

TURRET INTERFACE **PTI**

Clamping Technology for the Standardized Interface

OTT
Spanntechnik

JAKOB

LONG-LIFE
CLAMPING
TECHNOLOGY
I N S I D E



EMO Hannover 2023

mimatic[®]

Tool Systems

Your Partner For Clever Tooling





CLAMPING SYSTEM



RECEIVING FLANGE



CLAMPING FORCE
ADAPTER



MAIN



- **High Torsional Stiffness**
Positive-locking fit (polygon)



- **High Bending Rigidity**
Facing system and clamping system



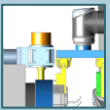
- **High Repeatability**
Tapered polygon shank



- **Manual quick change**
Savings in non-productive time



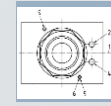
- **ISO Standardization beginning of 2024**
Globally standardized interface



- **Automatic clamping in preparation**
Suitable for low-manned operation



- **Large shaft diameter**
DTH with powerful coupling



- **Supply of coolant and sealing air**
flexible media supply



- **Data & energy transmission**
equipped for i4.0



- **Suitable for radial and axial turrets**
Universal suitability for all machines

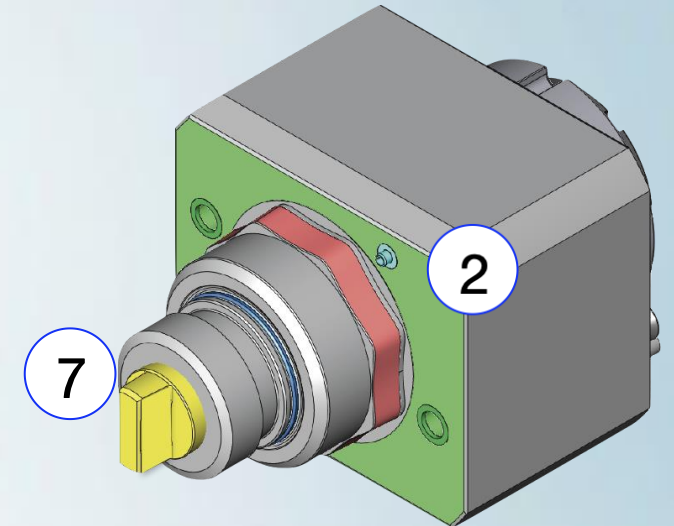
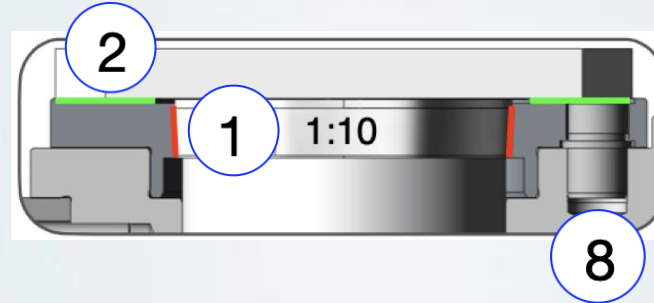
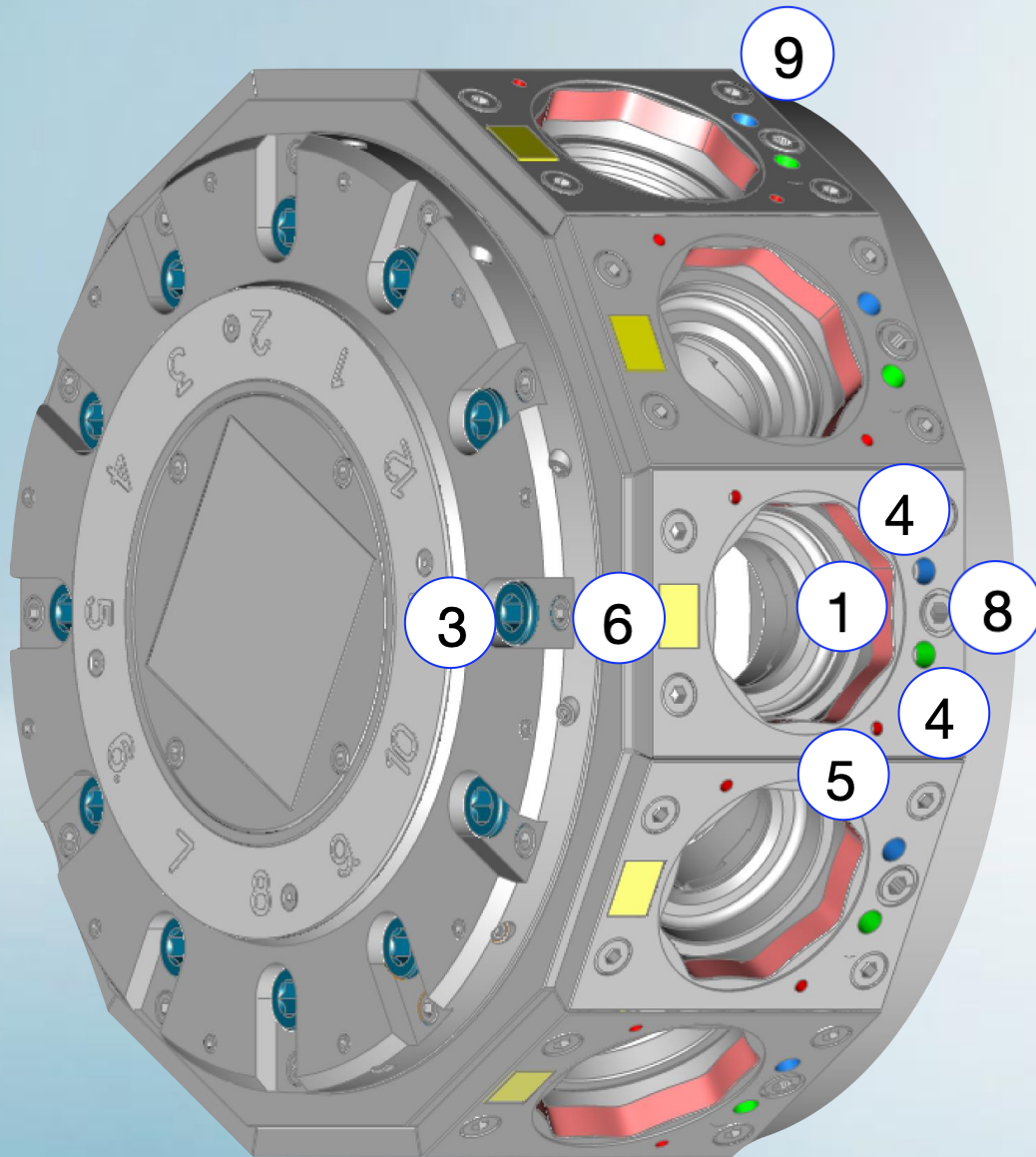


- **Interface symmetry for 180° installation**
Functional extension for tool holder



- **Small Size**
Compact use in small turrets





1 8-fold conical polygon

2 Contact face

3 Quick-change system

4 Coolant bores

5 Sealing air hole

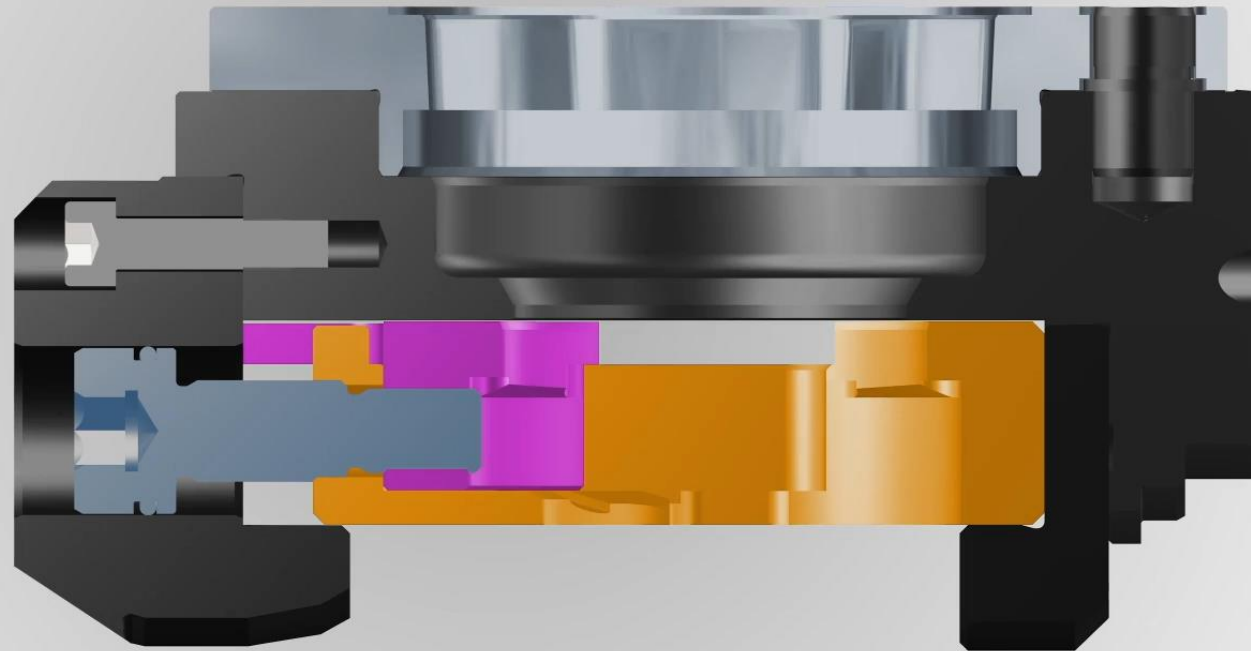
6 Area for energy and data transfer

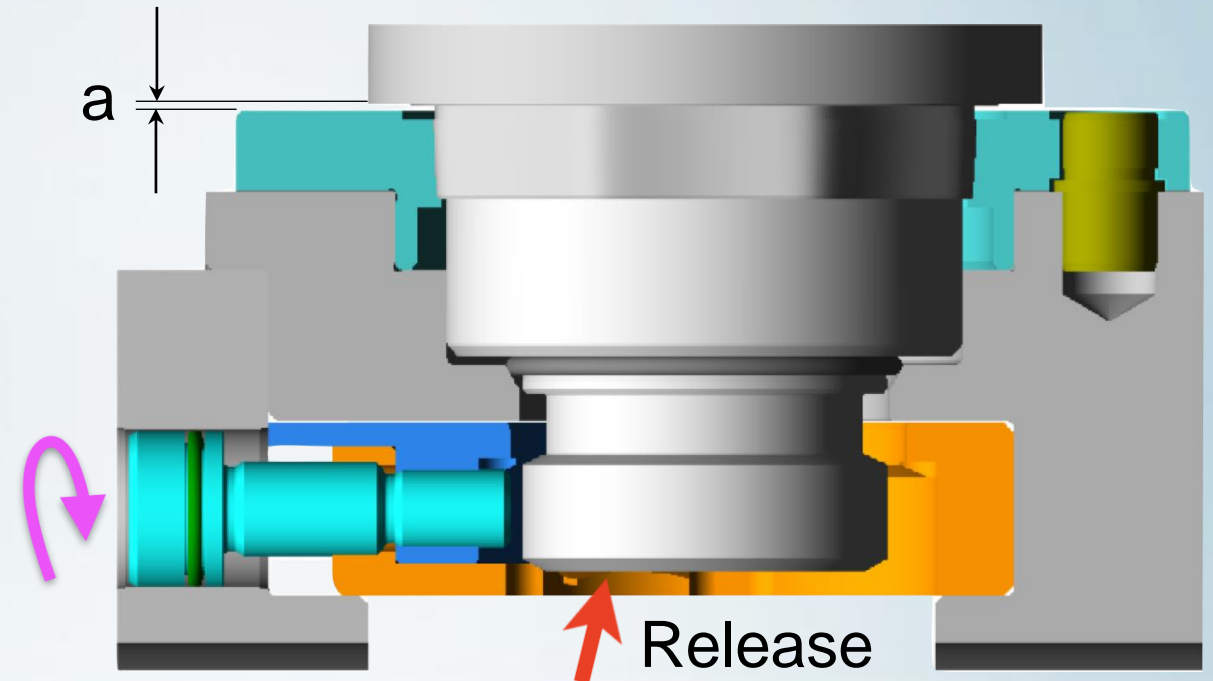
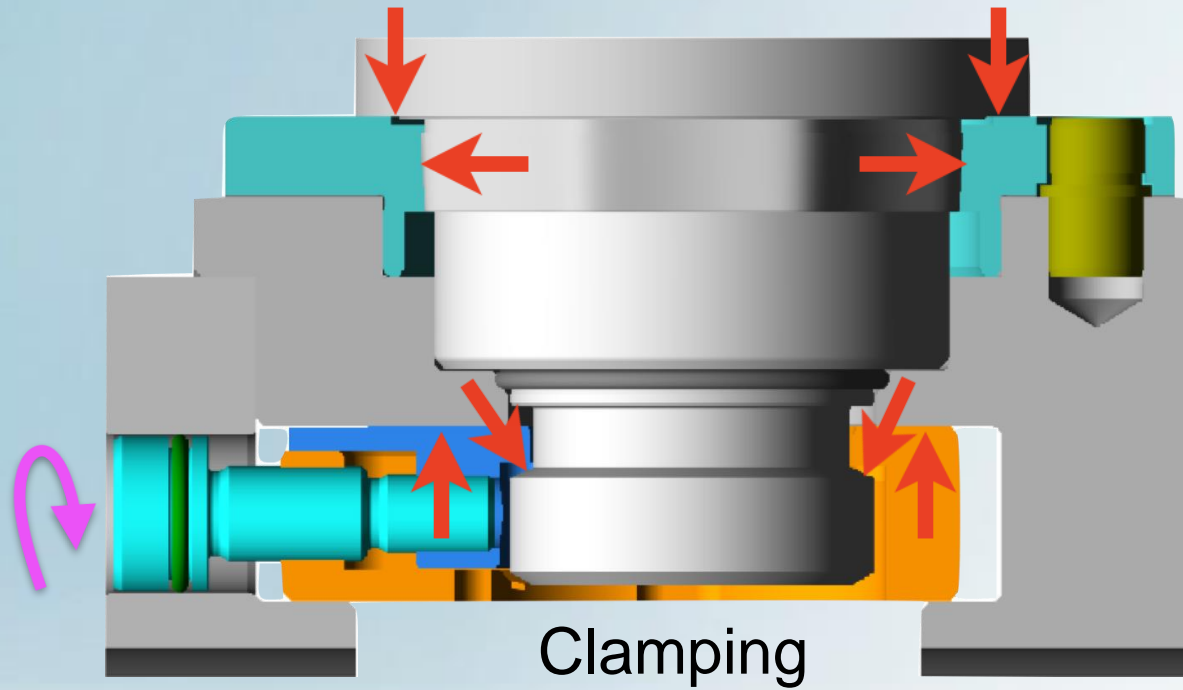
7 Coupling with double flat

8 Eccentric bolt for flange alignment

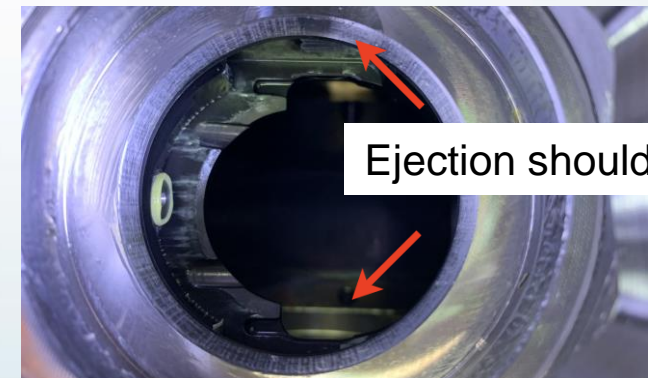
9 SW 220/280/340
for PTI 42/54/65
(SW = Width across flats in
mm, 12-fold turret)



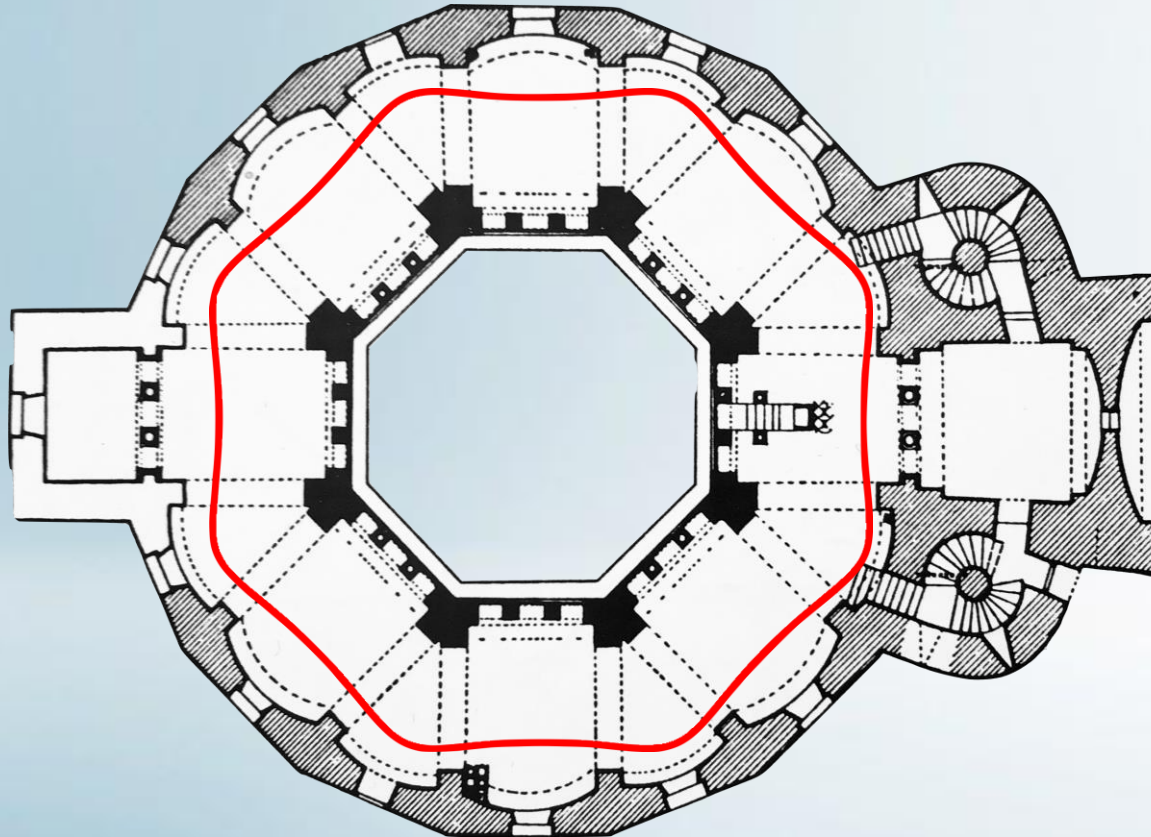




PTI Size	42	54	65
Recom. clamping force (kN)	35	50	70
Clamping torque (Nm)	18	25	35

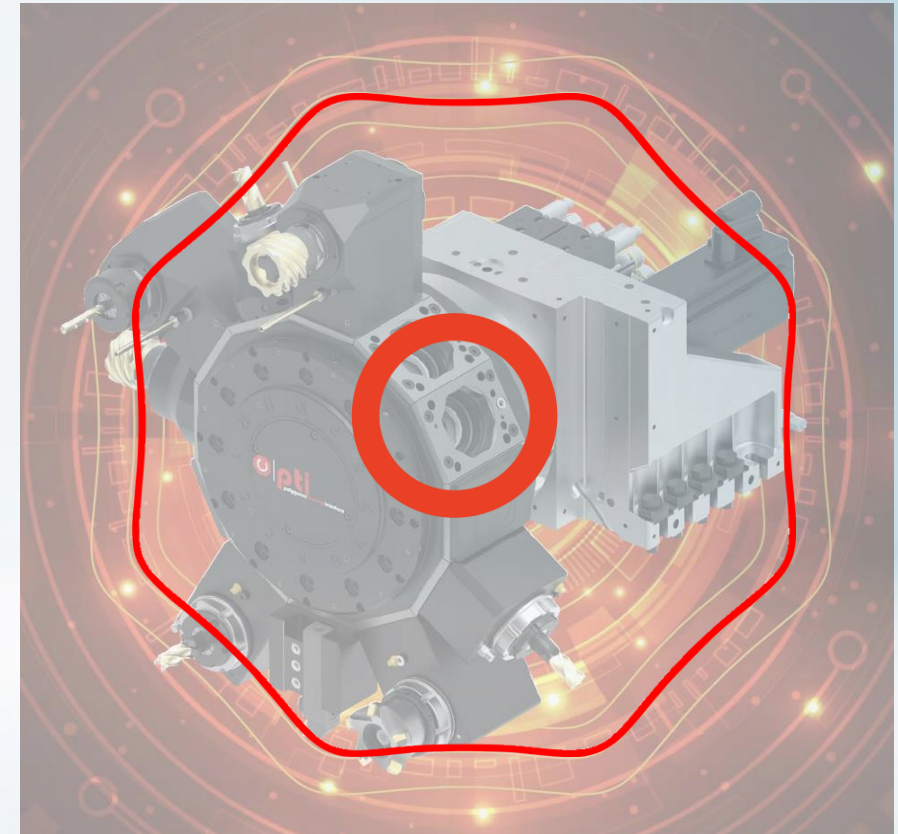


Oktogon Layout



Charlemagne's Palatine Chapel,
Centerpiece of Aachen Cathedral, around 800 A.D.

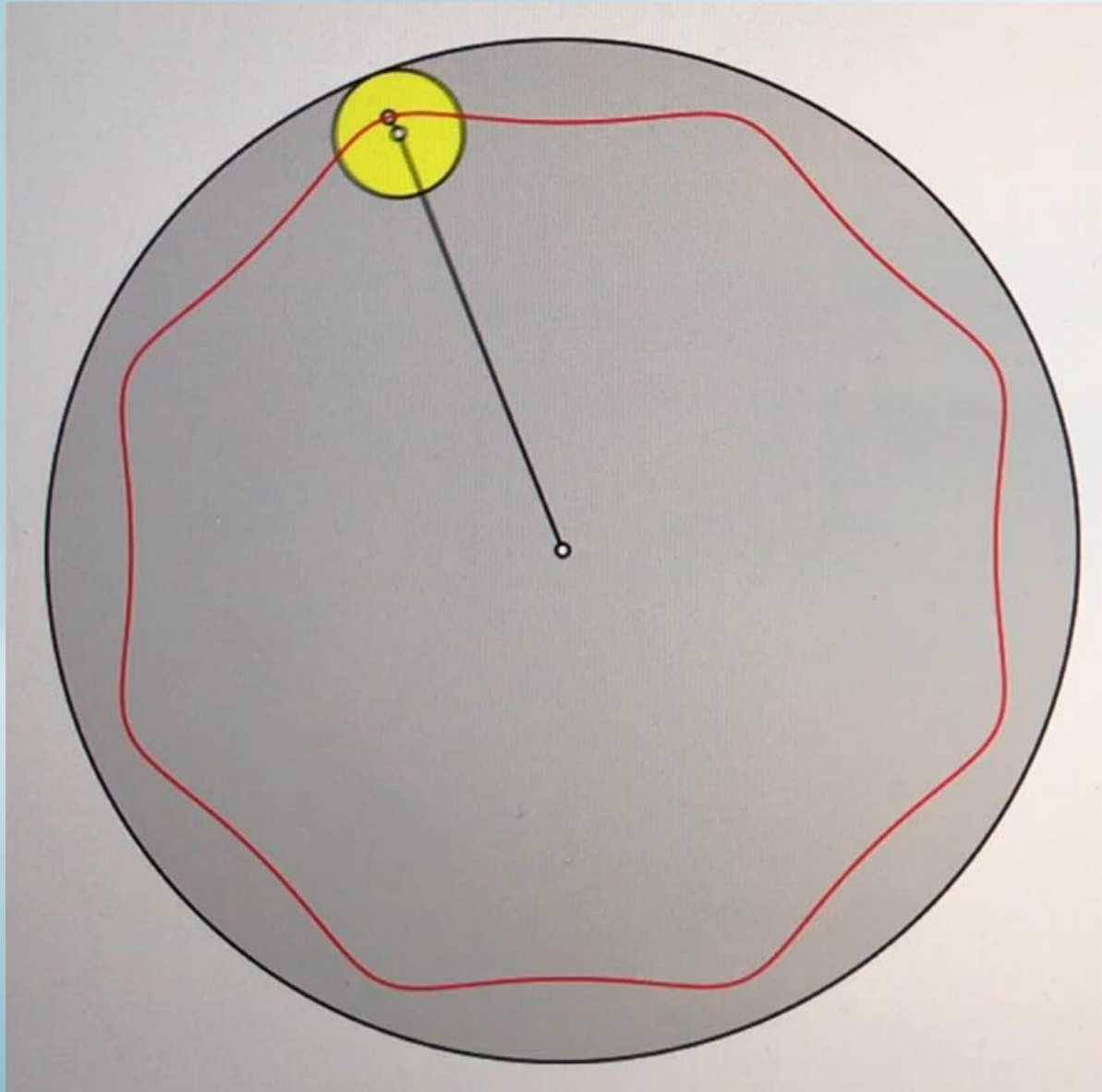
8-fold Polygon



Basic form of the PTI interface,
developed with WZL Aachen, 2014-2019 A.D.



MAIN



$$x(\varphi) = r \cdot \cos(\varphi) - e \cdot \cos[(n-1) \cdot \varphi]$$

$$y(\varphi) = r \cdot \sin(\varphi) + e \cdot \sin[(n-1) \cdot \varphi]$$

a is the radius of the base circle K_B ;

b is the radius of the pitch circle K_R ;

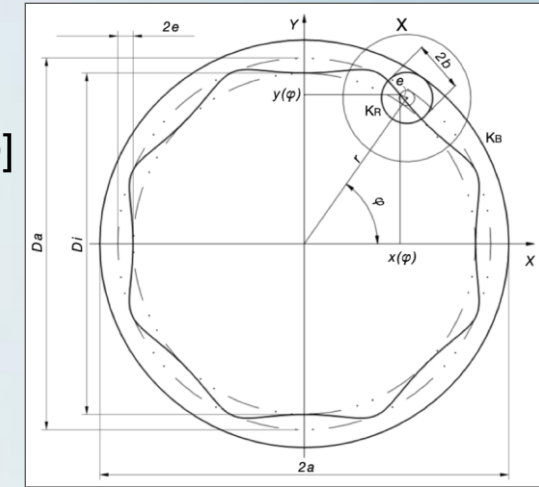
r is the base radius of the H-profile for the parameter equations;

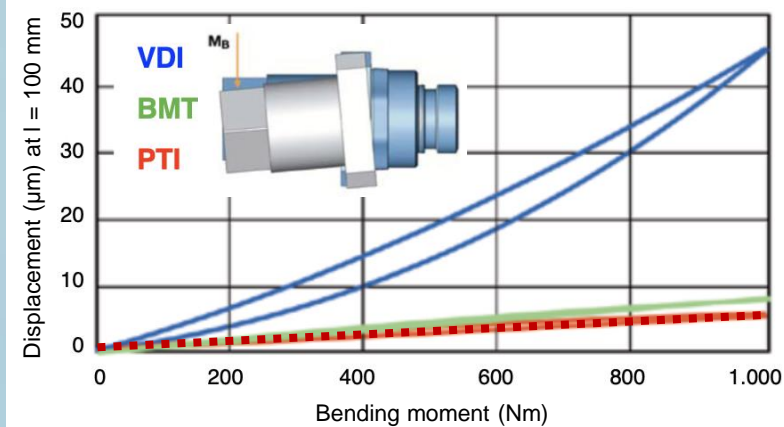
n is the number of drivers

($n = 8$, for the hypotrochoidal profile of this standard);

e is the eccentricity;

φ is the parameter angle 0° to 360°

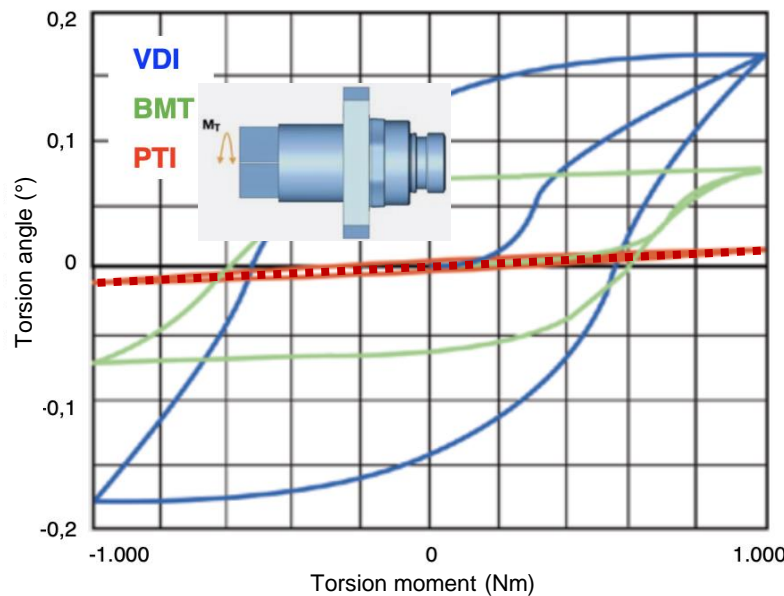




BENDING

PTI

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



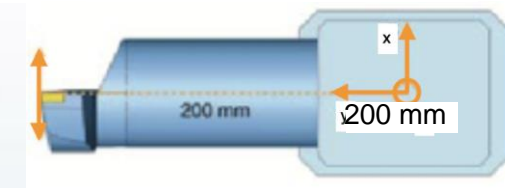
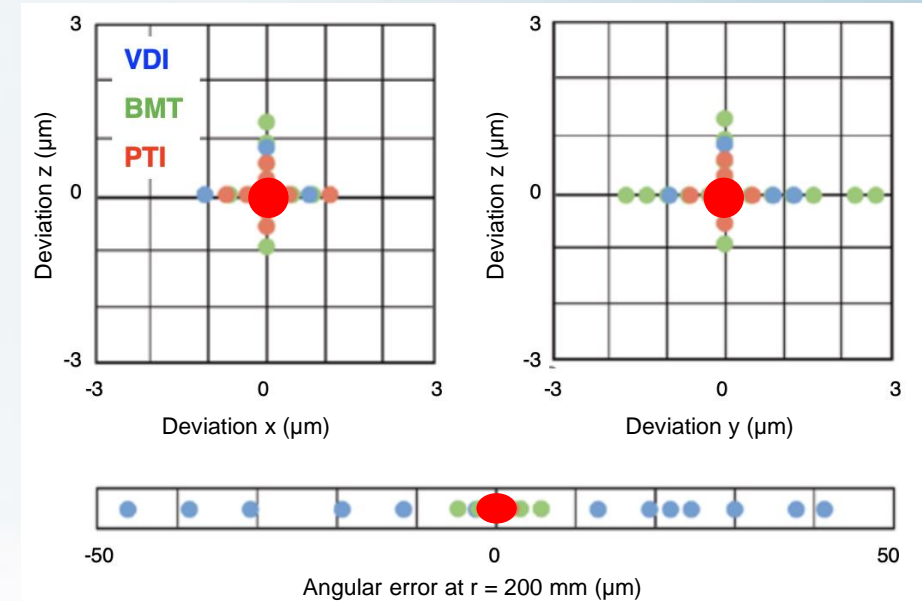
TORSION

PTI

- 10x more torsionally stiff than VDI
- 5x more torsionally stiff than BMT



ACCURACY



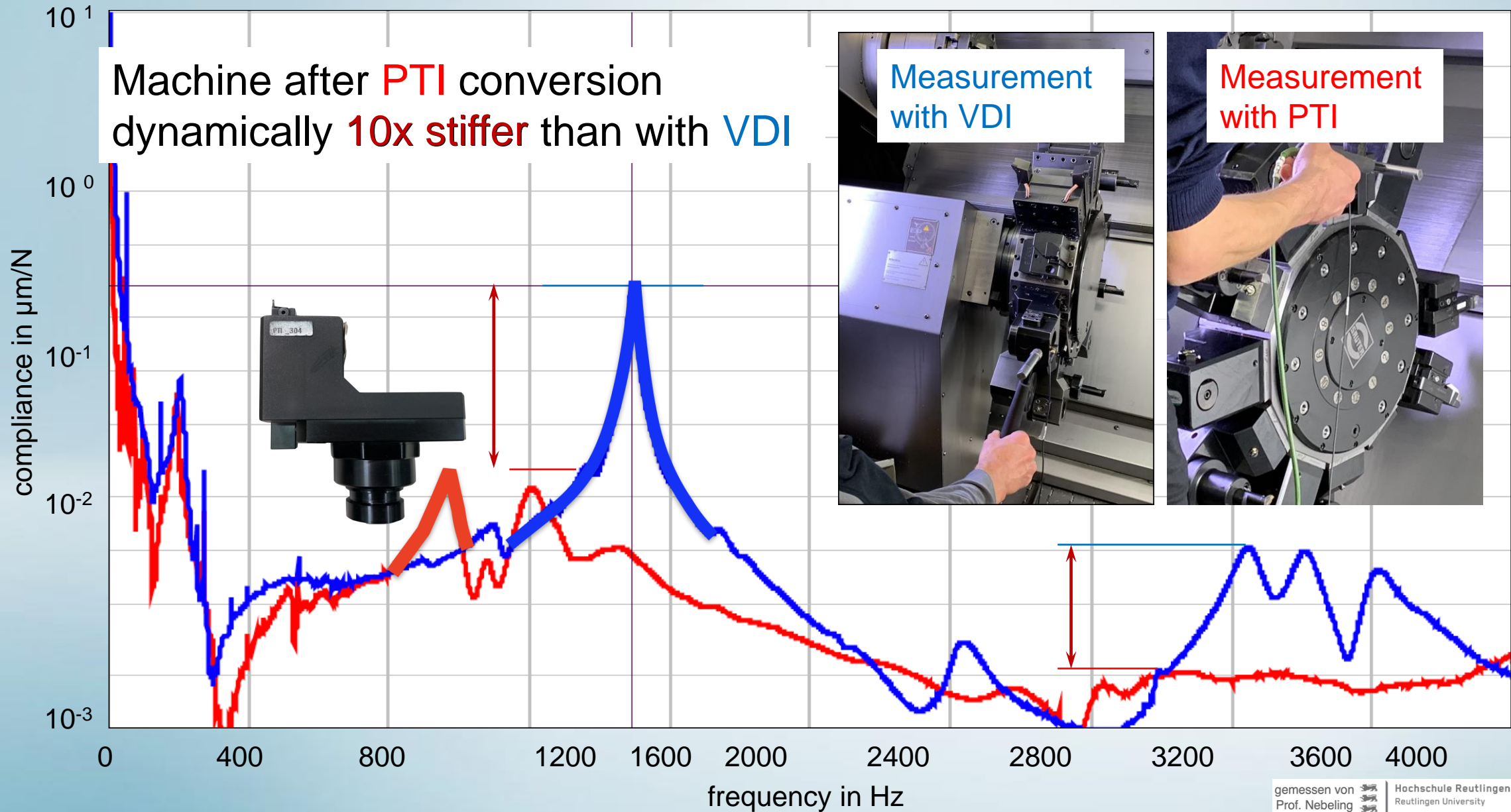
PTI

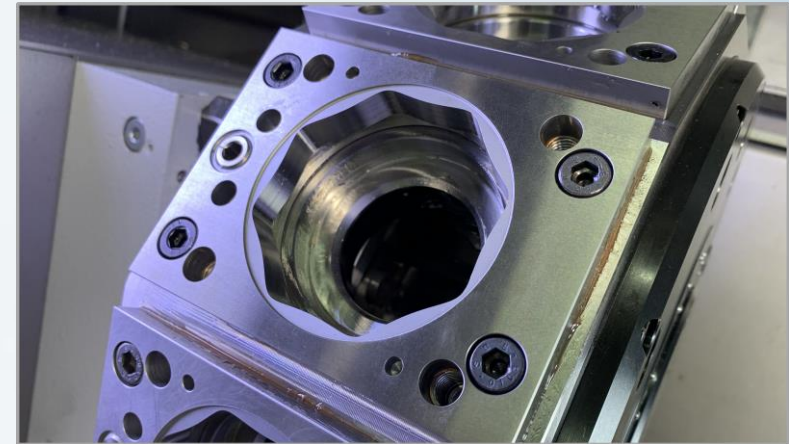
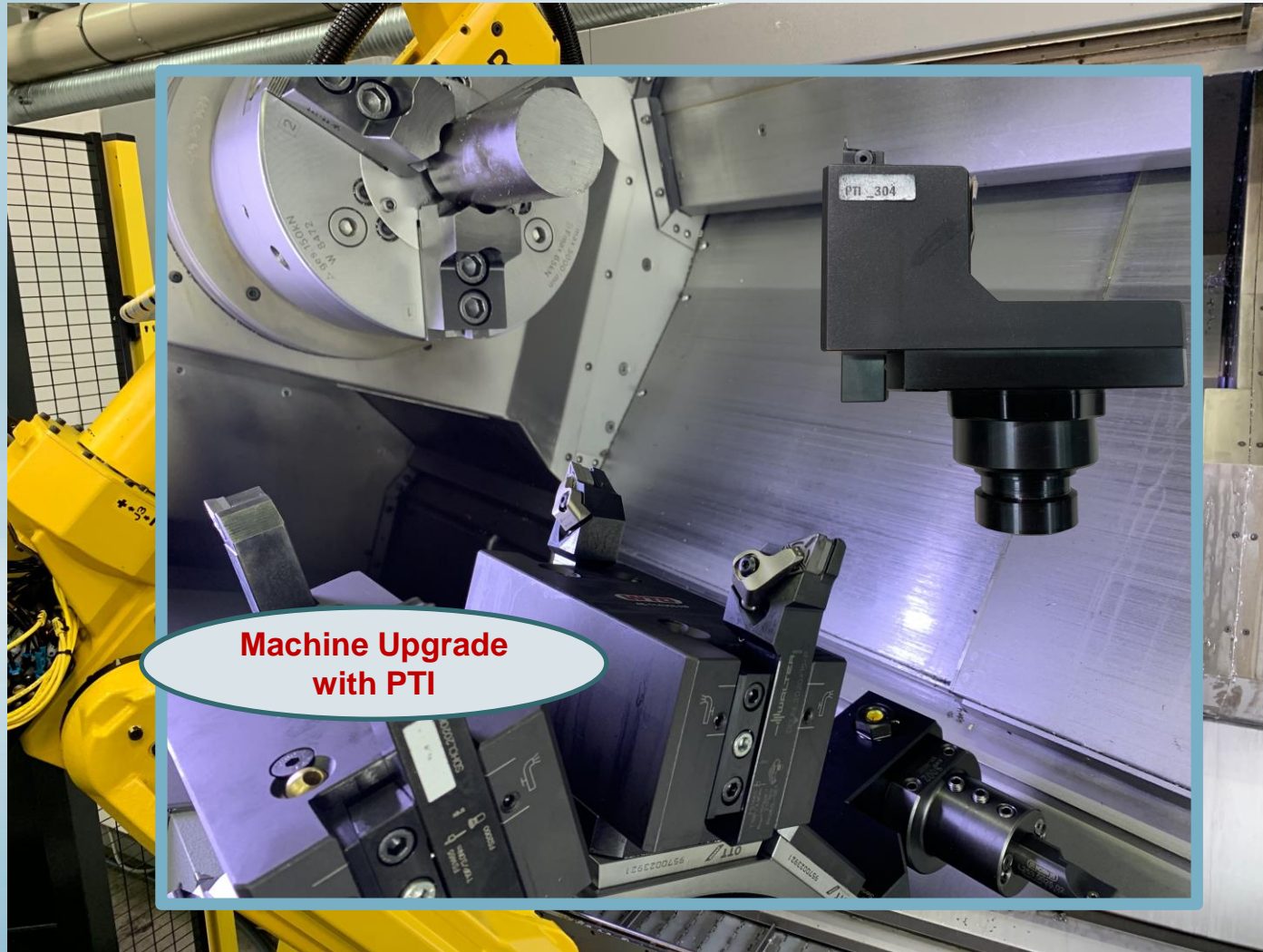
- With $\pm 2 \mu\text{m}$ at 200 mm projection length twice as accurate in position as BMT

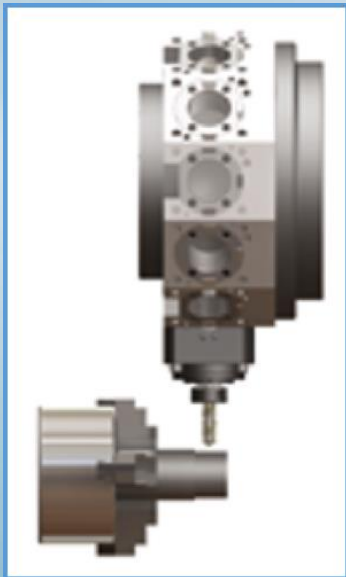
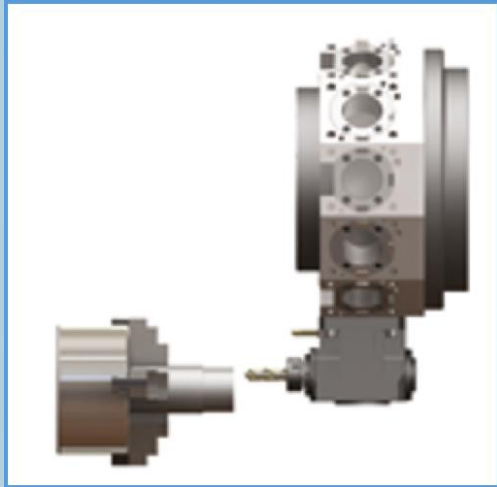




Machine after **PTI** conversion
dynamically **10x stiffer** than with **VDI**







Static holders and driven tools in three sizes

Three different sizes of PTI tool holders are shown, ranging from a small L-shaped holder to a large, complex assembly. Each holder is black with a white base and features the 'mimatic' logo.

eltimon[®]
PRO INSIDE

mimatic[®]
Tool Systems

pti
polygonal turning interface





**DRAFT INTERNATIONAL STANDARD
ISO/DIS 5686-1**

ISO/TC 29/SC 9

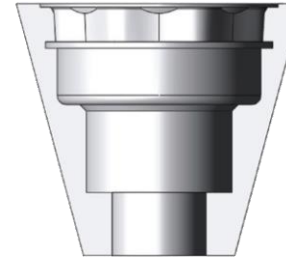
Secretariat: **DIN**

Voting begins on:
2023-04-03

Voting terminates on:
2023-06-26

Tapered polygonal interface with flat contact surface —

Part 1:
Shanks of type F, H, A



**DRAFT INTERNATIONAL STANDARD
ISO/DIS 5686-2**

ISO/TC 29/SC 9

Secretariat: **DIN**

Voting begins on:
2023-04-03

Voting terminates on:
2023-06-26

Tapered polygonal interface with flat contact surface —

Part 2:
Receivers of type F, H, A and X for shanks of type F, H and A



**DRAFT INTERNATIONAL STANDARD
ISO/DIS 5686-3**

ISO/TC 29/SC 9

Secretariat: **DIN**

Voting begins on:
2023-03-30

Voting terminates on:
2023-06-22

Tapered polygonal interface with flat contact surface —

Part 3:
Coupling for driven tool holders with shanks of type F and A

**2024 - It is Time
for the New
Standard**

DIS registered
2023-01-19

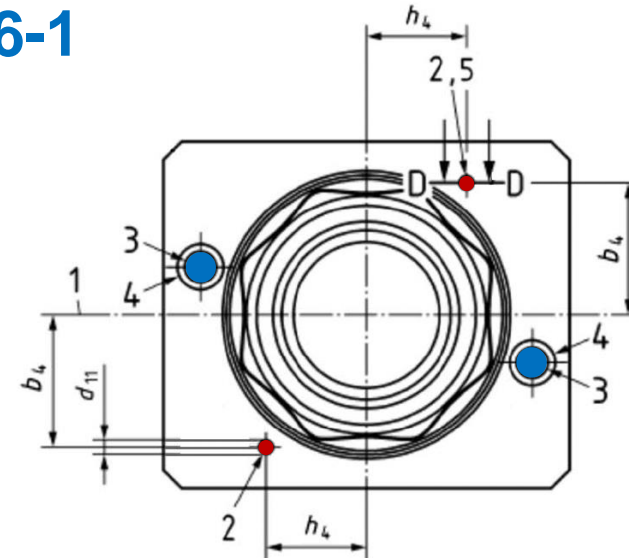
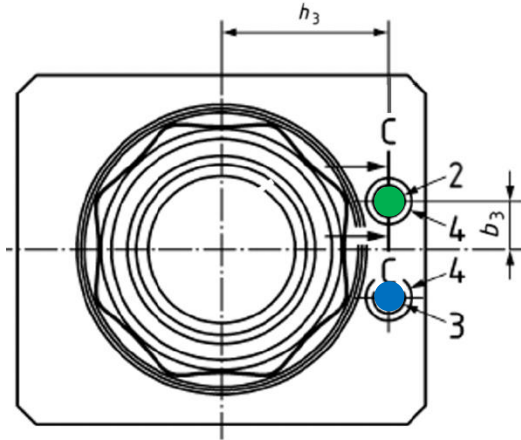
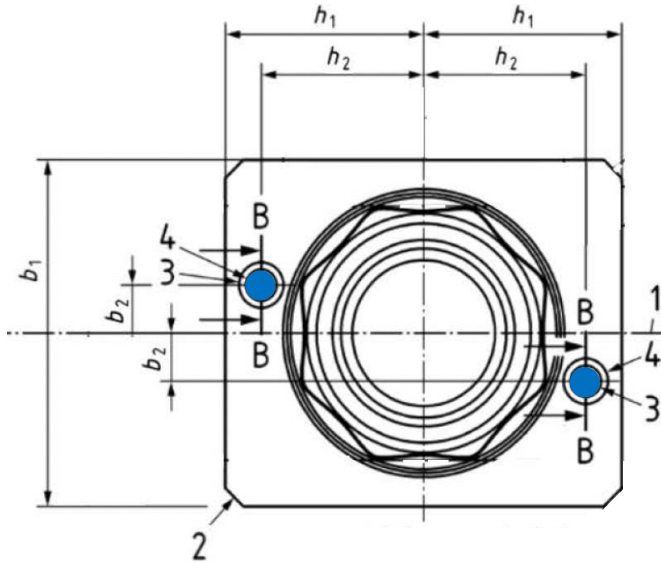
Close of voting
2023-06-26

F-DIS registered
2023-10-16

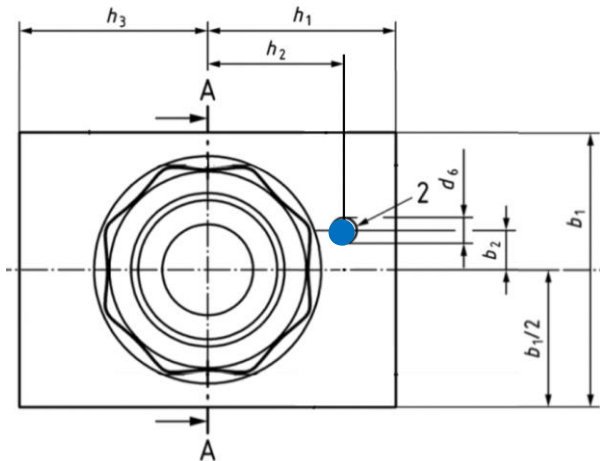
International standard published
2024-01-30...2024-07-06



SHANK: ISO/CD 5686-1

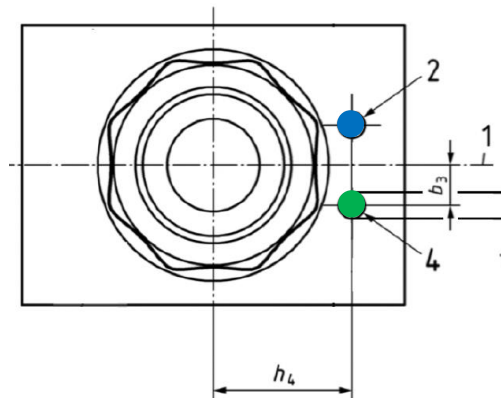


TYPE F

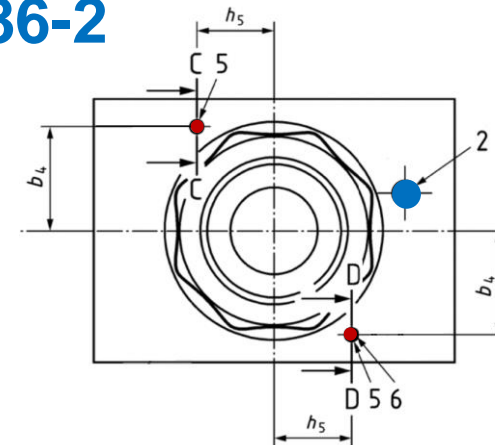


TYPE H

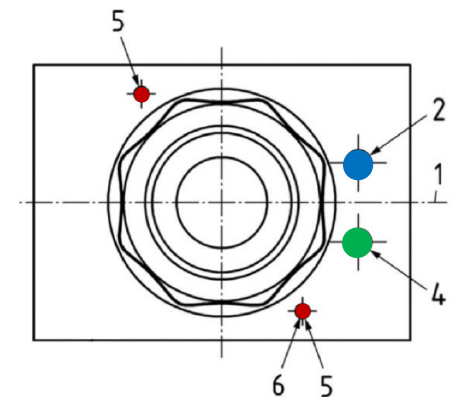
RECEIVER: ISO/CD 5686-2



TYPE A



TYPE X

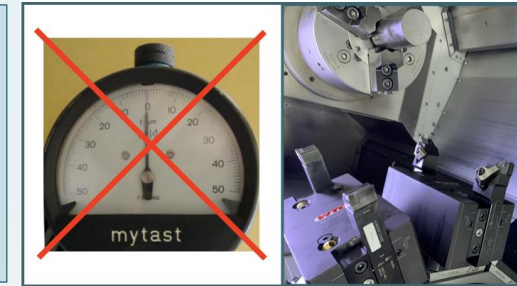




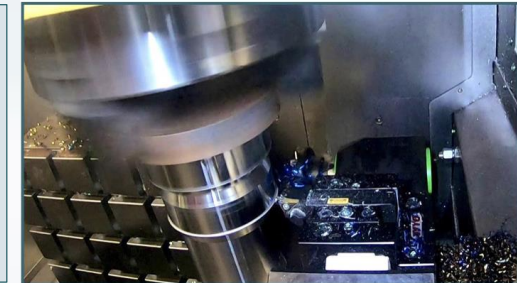
The turret interface **with quick-change system.** ✓
Savings in non-productive time due to fast manual tool change



The **highly accurate** turret interface. ✓
Savings in non-productive time due to elimination of measuring cuts and alignment processes

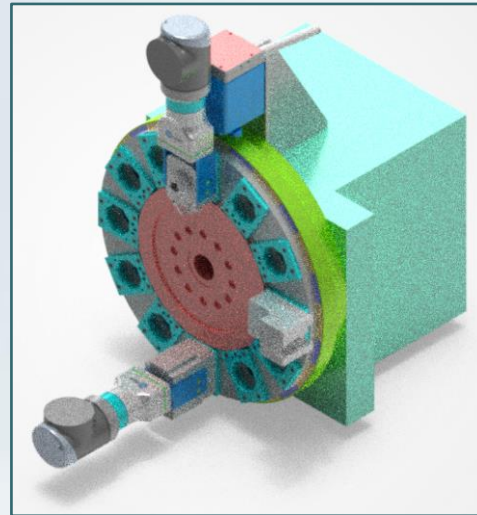
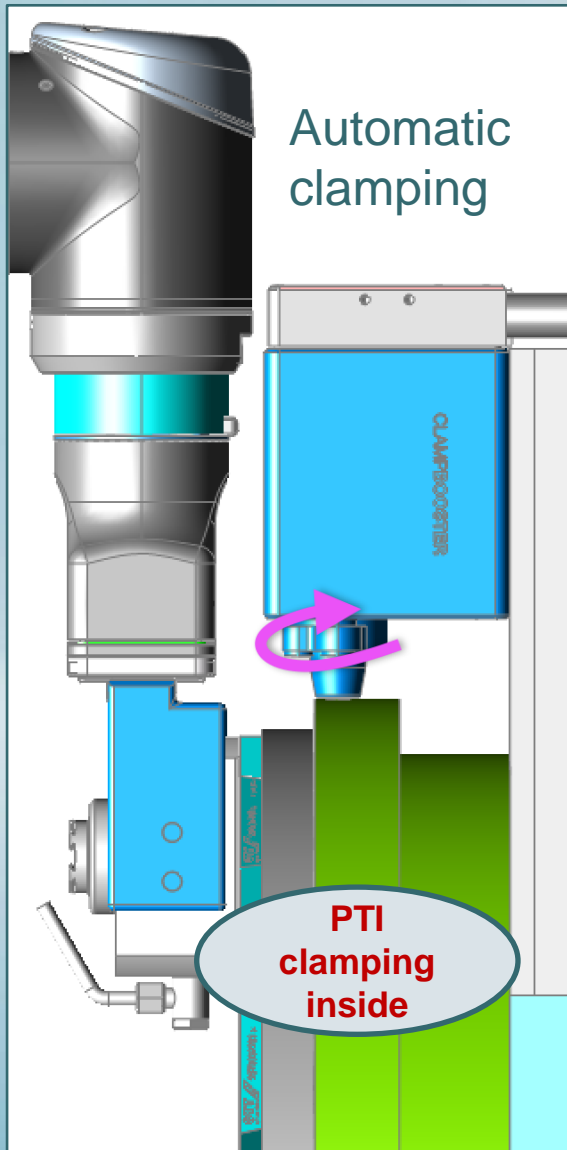


The **heavy-duty** turret interface. ✓
Productivity increase due to higher stiffness, bending load and extremely high torque transmission

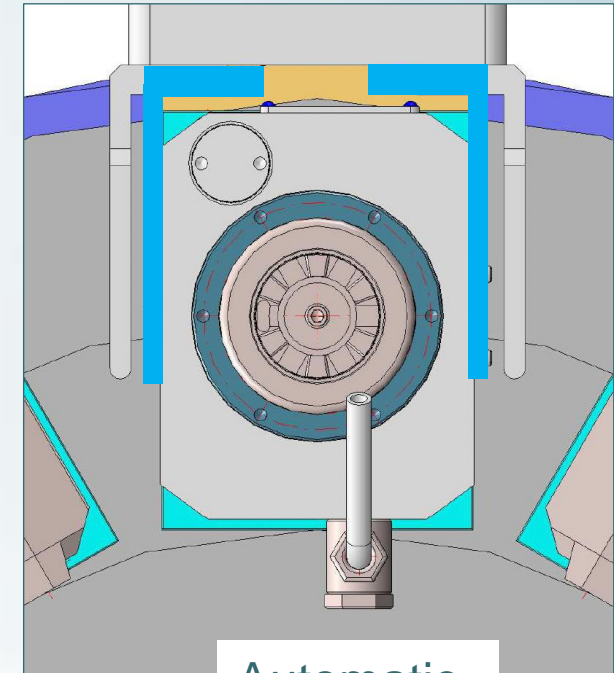


The turret interface with the **powerful drive.** ✓
More than 30% higher milling power with DTH due to strong drive shaft and coupling





Cobot Gripper in Turret lathe



Automatic handling

