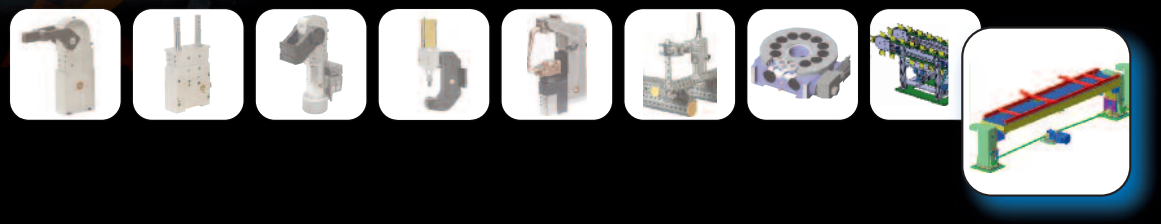
Transporting

Transporting – An Automation Module of the Tünkers Group



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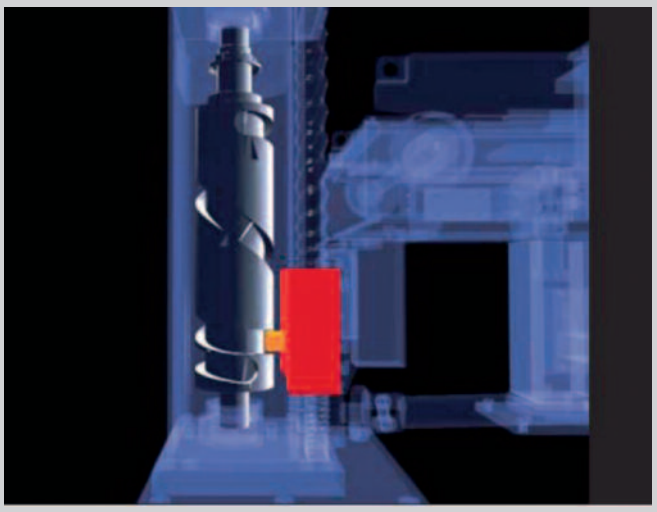
It is our understanding that the transport function includes electro-mechanical systems taking over e. g. the transport of a complex assembly group such as a door, side panels or the entire car body in car body construction. The transport distances are set up in lines and designed as walking beam system, also called lift shuttle system, with a central drive. Lift powered rollerbeds equipped with decentralised drives are a further development offering new dimensions in terms of performance data and also more layout flexibility as regards possible lengths of interlinking.

Cam-Driven Lifter providing Optimum Lifting Profile

One of the essential characteristics of lift conveying systems used in body construction is the requirement for a smooth component pick-up to reduce noise emissions and wear and tear of the lift and the component.

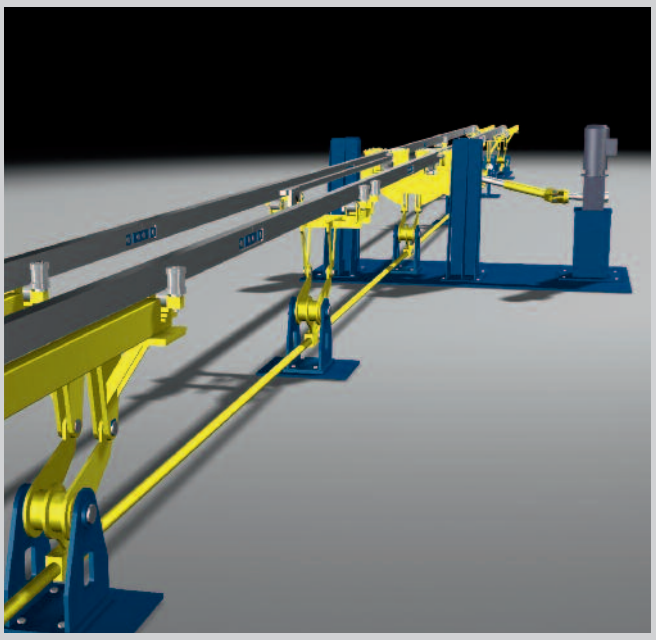
This liftinge profile is realized at zero speed at the point of transfer, high acceleration and braking processes provided by the EXPERT-TÜNKERS barrel cam, disposing of an adequately machined motion profile as standard. For cams with fixed gradient, so-called flexible cams, the desired lifting profile is achieved via the servo-control.



Soft-Touch Pick-up

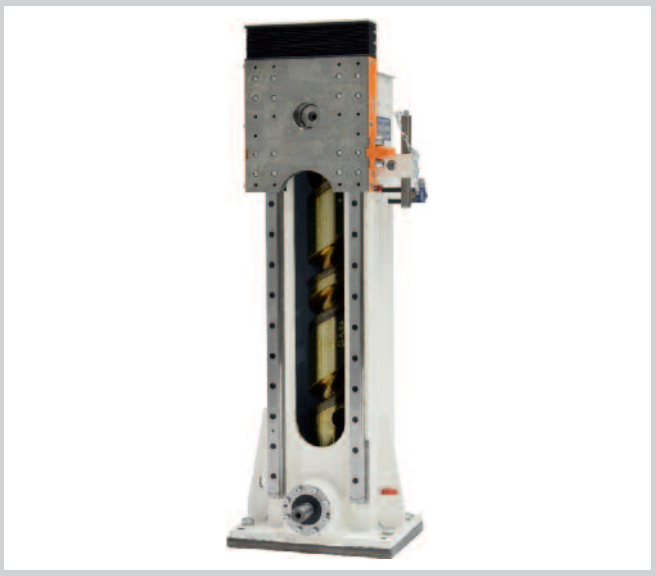
Lift Shuttle System

The barrel cam is the core element of lift shuttle systems equipped with central drives.



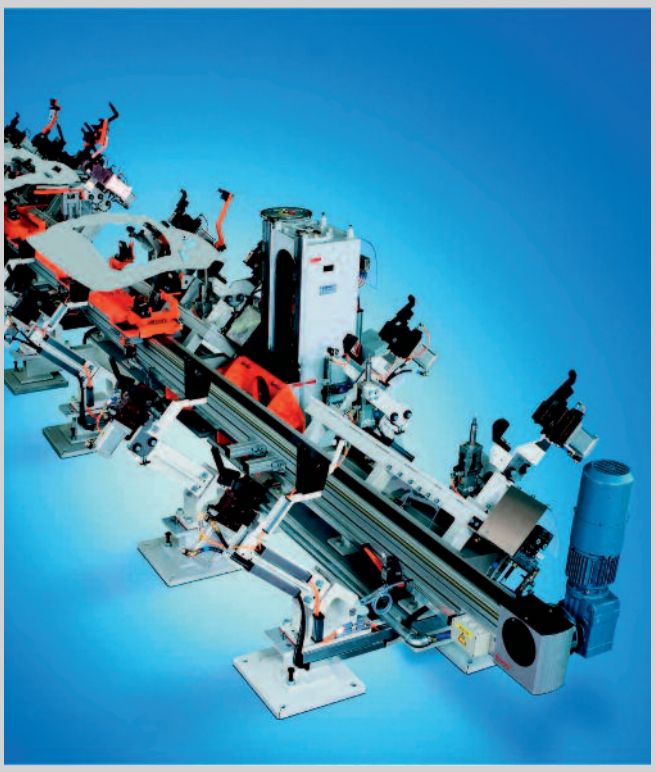
Lift Column with Cam Technology!

Combined with a robust longitudinal guide, the barrel cam constitutes the basis of EXPERT-TÜNKERS lift columns. Synchronized via a cardan axis, two lift columns driven by a central geared motor form a lift station.



Monorail Shuttle

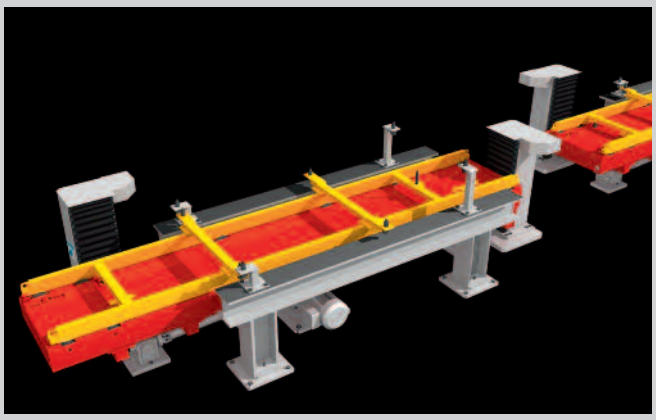
By means of horizontal linear axes and two synchronized lift columns, simple conveyor lines such as the monorail shuttle system can be built. They are particularly suited for the transport of smaller components with lower loads.



Lift Powered Rollerbed

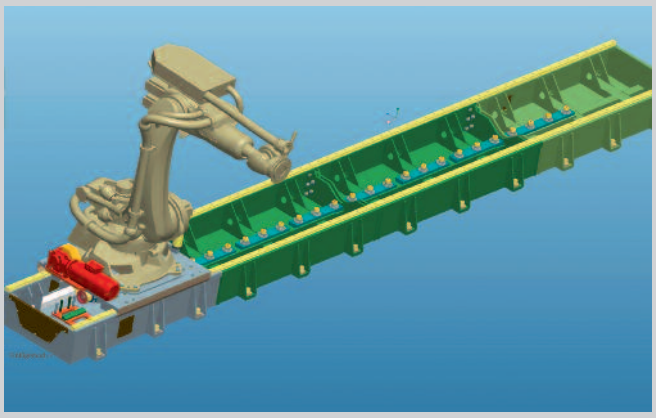
Two lift columns combined with one EXPERT-TÜNKERS roller conveyor form the centrepiece of the EXPERT-TÜNKERS lift powered rollerbeds.

This skid conveyor system is designed to transport complete car bodies or undercarriages with maximum loads of 2 to.



Buffer/Transverse Transport etc. Additional Transport Solutions

The transport lines are supplemented by coordinated construction systems such as buffer segments, transverse conveyors, ring buffers, lifting rotary units and level lifter, feeding the component into the higher-level conveying technology. This technology is also used in heavy-duty systems to traverse complete fixtures or robot systems (7th axis).



Shuttle beats Robot – EXPERT transport systems are more cost-efficient than robot lines

Even though in the robot era cell and/or station transport are increasingly realized by robot handling, EXPERT-TÜNKERS transport lines provide economic benefits not only when heavy and large-dimensioned components are transported. This is particularly evident when comparing the controllable drives. For a lift shuttle designed for 8 stations two drives (1 x lifting and 1 x traversing) are required. The alternative solution with 8 robots (6-axes-system) requires still 48 drives – admitteldly,with lower flexibility but optimized cycle time. With this in mind, EXPERT transport systems are also an instrument to streamline layout complexity and therefore to reduce costs.

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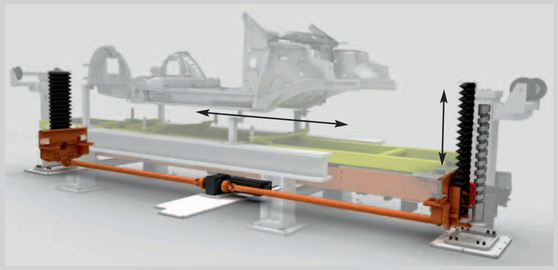
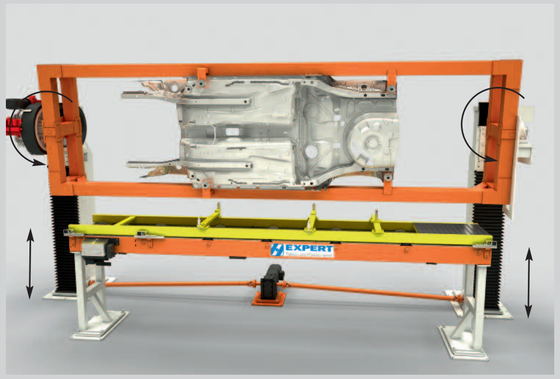


Lift Powered Rollerbed

Conveying system for car body-framework for precise and pinpoint positioning of skids with car bodies or car body components in flexible station design in non-chained operation.

– Secure and rapid transport
– Soft component transfer
– Flexible definition of pick-up position
– Compact design
– Extreme ease of maintenance
– Long service life
– Flexible arrangement of lift columns for optimized robot accessibility to the component

Customer Load (Skid + car body)	200-2.000 kg
Horizontal stroke	4.000-10.000 mm
Vertical stroke	300-1.200 mm
Cycle time Lifting/traversing/lowering	≥ 7 sec

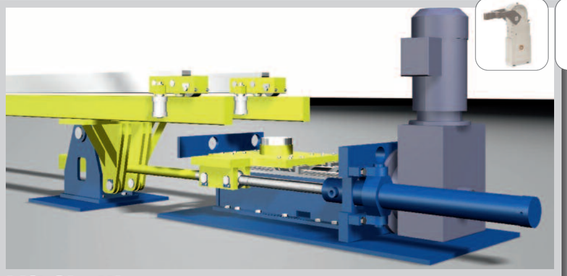


Lifting Rotary Unit

Lifting rotary device for handling car bodies

– Fields of application e.g. inspection station, rework stations, setting of weld studs
– Modular design consisting of EXPERT standard components with cam-driven lifting unit and trunnion drive
– Minimum space requirements

Customer load (Car body + Holding frame)	50-3.000 kg
Vertical stroke	1.200-2.800 mm
Stroke time	3-10 sec
Rotating angle	flexible

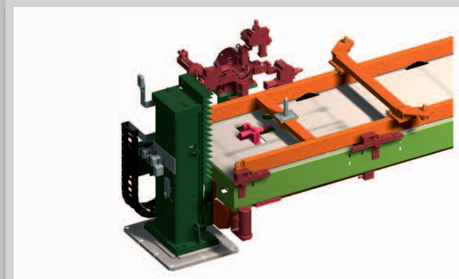


Lift Shuttle

Conveying system for body-framework for precise and pinpoint positioning of car bodies or automotive body parts in chained operation.

– Secure, precise working and rapid transport system with lifting and positioning axis for large components
– Synchronous component transport through all stations
– Simple design, only one central drive for lifting and conveying
– End position mechanically locked via gate, overrunning the end position is impossible

Customer load	50-500 kg/station
Number of stations	3-15
Horizontal stroke	3.000-8.000 mm
Vertical stroke	300-1.200 mm
Cycle time Lifting/traversing/lowering	≥ 10 sec

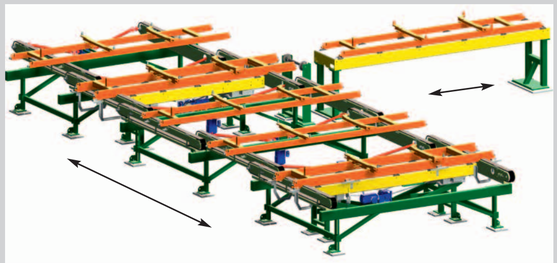


All-Electric Lift Powered Rollerbed

All-electric lift powered rollerbed with laser positioning of the skids and flexible ground clamping technology

– Time-saving, approx. 1 second!
– Cycle time less than 7,5 sec.!!!
– Precise skid positoning via laser distance measurement
– Variable skid positioning on the roller conveyer is possible
– Electric stopper to protect against overflow
– Electric fine positioning of skids
– No pneumatics, i. e. no valve island required!

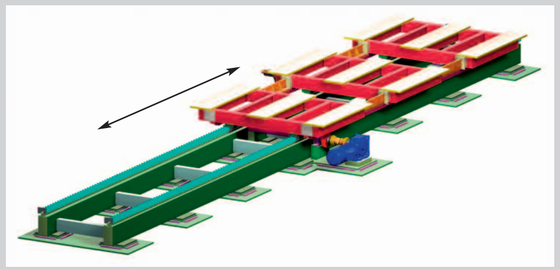
Customer load (Skid + car body)	200-2.000 kg
Horizontal stroke	4.000-10.000 mm
Vertical stroke	300-1.200 mm
Cycle time Lifting/traversing/lowering	≥ 7 sec



Skid Transverse Conveyor

– Modular horizontal accumulator for skids with car body
– Parts buffer for decoupling production lines
– Flexible layout design

Customer load (Skid + car body)	200-2.000 kg
Transversal stroke	2.000-10.000 mm
Vertical stroke	50-200 mm

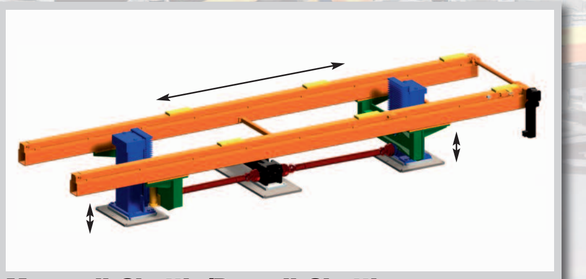


Tool Traversing Unit

Tool traversing unit for horizontal traversing of heavy fixtures

Use in flexible production lines: e. g. for cross traversing of fixtures for various car types below the centre line.

Customer load	500-5.000 kg/ Fixture
Horizontal stroke	2.000-8.000 mm

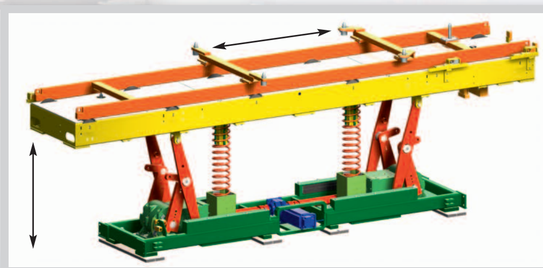


Monorail-Shuttle/Duorail-Shuttle

Conveying system for short traverse paths and smaller components

– Transport system for body panels, e.g. doors and flaps
– Fields of application e.g. application of adhesive, clinchinig
– Modular, flexible design
– Cost-efficient solution for the transport of small components

Customer load	10-250 kg
Horizontal stroke	1.000-5.000 mm
Vertical stroke	300-1.000 mm
Cycle time Lifting/traversing/lowering	≥ 5 sec

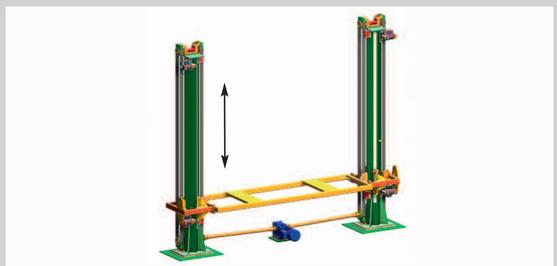


Double-box Lift

Roller conveyor lift in flat design with integrated spring-loaded accumulating system

– 30% less energy consumption
– Minimum space requirements
– No disrupting edges for robot welding guns
– Soft component transfer
– Flexible definition of pick-up positions

Customer load (Skid + car body)	200-1.000 kg
Horizontal stroke	4.000-10.000 mm
Vertical stroke	200-800 mm
Cycle time Lifting/traversing/lowering	≥ 6 sec



Level lifter

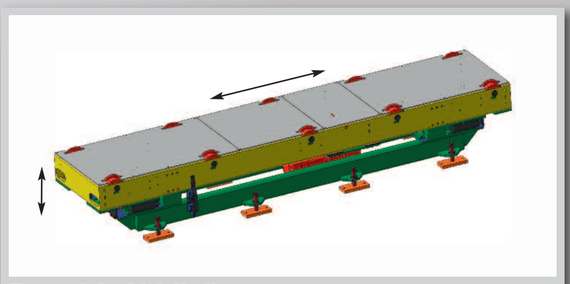
Lifting device for complete car bodies from the welding plane to the higher-level conveying technology.

Customer load (Skid + Car body rie)	150-1.500 kg
Vertical stroke	4.000-8.000 mm

Ring Buffer

– Modular horizontal vertical accumulator for skids with car body
– Maximum storage capacity with minimum space requirements
– Parts buffer for decoupling production lines
– Flexible layout design

Customer load (Skid + car body)	200-2.000 kg
Transversal stroke	2.000-10.000 mm
Vertical stroke	1.500-2.800 mm



Eccentric Lift Unit

– Lift system for short lifts with moderate transport times

Customer load	200-2.000 kg
Vertical stroke	50-200 mm
Stroke time	≥ 2 sec

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