMT

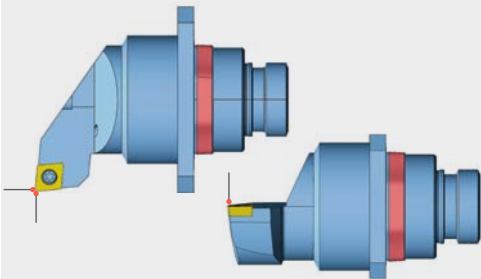


Increasing of productivity and reduction of unit costs



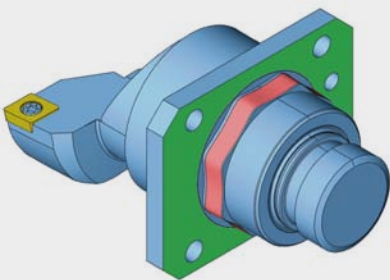
pti - the turret interface with quick change system

Saving of non-productive time by quick manual tool change



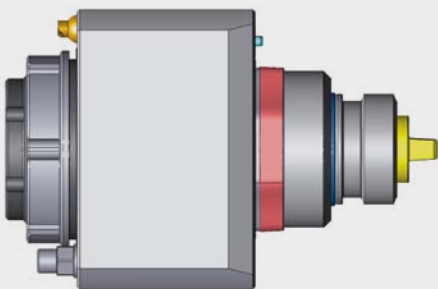
pti - the high precision turret interface

Saving of non-productive time by omission of measuring cuts and alignment processes



pti - the high loadable turret interface

Increased productivity through higher rigidity, bending load capacity and extremely high torque transmission



pti - the turret interface with the powerful drive

More than 30% higher milling performance with DTH due to strong drive shaft and improved coupling

pti working group

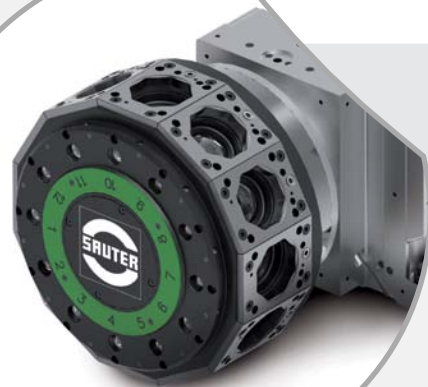
brings new interface to the market

pti-working group

WTO



SAUTER
Mit uns dreht die Welt!



OTT
Spanntechnik **JAKOB**



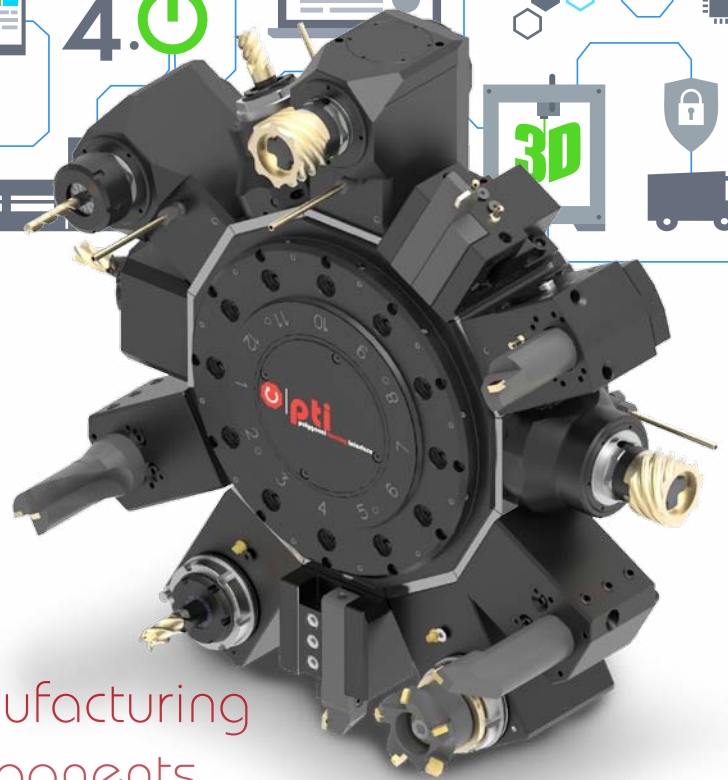
WEISSER

Industry 4.0 development requires an integral view of flexible production systems. The design of uniform mechanical interfaces is just as necessary as the definition of uniform interfaces for the collection and processing of data in the course of digitisation.

With the pti interface for tool turrets in turning machines, the **pti-working group** creates the preconditions for limiting the variety of mechanical tool interfaces and contributes to designing flexible production systems according to requirements.

The **pti-working group** has developed an interface in which mechanics and media supply are coordinated and space for elements of data and energy transfer has been created. The new, future-oriented interface is suitable for its outstanding performance both in series production and for flexible parts production and is introduced in various areas of industry.

Initiated by the four protagonists of the **pti-working group**, the pti interface is on its way into the market and will be standardized concurrently. Thus, it is open to all interested parties and promotes the competition in the combination „uniform interface“ and „individual product“ for the benefit of the users.

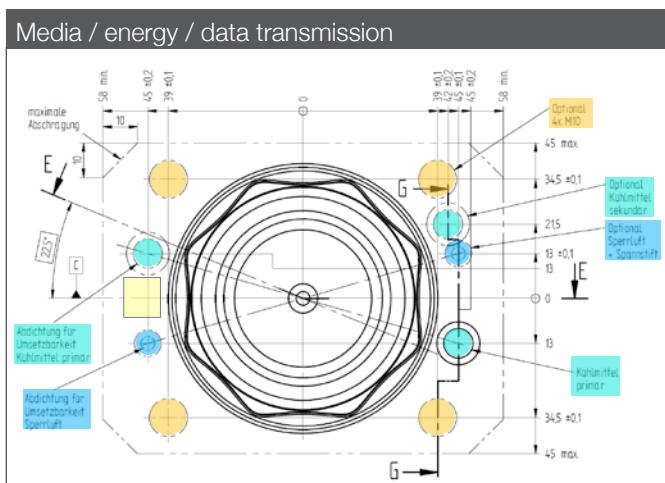
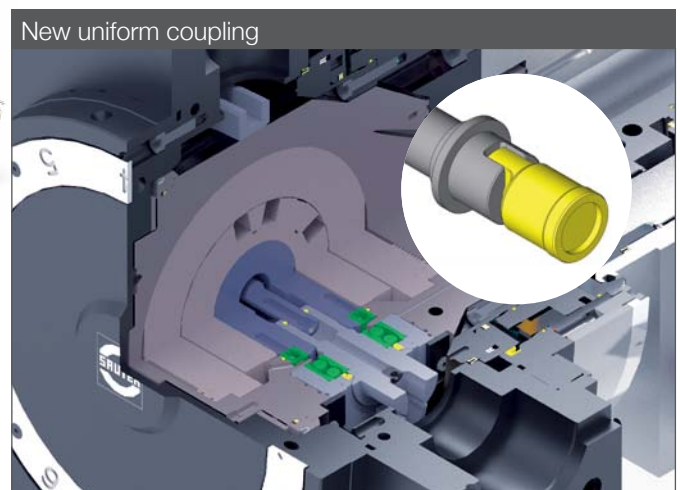
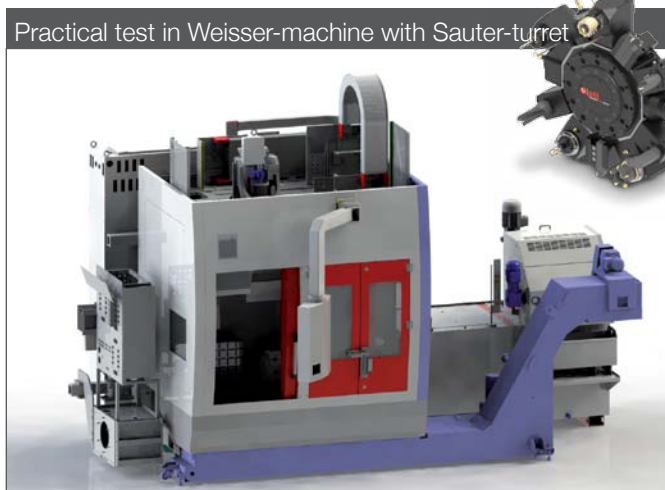


Automotive parts manufacturing
Manufacturing of components
Medical technologie
Watchmaking industry
...

„Standardization of a uniform coupling for driven tools in turret lathes“

Project REKUNORM

- The funding project REKUNORM closes the last gap in the design of the new turret interface.
- Ott-Jakob, Sauter, Weisser, WTO and the WZL are developing a uniform DTH coupling for axial and radial applications.
- Further tasks in the project are:
 - Development of the model series (pti 65, 54, 42).
 - Definition of interfaces for media / energy / data transfer (cooling lubricant, sealing air, electrical contacts).
 - Series testing in the experimental machine and in the industrial environment.
 - Development of a proposed standard for tools, receivers and couplings.



Supported by:



Bundesministerium
für Wirtschaft
und Energie

In cooperation with:



pti-working group

Proposed standard

After completing the most important development stages of the pti interface, defining a series and demonstrating the performance, the pti-working group has developed a proposal for a standard.

The three-part proposal includes the tool shanks (part 1), the tool receivers (part 2) and the couplings for driven tools (part 3). The proposed standard will be submitted in two stages (parts 1 and 2 in 2018, part 3 in 2019) and, with the support of the DIN and VDW committees, transferred directly to a DIN standard.

The pti-working group has developed three sizes of a standard series, which meet the industrial requirements by different styles.


The introduction and standardization of pti is accompanied by an open group of experts, to which the pti-working group invites further interested parties. Information is available from the partners of the pti-working group and the WZL.

DEUTSCHE NORM Vorlage: Oktober 2018

	Kegelig polygonale Schnittstelle mit Plananlage Teil 1: Werkzeugschäfte Form A; Maße	DIN 69xxx-1
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ICS 25.060.20

Tapered polygonal interface with flat contact surface — Part 1: Tool shanks type A; Dimensions
Interface polygonale conique à surface de contact plane — Partie 1: Queues d'outils type A; Dimensions

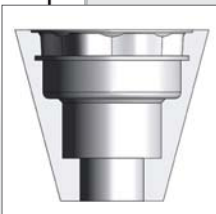


DEUTSCHE NORM Vorlage: Oktober 2018

	Kegelig polygonale Schnittstelle mit Plananlage Teil 2: Werkzeugaufnahmen Form A; Maße	DIN 69xxx-2
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ICS 25.060.20

Tapered polygonal interface with flat contact surface — Part 2: Tool receivers type A; Dimensions
Interface polygonale conique à surface de contact plane — Partie 2: Récepteurs d'outils type A; Dimensions

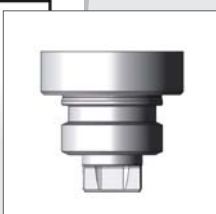


DEUTSCHE NORM Vorlage: Oktober 2018

	Kegelig polygonale Schnittstelle mit Plananlage Teil 3: Kupplungen Form A; Maße	DIN 69xxx-3
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ICS 25.060.20

Tapered polygonal interface with flat contact surface — Part 3: Coupling type A; Dimensions
Interface polygonale conique à surface de contact plane — Partie 3: Couplage type A; Dimensions



Supported by
the DIN Working Committee
Interface Machine-Tool
NA 121 Standards Committee
Tools and Clamping Devices (FWS)



NA122 Standards Committee
Machine Tools (NWM)



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