

MULTIFLEX

Products for Multi Model Plants

EXPERT-TÜNKERS represent rotary table competence in body-in-white automation. Today, round index tables form the basis for flexible automation processes, for instance, to move model-specific tools designed as rotary or trunnion systems into the relevant work station / geometry station as required.

Round index tables also form the basis of the new EXPERT-TÜNKERS product group **Multiflex**. Multiflex enlarges the functional scope of rotary tables to resemble standardised, flexible fixture systems which are also aimed at the production of different car models, independent of cycles times and without set-up time loss.

Accordingly, rotary, lift and traversing units are integrated into the **Multiflex** product line, to move, swivel and position corresponding workpieces or complete fixtures weighing up to 24 tons in total in ultrashort cycle times.

EXPERT-TÜNKERS - We have the products for your flexible body-in-white production!

- 1. Multitooling**
(System BMW) for 5 types
- 2. Minimultitooling**
Pallet Tool Changing System
- 3. Heavy-duty rotary lift table**
for 4 types
- 4. ETS Trunnion System**
- 5. EGV series**
Changing fixture for flexible underbody
clamping technology for 4 types
- 6. Large-size rotary table as a basis for flexible industrial facilities**

Multitooling

Flexible, cycle-time-independent side panel tool changer based on EXPERT-TÜNKERS rotary tables

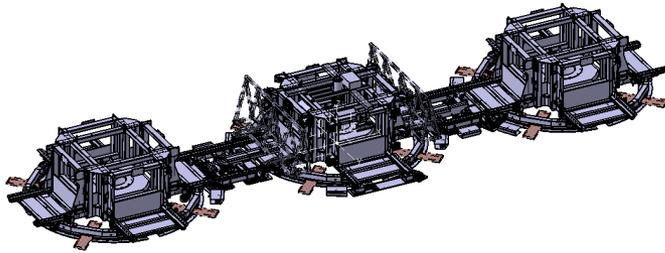
The system developed and patented by BMW consists of three EXPERT-TÜNKERS rotary tables, whereby the rotary table at the centre is referred to as a geometry rotary table and the two outer ones as rotating buffer tables. The system works with 10x geo-slides, whereby one pair is always required per type. This means that a mixture of five types (type A, B, C, D, E) can be handled by the system independent of the cycle time.

Technical data (EDH 2550):

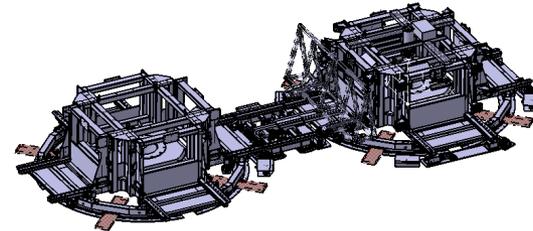
Customer load	20,000 kg
Max. external diameter	6,300 mm
Indexing angle	180° in t = 6 sec.
Motor output	66 kW
Required converter capacity	90 kW

Multitooling product range

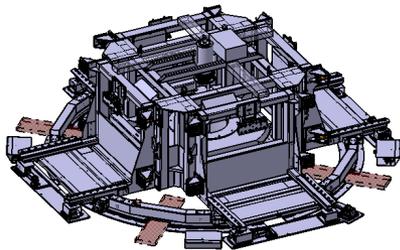
System for 5 types



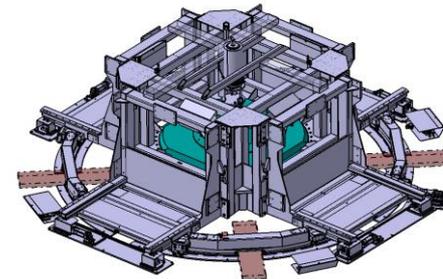
System for 3 types



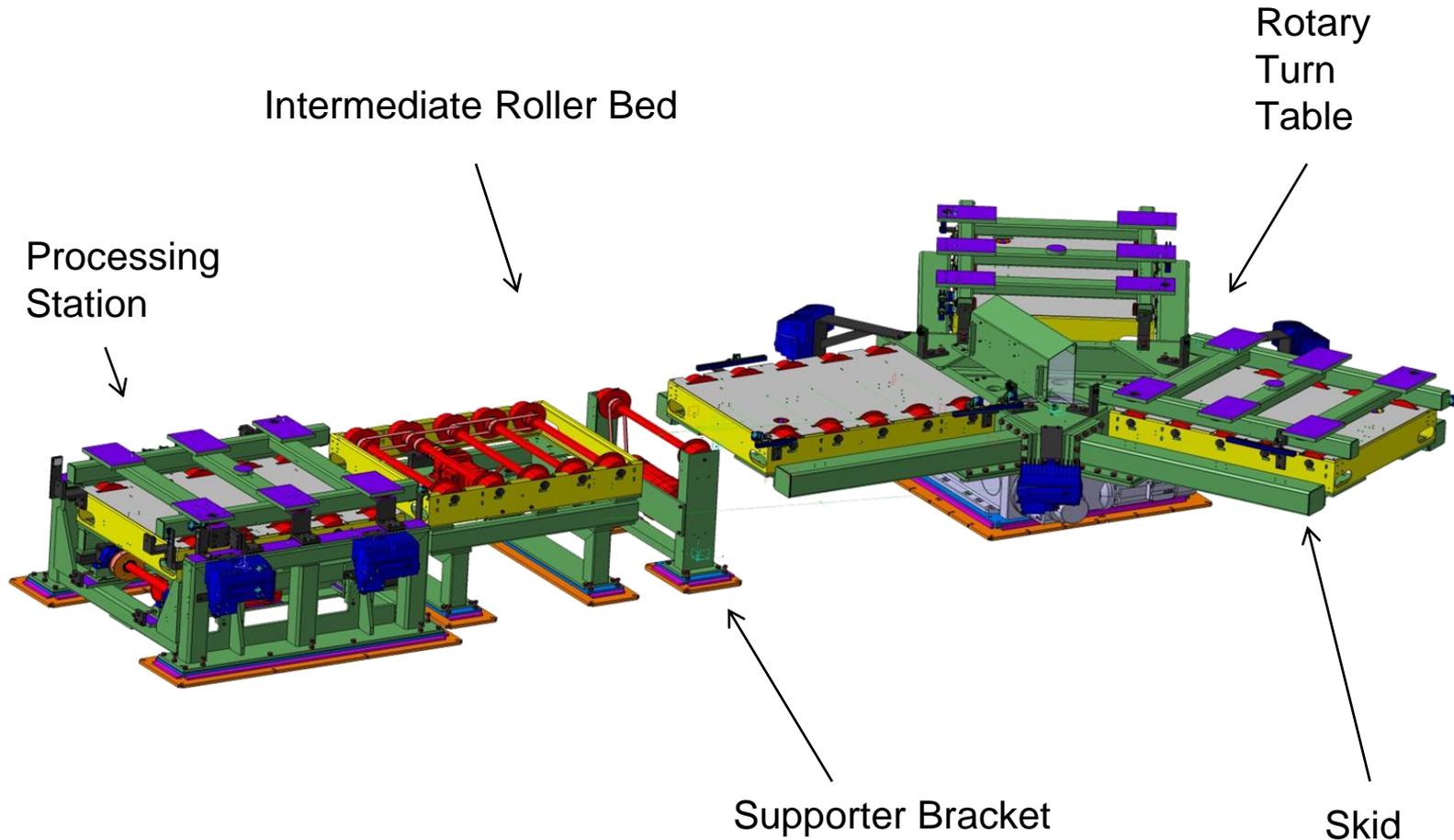
System for 2 types incl. provision for automated changing



System for 2 types without provision for automated changing



Multiflex - 2. Pallet Tool Changing System Mini-Multitooling (BBA/BMW Shenyang/China)





Puffer station for the toolings on the felx turntable



Intermediate roller bed for extended transport



View over roller bed in the processing station (Laser cell)

Tooling Changing System

Flexible, cycle-time-independent side panel tool changer based on EXPERT-TÜNKERS rotary tables

The system developed for BBA/BMW Shenyang/China consists of one EXPERT-TÜNKERS EDH1370/flex and a processing station with a vertical stroke of 100 mm. The rotary table has buffer for three skids. Across a supporter bracket and an intermediate roller bed reached the skid the processing station.

Technical data (EDH 1370/flex):

Customer load	2,000 kg / Skid
Indexing angle	120° t = 15 sec.
Motor output	6.0 Nm
Required converter capacity	3 kW

Technical data (Processing Station):

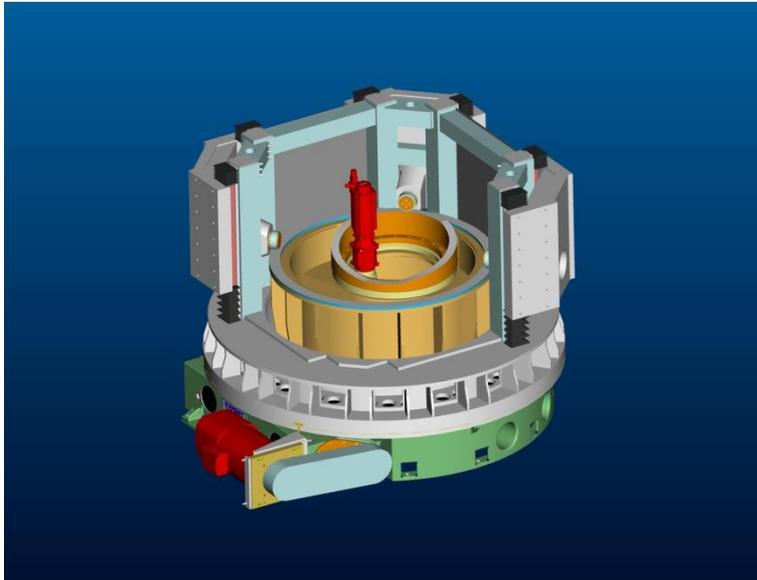
Customer load	2,000 kg / Skid
Vertical Stroke	100 mm t = 3.0 sec
Motor output	1.5 kW
Required converter capacity	3.0 kW

Heavy-duty rotary lift tables

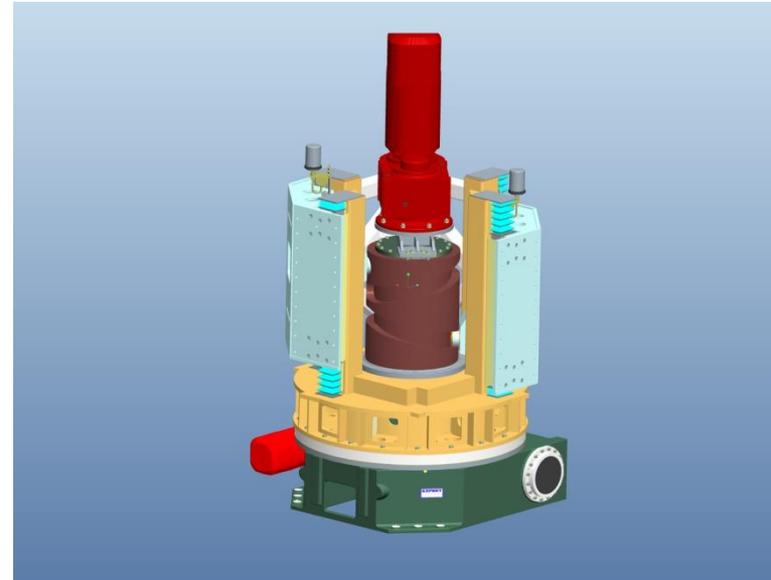
Features:

- Heavy-duty rotary table with integrated lift function (e.g. as tool changer for flexible side panel production for four different vehicle types)
- Overall load 12,000 kg
- Total mass moment of inertia 81,000 kgm²
- Indexing angle 90° in 3.4 sec. / 180° in 4.8 sec.
- Vertical lift 150 mm in 1.8 sec.
- Required drive power for rotating 61 kW
- Required drive power for lifting 25 kW

Application example:

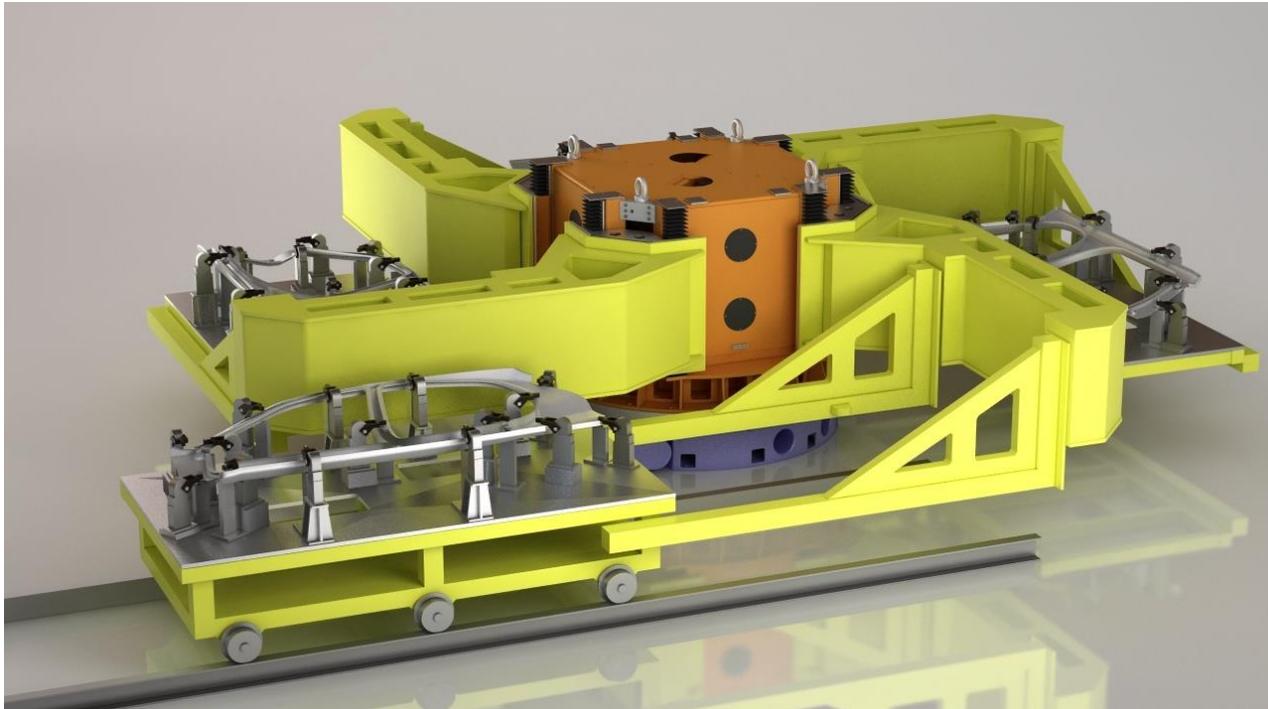


Heavy-duty rotary lift table for flexible production of 4 types

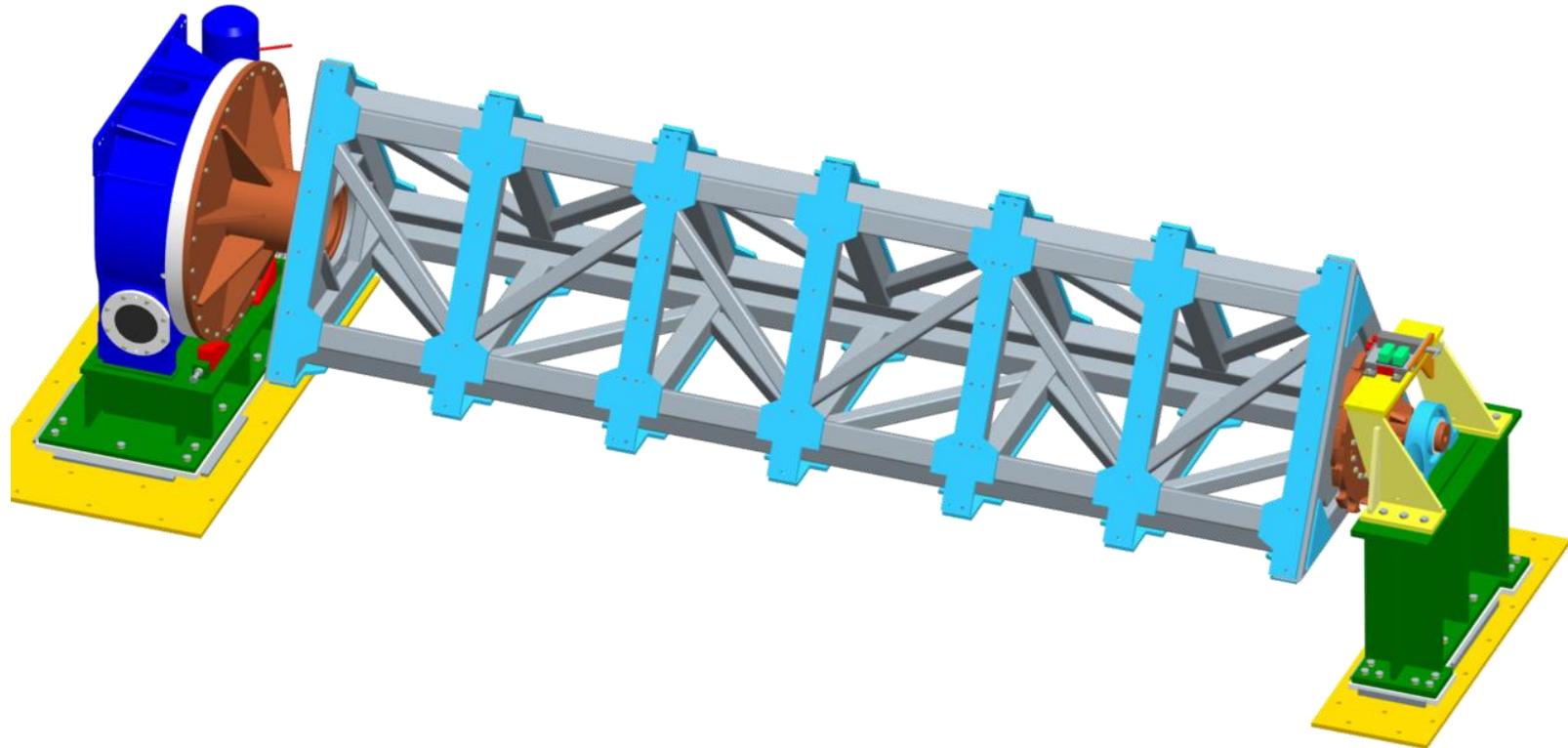


Heavy-duty rotary lift table for flexible production of 2 types

Application example:



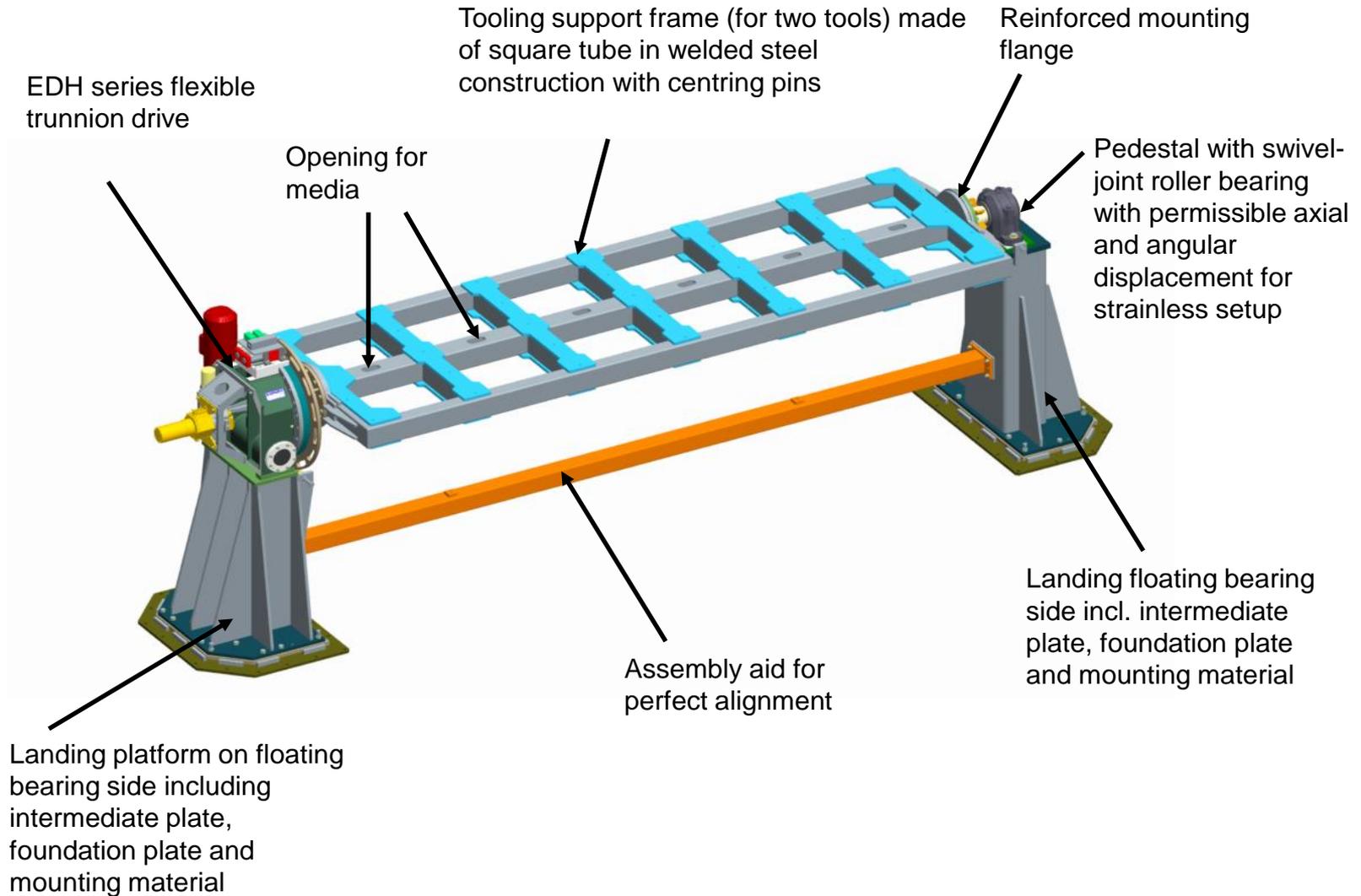
**Heavy-duty rotary lift table for flexible production of 4 types
incl. side arm and side panel tooling**

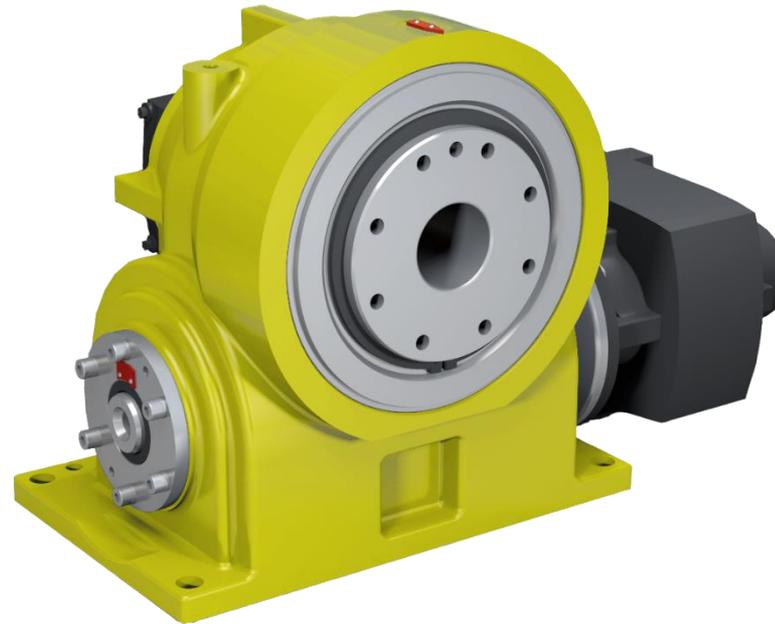


- For more than 50 years, EXPERT has been supplying rotary indexing tables for trunnion drives.
- More than 200 systems were already designed and manufactured, making EXPERT-TÜNKERS the leading supplier of complete trunnion systems.
- The largest systems ever built were hexagonal trunnions, turning 180° in 6 sec. and moving a total mass of 35 t.
- Based on their experiences, the **trunnion system ETS** has been designed in cooperation with well-known OEM's.



Multiflex - 4. ETS Trunnion System



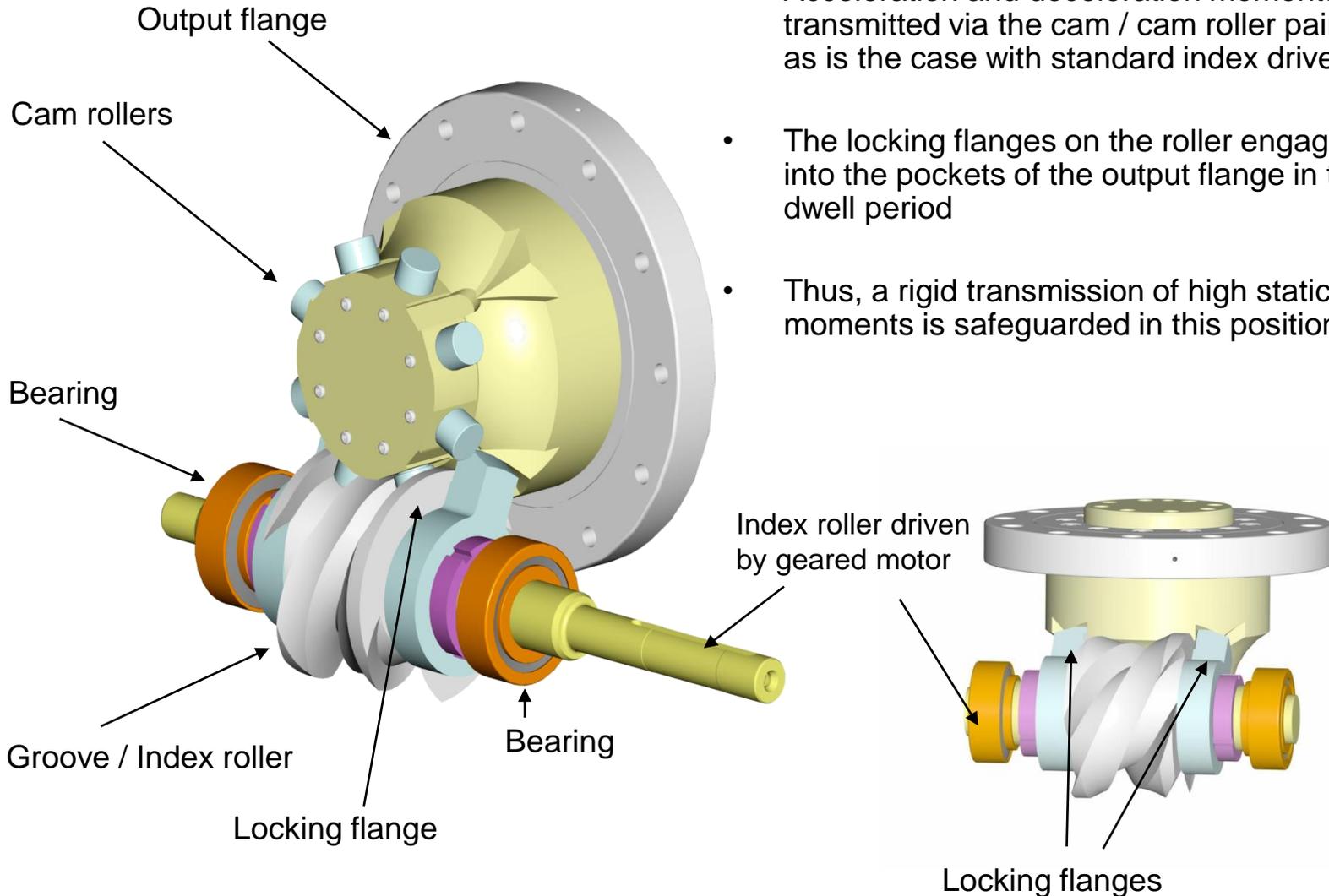


**Globoidal index drive mechanism
with integrated precision locking device
for versatile and flexible applications
in the underbody clamping technology of
multi-model manufacturing facilities**

Index drive EGV with integrated precision lock for the flexible production of up to 4 vehicles in one production line

Very compact index drive, where the output flange is mechanically locked in stopping position via a brace support mounted to the driving roll, to absorb the high loads generated when car bodies are placed down.



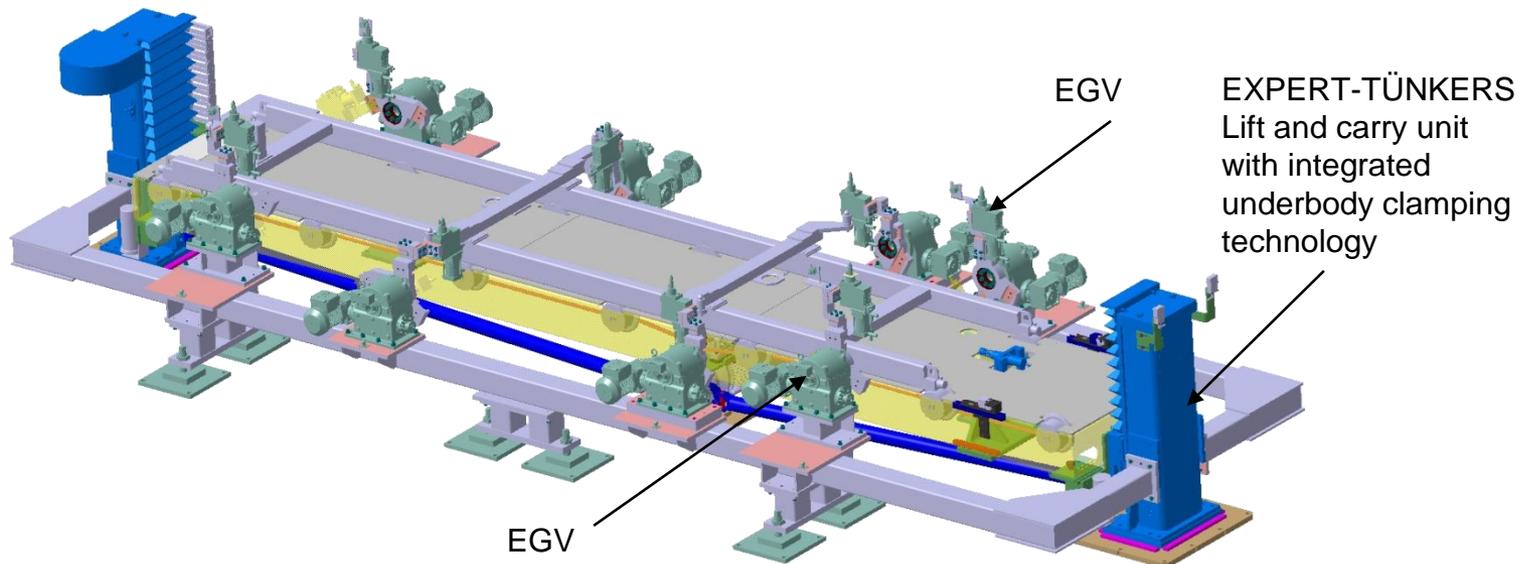


- Acceleration and deceleration moments are transmitted via the cam / cam roller pairing as is the case with standard index drives
- The locking flanges on the roller engage into the pockets of the output flange in the dwell period
- Thus, a rigid transmission of high static moments is safeguarded in this position

Rotary table drive with integrated precision lock for flexible production of up to 4 vehicles in one production line

Application example:

Overall layout of flexible underbody clamping technology with EXPERT-TÜNKERS lift and carry unit



Large-sized table as a basis for flexible industrial facilities

Based on the approved construction principle of EXPERT-TÜNKERS standard rotary tables, heavy-duty tables reach dimensions of up to 10 metres in diameter with payloads of up to 100 tons.

As a rule, these are specific special constructions tailored to meet customer requirements.

Typical areas of application of heavy-duty rotary tables include foundries, the production of interior products, the glass industry, large-sized drive and motor production, or as a basis for flexible production cells (e.g. for complete side panel tooling).

Specific advantages:

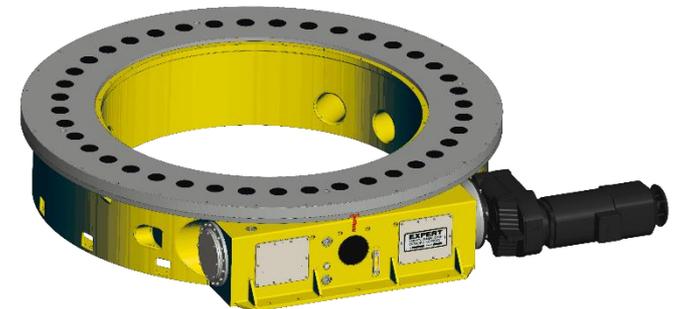
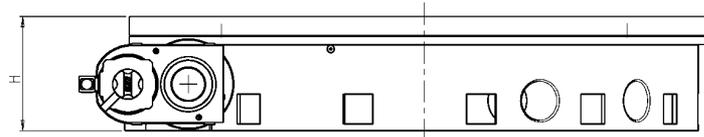
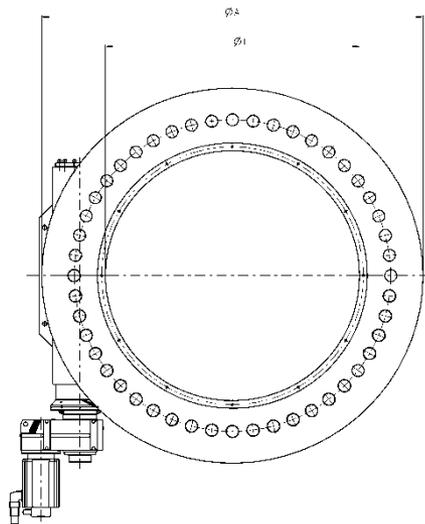
- Robust roller technology for high load cycles
- Basis construction individually adjustable to customer requirements

Rotary plate with wide central opening (e.g. diameter of 1,700 mm) for the central integration of an additional robot. Flexible processing of 3, 4 or 6 working stations = car body models.

Large-sized rotary tables as a basis for flexible industrial facilities

Technical data

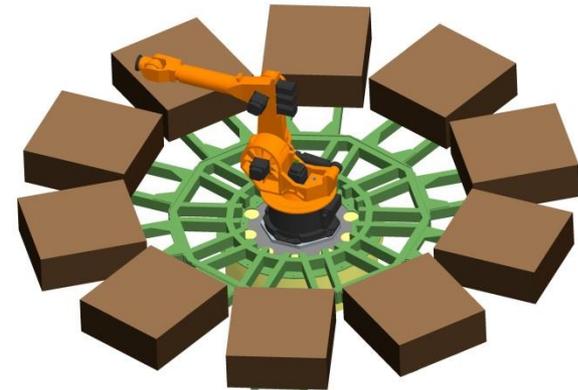
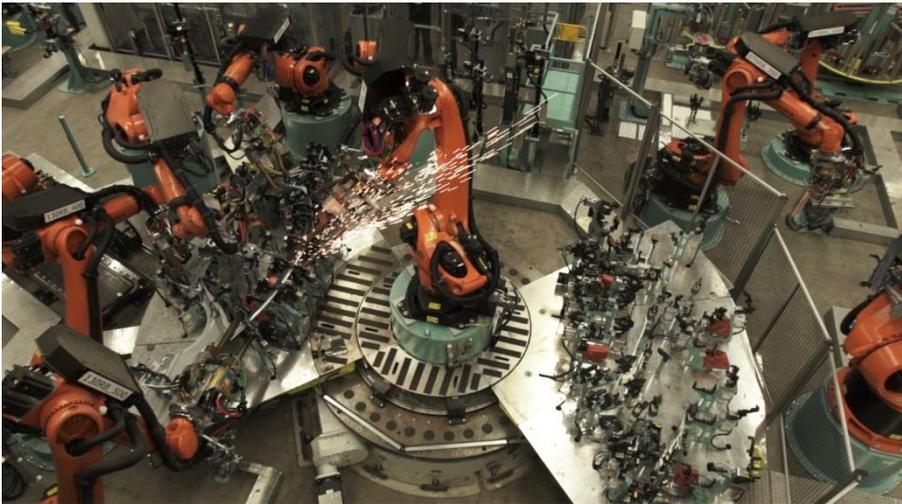
Type	Outer Ø Table plate (A) [mm]	Inner Ø Table plate (I) [mm]	Height (H) [mm]	Max. output torque [Nm]
EDH 2050	1,800	900	480	60,000
EDH 2550	2,300	1,300	450	127,000
EDH 3250	3,000	2,000	600	145,000



Large-sized rotary tables as a basis for flexible industrial facilities

Application example:

- Flexible side panel production based on heavy duty ringtable EDH 3250
- Turntable outside diameter 3,000 mm with larger center opening
- Central position of welding robot with optimized access to the fixtures
- Customer load 50,000 kg



Thank you for your attention.

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