

When every part counts

Plants and system solutions

Manufacturing systems for high production volumes require reliable and high-quality automation. Our broad portfolio of automation products enables the flexible configuration of plants with maximum productivity.

LIEBHERR

Automation systems



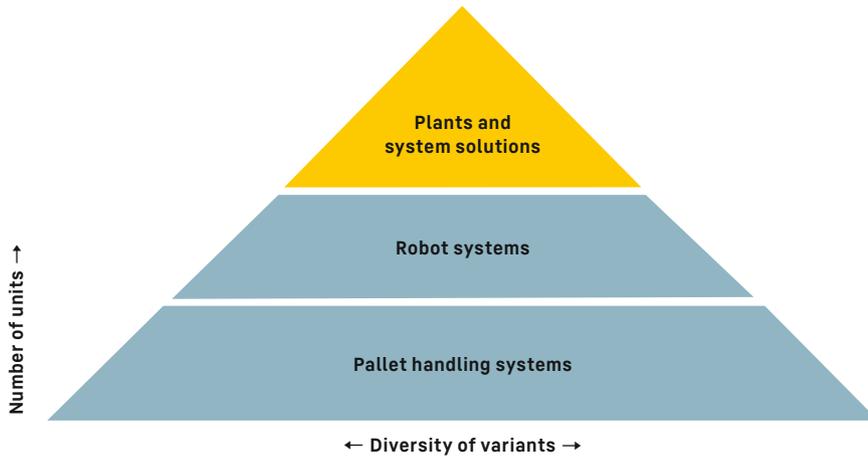
Turnkey automation from a single source

Liebherr offers a wide range of automation systems for modern, high-efficiency manufacturing. These solutions help to reduce production costs and enable a flexible response to changes in the market: Systems can be expanded, thereby increasing production capacity and/or adding additional functionality. Our focus is to ensure that our products are cost-effective, user-friendly, high-quality and reliable, with great flexibility. As a system provider, we make use of our

broad product portfolio, consisting of gantry robots, pallet handling and conveyor systems, and robot cells and technological solutions.

We combine these products intelligently to form flexible manufacturing cells, systems or lines for small and large projects, from one unit through to mass production.





Our product areas for diverse requirements

Planning a manufacturing line can be highly complex. With Liebherr at your side, you have an experienced partner with great process and system expertise. We have proven and established ourselves as a reliable automation supplier with strong references in the automotive industry. Turnkey lines by Liebherr have been in use for over 50 years and ensure optimal production in high volume systems.

Economy

Liebherr solutions automate workpiece handling from machine to machine and guarantee high process reliability.

The first rule of series production is to minimize idle times. We supply automation systems of excellent quality and thus achieve high system availabilities. Liebherr designs SPC/NOK stations to implement production quality control. These SPC/NOK stations enable the removal and reintroduction of parts into the line without impacting throughput. For customers that need to implement a higher level of quality control into their production systems, Liebherr has developed and can integrate process monitoring and part tracking software. This enables early error detection and prevents expensive reject spills.

Flexibility

Liebherr turnkey systems are designed for the future. During initial planning, future expansion phases can be taken into account in order to develop scalable production lines.

In addition, if a manufacturing line is to be designed for families of parts, then Liebherr can design for part commonality, and plan for automatic and manual change-over devices.

User-friendliness

With intelligent software systems such as the LMS 4.0, we provide options for efficient and simple process monitoring at a glance.

Liebherr takes into account optimal workplace design with respect to safety, ergonomics and efficiency in all operator interfaces. Accessibility for maintenance and operational tasks are a key priority for automation design.

Quality and reliability

Quality is the ultimate priority at Liebherr. Every production stage is consistently monitored in order to achieve the best results at all times and to ensure reliability and long product life.

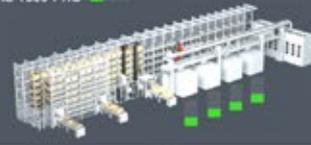
Liebherr-Verzahntechnik GmbH's quality management system is certified in accordance with ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018, as well as VDA 6.4. Moreover, many years of experience and state-of-the-art technologies flow into product development. This high standard means that our automation systems guarantee high availability and part quality for the end customer.

LIEBHERR

CELL CONTROL SYSTEM



PHS 1500 PRO



RLS 800



Setup Station

LC 180CC



LGG 500



LGG 700M

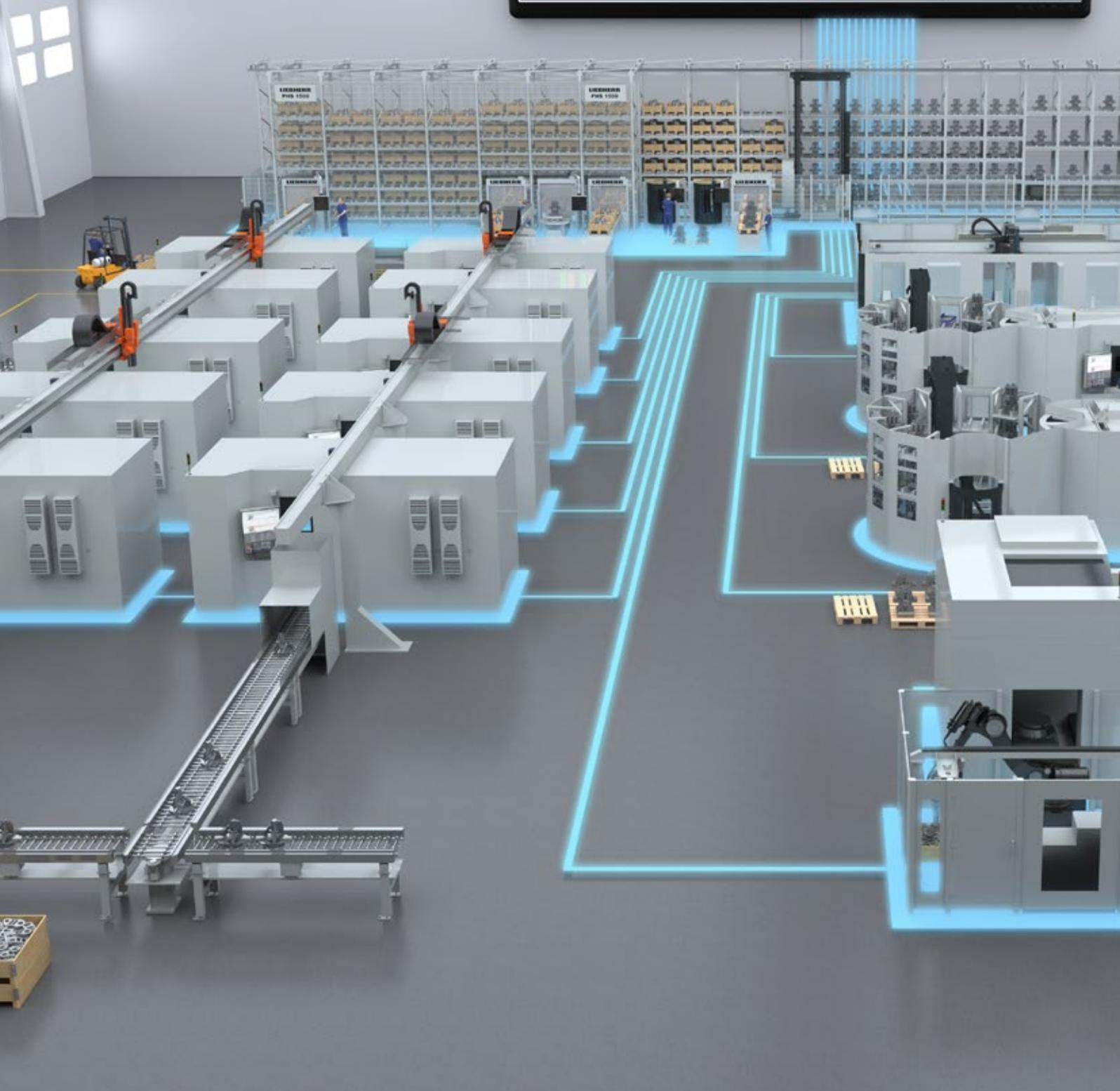
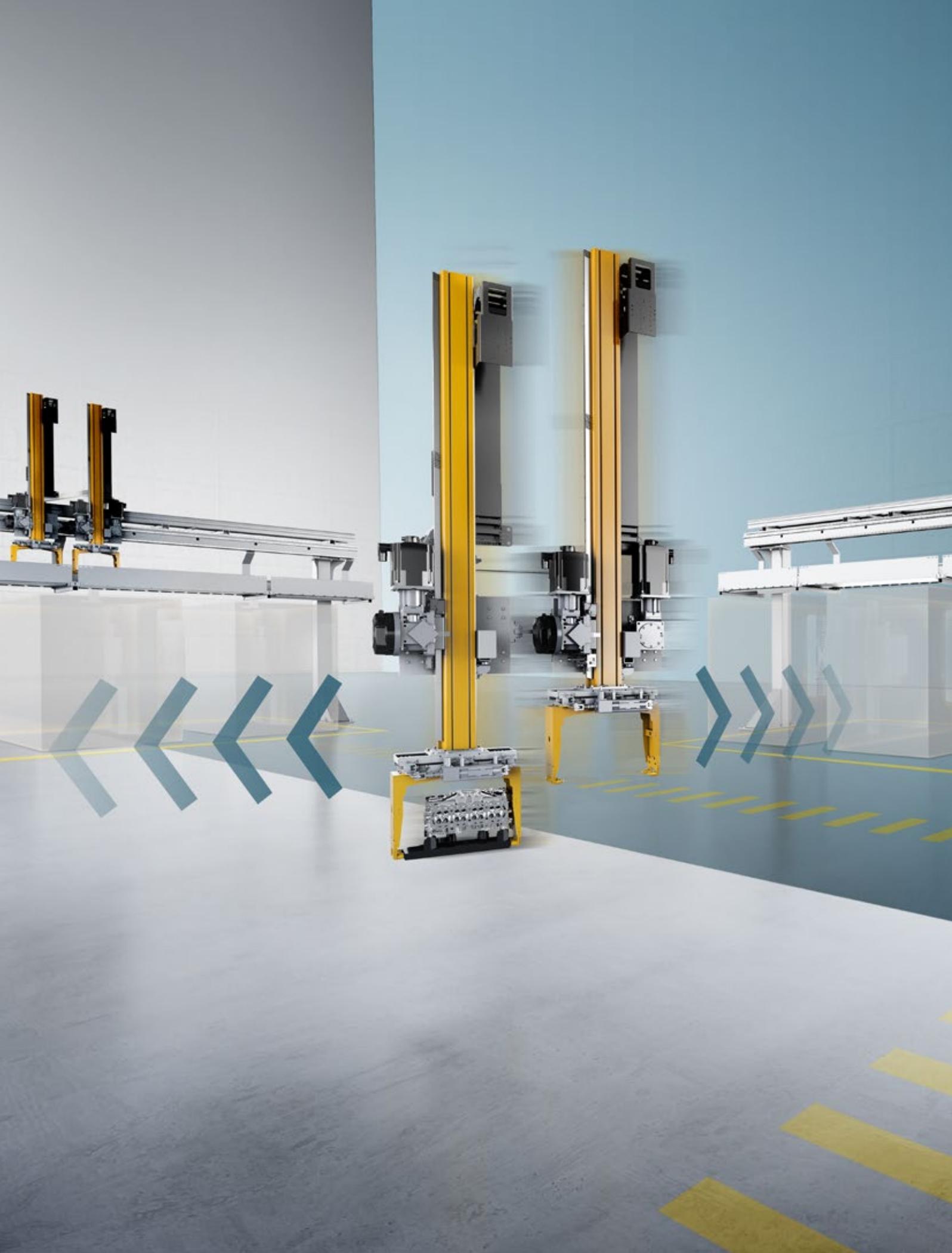




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Gantry robots

Liebherr has established itself as a pioneer in gantry robot technology as a partner of the automotive industry since the 1970s. Over 20,000 machines worldwide have been automated with gantry robot technology to date. Liebherr gantry robots can be deployed in a variety of ways: for transporting, palletizing, goods handling, loading and unloading, or storing. This makes Liebherr gantry robots ideal for diverse applications. As well as the automotive and commercial vehicle industry, they can be used for agricultural and construction machines, general machine construction, and aviation. For all sizes, Liebherr offers a gantry modular system which covers a large component spectrum.

Economy

The key to cost-effective manufacturing is reliable supply to the production machine. Hand-loaded or semi-automatic machines only meet this requirement to a limited extent.

Our gantry robots increase the productivity and efficiency of manufacturing processes and thus ensure long-term economic efficiency. The application-based design of the gripper configuration and axis technology allows us to offer maximum availability and throughput with minimum change-over. The systems can be designed with flexibility and expandability to accommodate changes to requirements.

Flexibility

Thanks to the modular platform system, gantry robots from Liebherr are particularly flexible and versatile. We find the optimal solution for every task. As Liebherr produces a large proportion of its components in-house, we are able to implement customer-specific requirements quickly and expertly.

User-friendliness

An optimum working environment provides the basis for a smooth manufacturing process.

Loading from the top enables unrestricted access to the machines and production system, while the floor surface remains free for use. Through the use of our LMS 4.0 software solution, our customers can monitor in real-time the manufacturing processes. This enables the customer's plant to support production for effectively and with faster response times. In addition, the system status can be displayed on large screens or mobile terminal devices via a graphic interface.

Quality and reliability

Quality is the ultimate priority at Liebherr. Every manufacturing stage is consistently monitored in order to achieve optimum results at all times and to ensure reliability and long product life.

Linear gantry robots

Linear gantry robots from Liebherr perform a wide range of automation tasks. Thanks to a flexible modular system, all sizes can be optimally tailored to the specific requirements. Individual series are available in other designs, such as a high-speed (HS) variant, a heavy-duty (HD) and a steel (STL) design.



PP 10

Load capacity max.	kg	40
Beam length X max.	m	3.5
Stroke Z max.	mm	700
Traversing speed X max.	m/min	120
Acceleration X max.	m/s ²	4.0
Traversing speed Z max.	m/min	40
Acceleration Z max.	m/s ²	5.0
+/- Reproductive accuracy/axis max.	mm	0.1



LP 20

Load capacity max.	kg	160
Beam length X max.	kg	140
Stroke Z max.	m	120
Traversing speed X max.	mm	2,300
Acceleration X max.	m/min	180
Traversing speed Z max.	m/s ²	4.0
Acceleration Z max.	m/min	120
+/- Reproductive accuracy/axis max.	m/s ²	5.0
+/- Repeat accuracy/axis max.	mm	0.1



LP 100

Load capacity max.	kg	200
Beam length X max.	m	120
Stroke Z max.	mm	2,300
Traversing speed X max.	m/min	180
Acceleration X max.	m/s ²	3.0
Traversing speed Z max.	m/min	120
Acceleration Z max.	m/s ²	5.0
+/- Reproductive accuracy/axis max.	mm	0.1

Using standardized interfaces, the gantries can be flexibly assembled up to lengths of more than 100 m.

The maximum load capacity refers to the bottom edge Z-axis (without gripper, additional axes and workpiece) for a 2,000 mm Z-axis stroke. Higher load capacities are possible with a shorter Z-axis stroke



LP 100 HS

Load capacity max.	kg	200
Beam length X max.	m	120
Stroke Z max.	mm	2,300
Traversing speed X max.	m/min	300
Acceleration X max.	m/s ²	4.5
Traversing speed Z max.	m/min	120
Acceleration Z max.	m/s ²	5.0
+/- Reproductive accuracy/axis max.	mm	0.1



LP 100 HD

Load capacity max.	kg	280
Beam length X max.	m	120
Stroke Z max.	mm	2,300
Traversing speed X max.	m/min	180
Acceleration X max.	m/s ²	2.5
Traversing speed Z max.	m/min	120
Acceleration Z max.	m/s ²	5.0
+/- Reproductive accuracy/axis max.	mm	0.1



LP 200

Load capacity max.	kg	300
Beam length X max.	kg	225
Stroke Z max.	m	120
Traversing speed X max.	mm	2,300
Acceleration X max.	m/min	180
Traversing speed Z max.	m/s ²	3.0
Acceleration Z max.	m/min	120
+/- Reproductive accuracy/axis max.	m/s ²	5.0
+/- Repeat accuracy/axis max.	mm	0.1



LP 200 HD

Load capacity max.	kg	380
Beam length X max.	m	120
Stroke Z max.	mm	2,300
Traversing speed X max.	m/min	180
Acceleration X max.	m/s ²	3.0
Traversing speed Z max.	m/min	120
Acceleration Z max.	m/s ²	4.0
+/- Reproductive accuracy/axis max.	mm	0.1



LP 200 STL

Load capacity max.	kg	600
Beam length X max.	kg	400
Stroke Z max.	m	120
Traversing speed X max.	mm	2,300
Acceleration X max.	m/min	180
Traversing speed Z max.	m/s ²	3.0
Acceleration Z max.	m/min	90
+/- Reproductive accuracy/axis max.	m/s ²	3.0
+/- Repeat accuracy/axis max.	mm	0.1



LP 2000

Load capacity max.	kg	1,000
Beam length X max.	kg	700
Stroke Z max.	m	120
Traversing speed X max.	mm	2,400
Acceleration X max.	m/min	120
Traversing speed Z max.	m/s ²	2.0
Acceleration Z max.	m/min	60
+/- Reproductive accuracy/axis max.	m/s ²	1.5
+/- Repeat accuracy/axis max.	mm	0.1



LP 10.000

Load capacity max.	kg	>1,000 (on request)
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For heavy duty gantries with load capacity > 1,000 kg, we are happy to create a custom offer

Area gantry robots

The highly accurate Liebherr area gantry robots are used when linear robots can no longer cover the working area. The modular design guarantees maximum flexibility when implementing complex customer requirements.



		LPR 20	LPR 200	LPR 200 HD	LPR 200 STL	LPR 2000
Load capacity max.	kg	160	300	380	600	1,000
Load capacity max. (telescopic design)	kg	140	240	-	400	950
Beam length X max.	m	60	60	60	60	60
Beam length Y max.	m	8	10	10	10	12
Stroke Z max.	mm	2,300	2,300	2,300	2,300	2,400
Traversing speed X max.	m/min	180	180	180	180	120
Acceleration X max.	m/s ²	4.0	3.0	3.0	3.0	2.0
Traversing speed Y max.	m/min	120	120	120	120	120
Acceleration Y max.	m/s ²	3.0	3.0	3.0	3.0	2.0
Traversing speed Z max.	m/min	120	120	120	90	60
Acceleration Z max.	m/s ²	5.0	5.0	4.0	3.0	1.5
+/- Reproductive accuracy/axis max.	mm	0.1	0.1	0.1	0.1	0.1



Aluminum axis



Steel axis

Z-axes

In addition to the standard design, Z-axes can be additionally designed for a high load capacity (HD/STL). The LP 100 is also available as a high-speed (HS) variant, which, in addition to increased speed, also offers up to 80% faster axis acceleration.



Telescopic axes, the solution for low hall heights

If the spatial conditions are restricted (e.g. low hall trusses/ceilings), telescopic axes extend the area of application of conventional stroke axes. With half the axis length, our telescopic axes achieve almost the same load capacity and the same rigidity and position accuracy as the traditional variant.



Flying robot with carriage on gantry

Flying robot

Application of the flying robot lends itself to various applications:

- if the aim is to save on floor space
- if loading needs to be performed from above with complex movements
- if the aim is to transport parts without floor automation

A robot is equipped with an additional axis by mounting it on a gantry. Such a flying robot then has degrees of freedom in every spatial direction and a view over everything: Above the machine column, it supplies machines, guarantees the flow of parts, transfers parts to individual cells or performs loading tasks itself.

The robot's range of motion is thus heavily influenced by the robot itself and how it is mounted, i.e. its mounting position. Lateral mounting ensures a large range of motion, including directly underneath the robot. Vertical mounting allows gripping in a 360° radius around the robot.

Liebherr uses robot arms from Kuka, Fanuc and ABB, which are embedded in the Liebherr automation system. A gantry modular system allows many different combinations to be realized. The control system's design is also flexible. It can be designed as a higher-level master cell control system or integrated as a slave in a complete system.

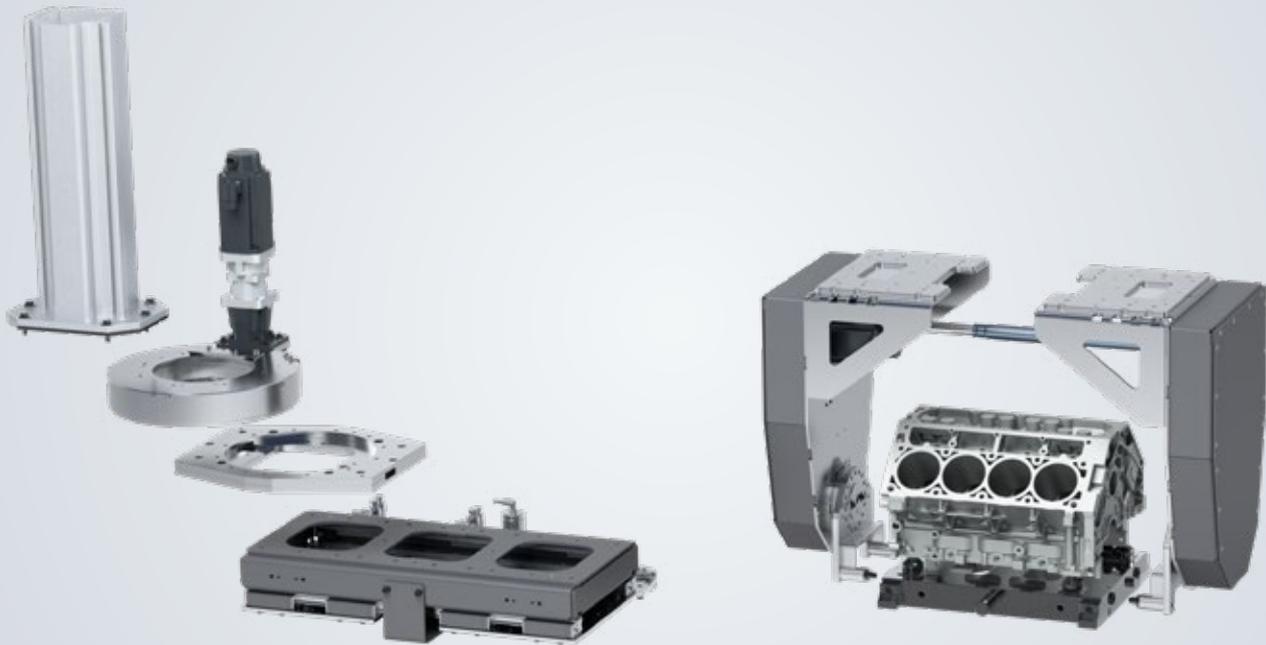


Lateral mounting



Vertical mounting

Gripper kit



We have a comprehensive modular gripper kit for the range of parts to be automated. This enables us to implement all the required gripping and axis movements, from simple gripping movements for shafts and wheels to complex turning and swivel movements for cubic parts. In the process, we combine basic components from global manufacturers with our own in-house platform. Part variants are handled by a flexible gripper system, which can be expanded to include an automatic gripper changing system if required.

Application examples



Toothed gear



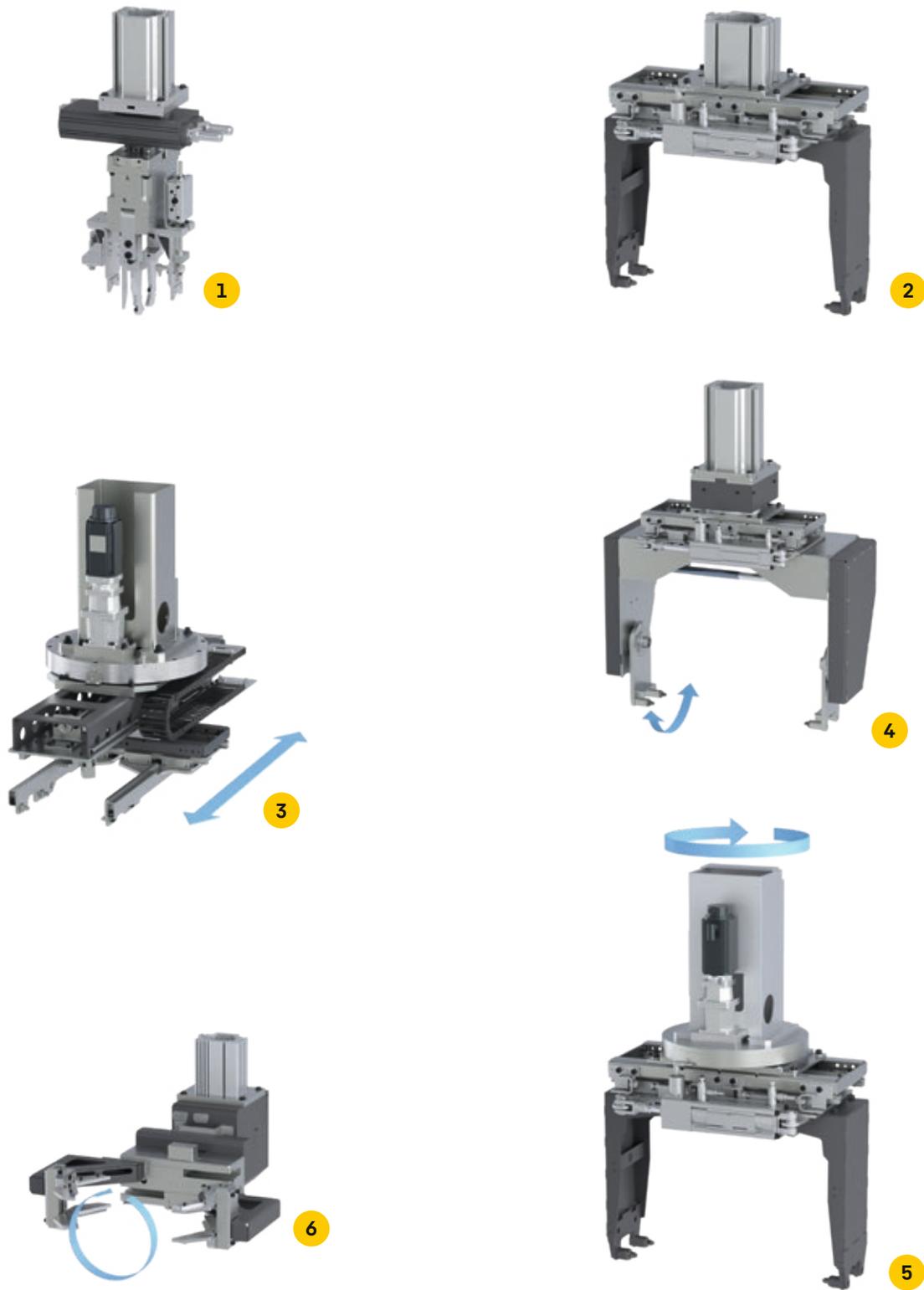
Crank shaft



Car cylinder block



Truck cylinder block



1 Crank shaft gripper · 2 Standard gripper for cubic parts · 3 Gripper for cubic parts with horizontal linear axis (Y-axis) · 4 Gripper for cubic parts with bucket axis (A-axis) · 5 Gripper for cubic parts with rotary axis (C-axis) · 6 Gripper for cubic parts with rotary axis (D-axis)

Floor automation

Conveyor belt systems



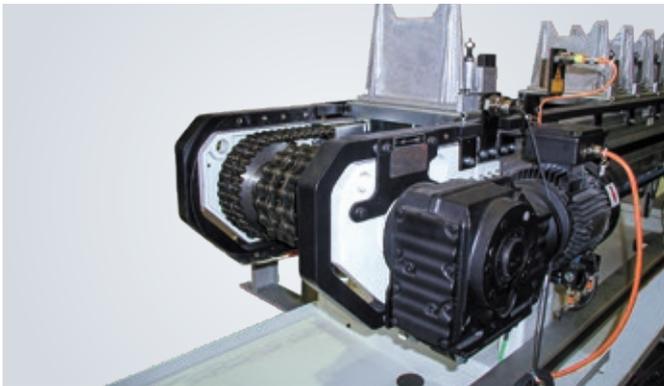
Friction roller conveyor (FRB)

Using friction roller conveyors, workpieces can be transported directly or on pallets. In this case, the transport length can be extended as required by joining individual conveyor sections together. The queue effect means that they are cycle-independent. The friction principle means that the transport surface on the workpiece is not damaged.



Plastic chain conveyor (KKB)

Plastic chain conveyors from Liebherr are designed to transport any number of irregularly shaped workpieces without them coming into contact with each other. The workpieces are transported on pallets. The queue effect means that they are cycle-independent. Depending on weight class and component requirements, various plastic chain conveyor designs are available.



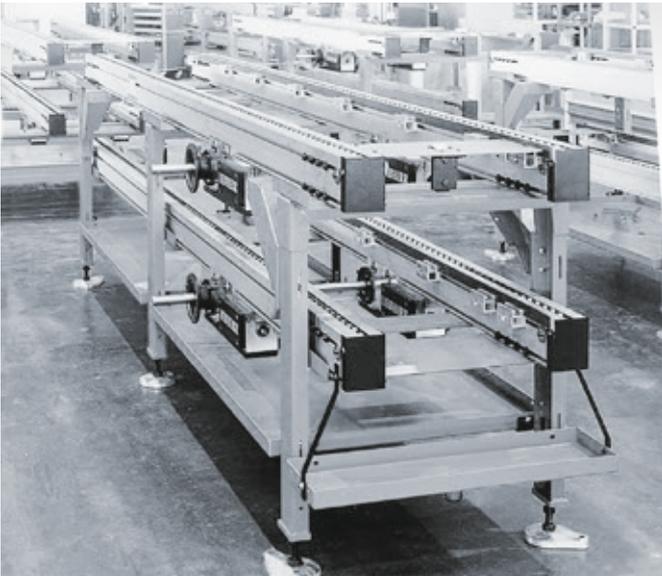
Pallet accumulating conveyor (PSB)

Pallet accumulating conveyors are also used to transport any number of irregularly shaped workpieces without them coming into contact with each other. Here, too, the workpieces are transported on pallets. The queue effect means that they are cycle-independent. The pallets are returned on the underside of the conveyor to save space.



Section roller conveyor (SERB)

Workpieces can be transported directly or on pallets using section roller conveyors. They also have a weight-independent automatic accumulating function. Section roller conveyors are particularly suitable for the transport of heavy components for which a queue effect would present the danger of injury, e.g. by crushing. Since each section has its own drive, they are cycle-independent.



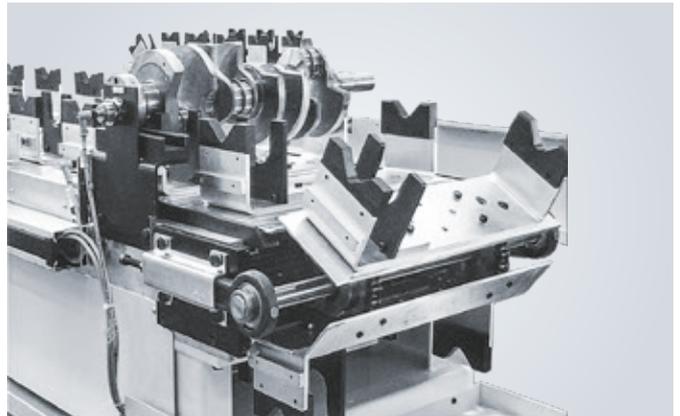
Accumulating conveyor (SFB)

Using accumulating conveyors, it is possible to transport workpieces either directly or on pallets. By joining individual belt sections together, the transport length can be extended as far as required; accumulating conveyors are also cycle-independent.



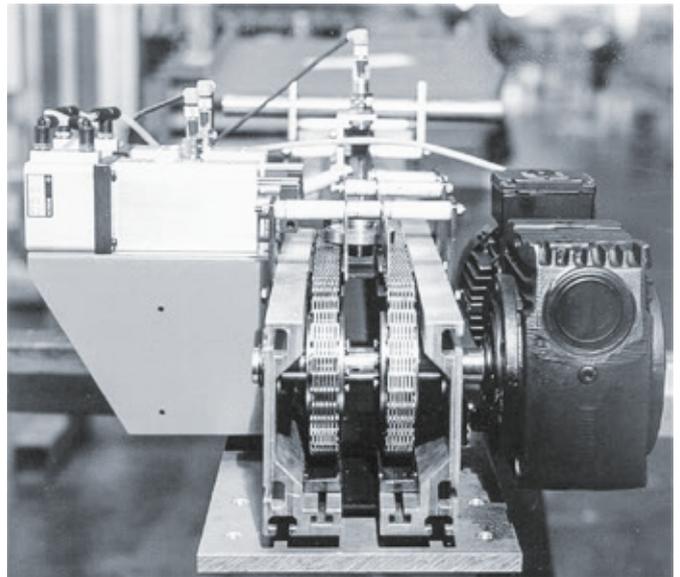
Hinged chain conveyor (SKB)

Hinged chain conveyors make it possible to transport workpieces with a flat transport surface, e.g. toothed gears. Depending on requirements, multi-land versions are also possible. By joining individual belt sections together, hinged chain conveyors can be extended to any length. The queue effect means that they are also cycle-independent.



Indexing chain conveyor (TKB)

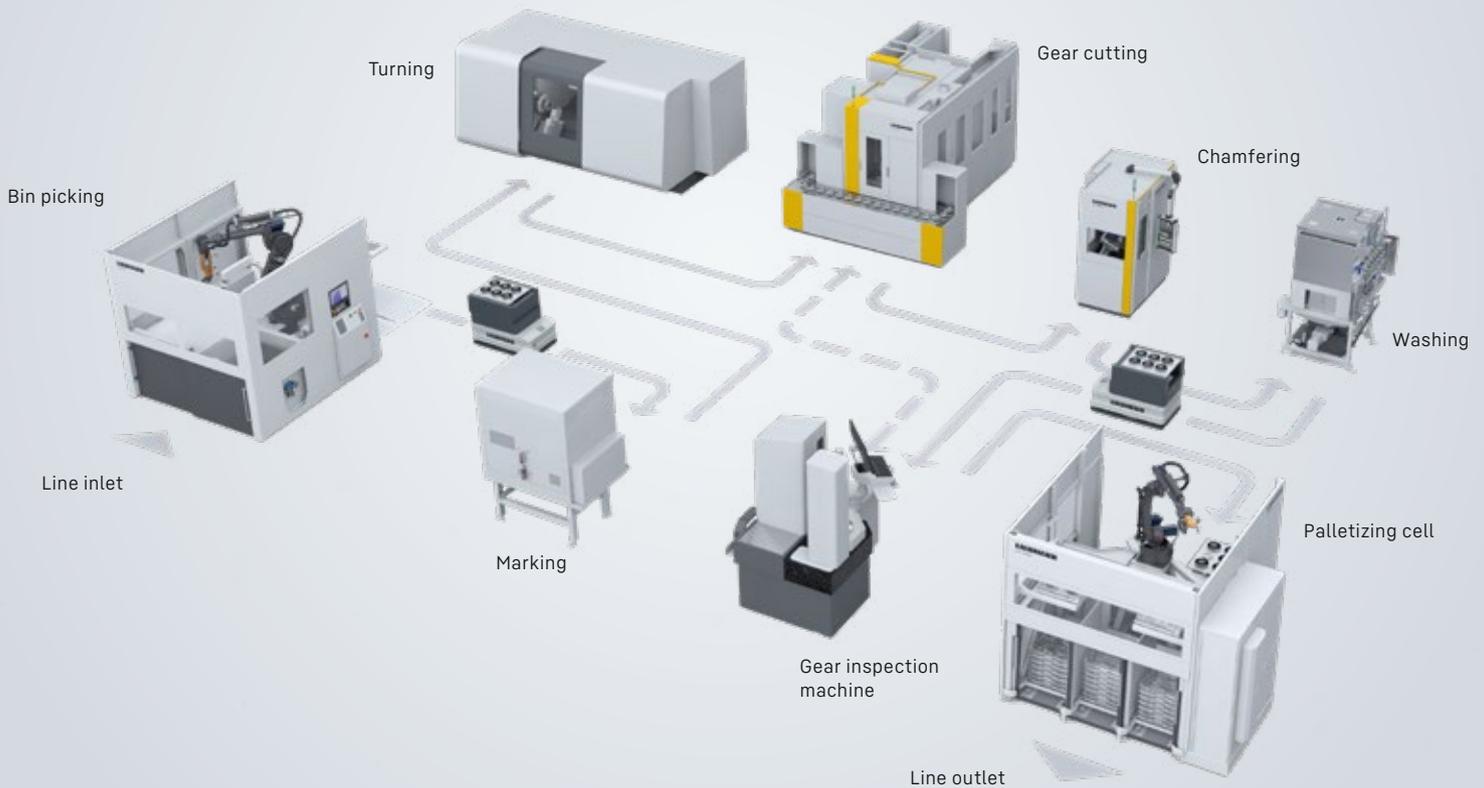
Indexing chain conveyors are used to transport parts on workpiece carriers. They are permanently joined to the drive chain and are conveyed in a cycle-dependent manner.



Tooth chain conveyor (ZKB)

Tooth chain conveyors transport workpieces that do not have a flat transport surface, e.g. those with pins or tool flanges. By joining individual belt sections together, cycle-independent tooth chain conveyors can be extended to any length

Automated guided vehicle systems AGV

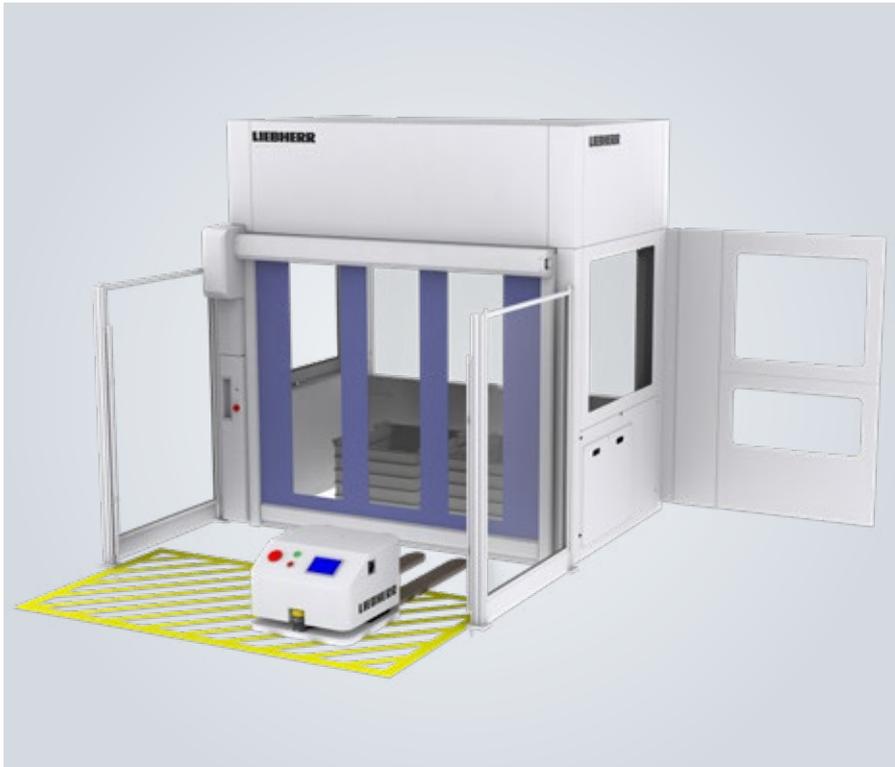


Use of AGV to interlink machines and functional systems – interlinking manufacturing islands / cells

Designing the interlinking of machines with maximum flexibility

With an AGV, machines or manufacturing cells can be linked flexibly – fixed paths are no longer obligatory. If the manufacturing sequence changes, the AGV can simply respond to this by changing its course of travel. Likewise, the paths and interfaces can be adapted if new devices or storage areas are added.

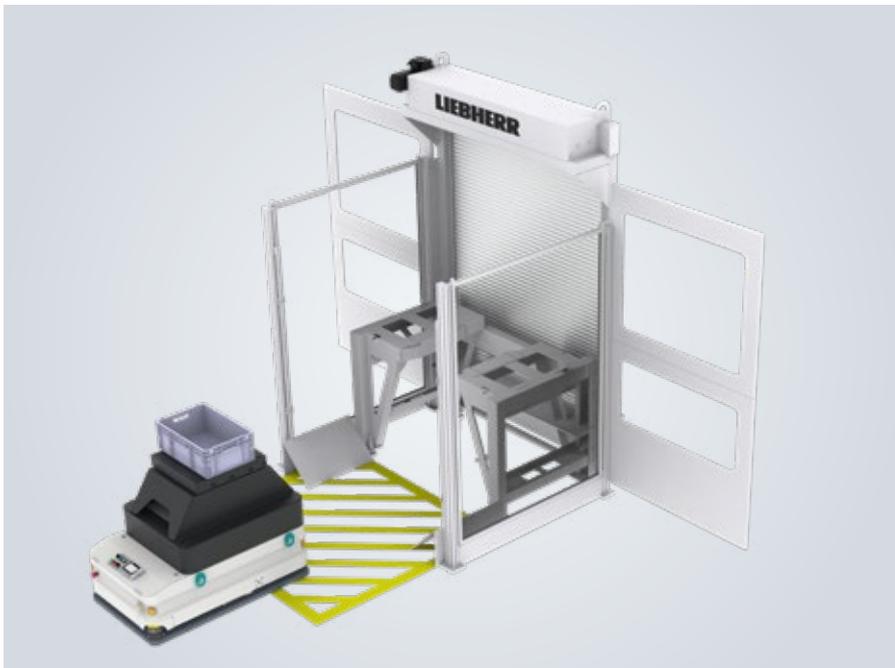
If an increased transport capacity is needed, further vehicles can simply be added to the vehicle pool. This makes an AGV the most flexible type of floor automation.



AGV interface to universal Liebherr feed module

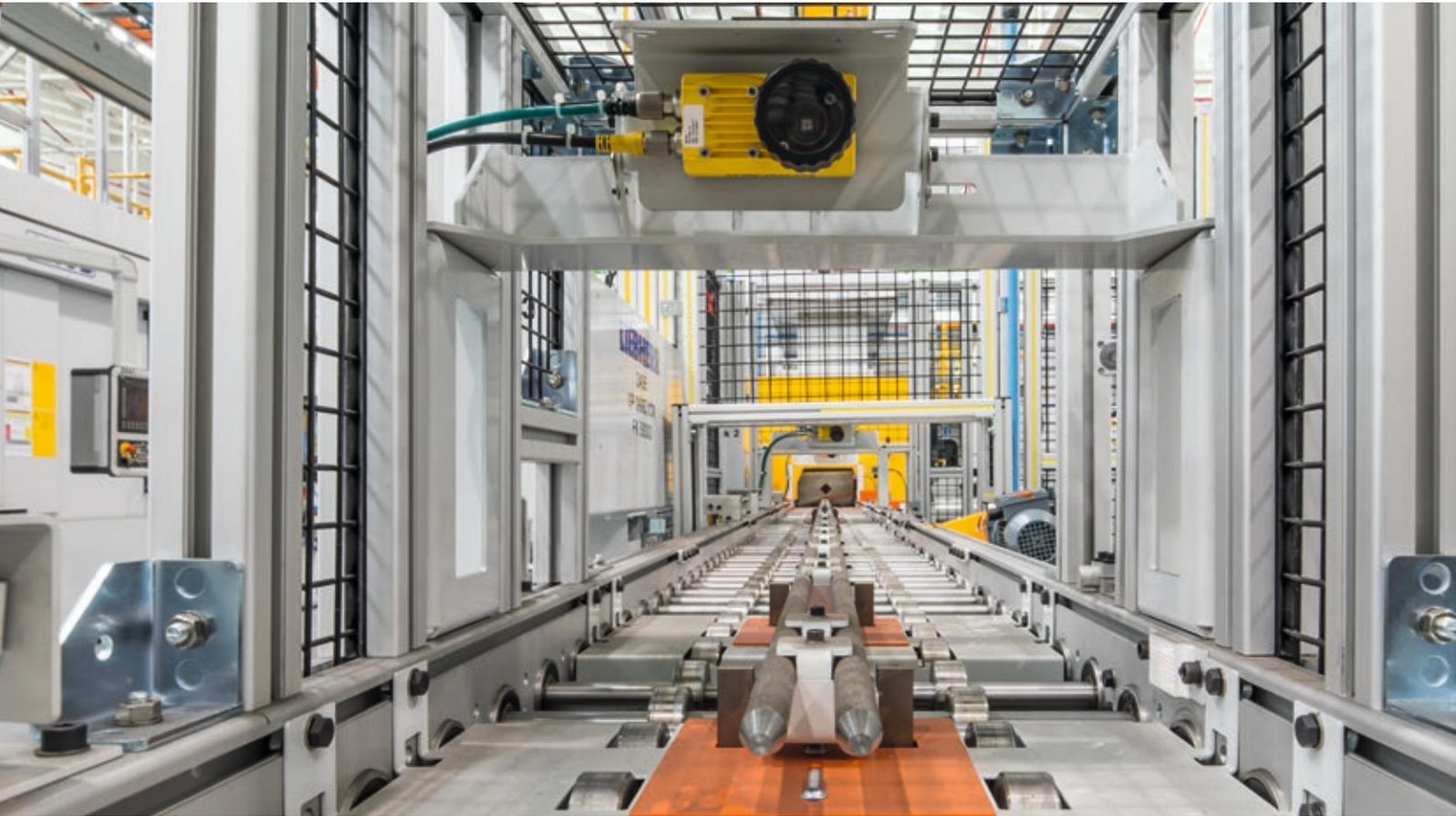
Our expertise includes the integration of the AGV fleet and interface coordination with vehicle manufacturers. During design, details such as the positioning accuracy at the transfer station, the required safety devices and the operating concept must be agreed on. In addition, smart functions such as the automatic ordering of material can be included: The Liebherr manufacturing system proactively recognizes a need and requests new blanks from the AGV. The AGV can also implement an SPC strategy in which the Liebherr system regularly loads parts into an SPC station which are then transported into a measuring room by the AGV. Tool transport is another possible application.

Each AGV can be simply and quickly connected with Liebherr products – regardless of whether an interface to a robot cell, a pallet handling system, a gantry loader, conveyor belt, or a stationary deposit place is required. A comprehensive interface platform enables us to implement any transfer situation.



AGV sluice for infeed and removal of SPC parts

Additional devices



As well as parts transport, manufacturing systems must often cover additional tasks. These may be the unloading of workpieces for statistical process control, cleaning to avoid cooling lubricant carryover, detecting and tracking workpieces in the manufacturing process, or labeling a component with a data matrix code. For all these tasks, Liebherr can offer a suitable solution from its comprehensive peripheral platform.



Unloading station

Statistical process control is a fixed element of any production line in modern manufacturing systems. Liebherr supplies modular stations for the unloading and loading of random samples.

In addition, depending on the design, these units enable gripper maintenance or changeover processes with minimum space requirement



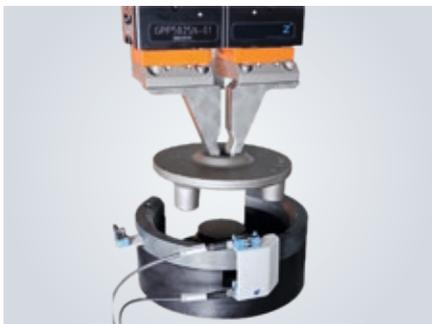
Labeling systems

With the high-quality labeling systems offered by Liebherr, number combinations or codes can be lasered, etched or engraved onto the workpiece.



Camera systems

With the aid of camera systems, labels and codes on the workpieces can be read and their information transferred to higher-level production management systems.



Orientation station

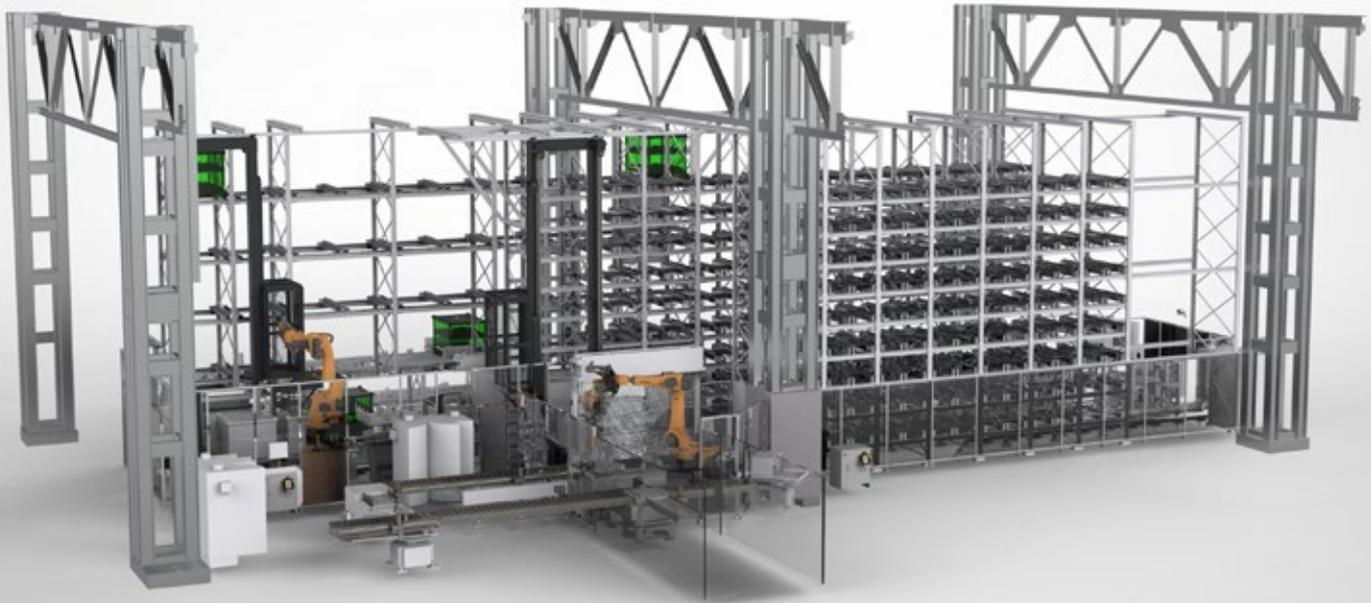
Modern production machines require that workpieces are loaded with the correct orientation. If the loading system is incapable of doing this, Liebherr offers ancillary orientation stations.



Cleaning station

To prevent the displacement or mixing of cooling lubricants, it is necessary for the workpieces to be cleaned automatically. Depending on the needs of the customer and the workpiece, different processes are employed. The Liebherr platform can include centrifugal, vacuum and blow-off devices.

Storage systems



Pallet handling systems with robot cells as end-of-line storage

Storage systems for workpieces can be deployed in a variety of ways: for decoupling on a manufacturing line, as a loading/unloading device, or as a classic logistics module with storage function.

Shelf magazine with gantry loader

Workpieces are stored on racks using a Liebherr gantry loader. The shelf magazine can be loaded either from the top or from the side. Due to its modular design, the overall system can be extended as far as required and, depending on the layout, enables storage based on the “first in, first out” principle.

Decoupling module EKM

The decoupling module is used for storage and decoupling in manufacturing lines. It has a high storage capacity with a small surface area requirement and is suitable for a very wide range of workpieces and production concepts. Workpieces are placed on pallets in the decoupling module and made available to gantry or robot systems via pull-out mechanisms to allow loading and unloading. A manual loading and unloading drawer for gauge parts can be integrated if needed.

High-bay shelves or pallet handling system pallet storage

In a pallet handling system, workpieces can be stored on pallets or parts in load carriers such as wire baskets or Euro pallets. High-bay shelves with large storage capacities can compensate for production fluctuations; for example, as systems for “end-of-line” storage prior to loading onto trucks. High-performance storage and retrieval units can move loads weighing several tons.

Robot integration



Flexible robot cell for the line inlet and outlet

Liebherr provides robot cells for automated feeding of blanks and removal of finished parts in manufacturing facilities in the powertrain and bodywork sector and has extensive expertise in the field of systems and software for object detection independent of the camera system in use.

Machining processes are highly customized, meaning that flexible products are needed. Our robot systems are unrivaled in their versatility and form economic solutions from “line in” to “line out”: We have solutions for all parts handling, palletizing, depalletizing and bin picking tasks on the way from the blank to the finished part.

Alimentation de pièces – Liebherr met toutes les pièces en place

Dès le début du processus, des exigences sont posées en matière d'automatisation : selon la façon dont les pièces sont acheminées, Liebherr fournit la technologie adéquate pour orienter les pièces. Cela peut être effectué via une cellule robotisée standardisée pour la dépalettisation, soit avec des processus de mouvement programmés de manière fixe, soit via un système de vision 2D ou 3D. Si les exigences sont complexes, une cellule robotisée standardisée est combinée avec la technologie sophistiquée Bin Picking.

Usinage – Cellules flexibles pour applications flexibles

Dans les systèmes de production ou de fabrication en série, les cellules robotisées Liebherr permettent d'automatiser les différentes étapes du processus. Diverses applications sont possibles comme les tâches de tri et de prélèvement ou encore les tâches additionnelles telles que le nettoyage, le marquage ou l'ébavurage.

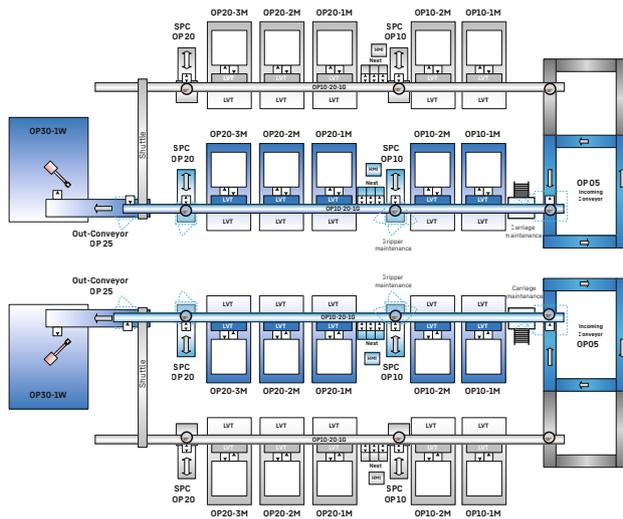
Évacuation des pièces – Vos pièces sont prêtes pour l'étape suivante

L'évacuation des pièces est le pendant inverse de l'entrée de ligne. Selon les exigences du processus consécutif – ou du chargement – un robot en sortie de ligne distribue les pièces de la manière souhaitée.



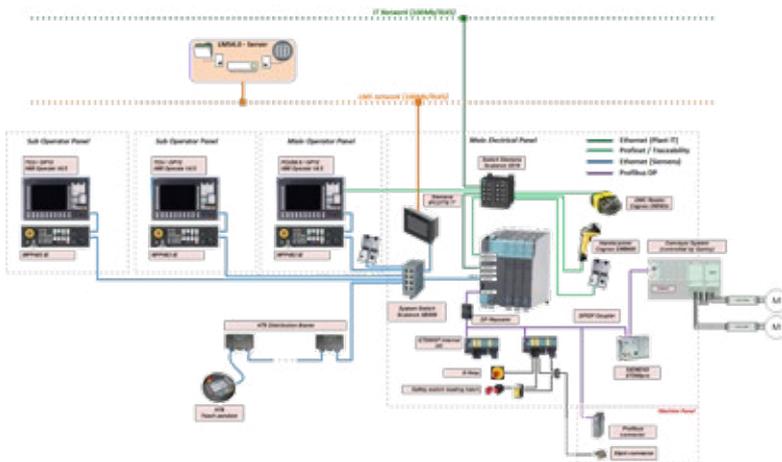
Video: Flexible production
networking
<https://www.youtube.com/watch?v=RBi5EZcz0r8&list=PLC5481F2D19BB6A5F&index=11>

Control system and software



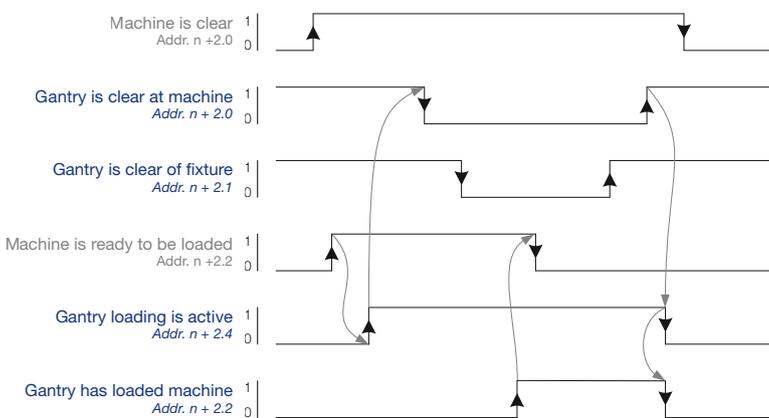
System description

The individual functions and sequences of the Liebherr automation systems within the manufacturing line are described and visually represented as a block layout in the system description. All the operating modes, the safety functions and the emergency strategies are described according to the machine guidelines. The description covers all the stations directly controlled by the gantry loader cell control, as well as additionally managed stations such as conveyor belts, marking devices or camera systems.



Control book

The control book describes the control architecture of the Liebherr automation systems, as well as the selected electrical components, taking customer specifications into account.



Interface specification

The interface specification describes the electrical interface between the Liebherr automation systems and the connected machines and stations.

A wide variety of processing machines, control or production planning systems can be integrated with a standardized software interface. This interface helps to ensure short commissioning times and smooth operation, as well as easy maintenance of the plant throughout the entire life cycle of the product.

Liebherr Manufacturing System (LMS 4.0)



Liebherr Manufacturing System (LMS 4.0)

Les systèmes de production complexes nécessitent un concept système intelligent et global. Avec le Liebherr Manufacturing System, Liebherr propose un logiciel additionnel facile d'utilisation qui garantit la sécurité du processus dans une ligne de production ou de montage. Le logiciel de base peut aussi être adapté de manière judicieuse aux exigences spécifiques du client par le biais d'applications, en fonction du module souhaité.

L'application Part Tracking est capable de documenter et d'enregistrer de manière durable le suivi des pièces. Le système propose une multitude d'évaluations. Ainsi, **l'application de surveillance** de la production peut être utilisée pour surveiller le respect du processus de fabrication. Lors de la première insertion de la pièce dans la ligne de fabrication, un nouveau jeu de données est créé dans LMS. Le jeu de données est actualisé de façon continue après chaque étape d'usinage. Si la pièce quitte la ligne de fabrication par voie régulière, le jeu de données est archivé dans l'ordre chronologique dans la mémoire à long terme. Si, suite à un contrôle, la pièce doit être réintroduite dans la ligne par le biais d'une station SPC, LMS vérifie en

premier lieu si la pièce présente le degré de fabrication requis et refuse, le cas échéant, l'autorisation d'introduire la pièce dans la station SPC correspondante.

L'application Production Schedule offre la possibilité de traiter les commandes de production selon les priorités. Elle peut suivre une logique statique, par exemple dans un ordre préétabli, ou dynamique, par exemple en tenant compte de la date de fin enregistrée.

L'application Info Board permet d'afficher facilement le déroulement des processus sur grand écran ou sur appareils mobiles. De nombreuses fonctions supplémentaires utiles, telles que le mail Client qui envoie des e-mails automatiquement à une liste de personnes dès qu'une erreur ou qu'un avertissement apparaît, parachèvent le système.



Vidéo : LMS 4.0
https://www.youtube.com/watch?v=_Ve6ECD9ryU&list=PLC5481F2D19BB6A5F&index=3

System competence at a glance

Pallet handling systems

In addition to organization as a manufacturing line, it is also possible to work with production cells or islands. A Liebherr pallet handling system automates and interlinks machining centers in a flexible manufacturing system which is particularly suitable for small to medium unit numbers.

Buffer storage for the line inlet or outlet

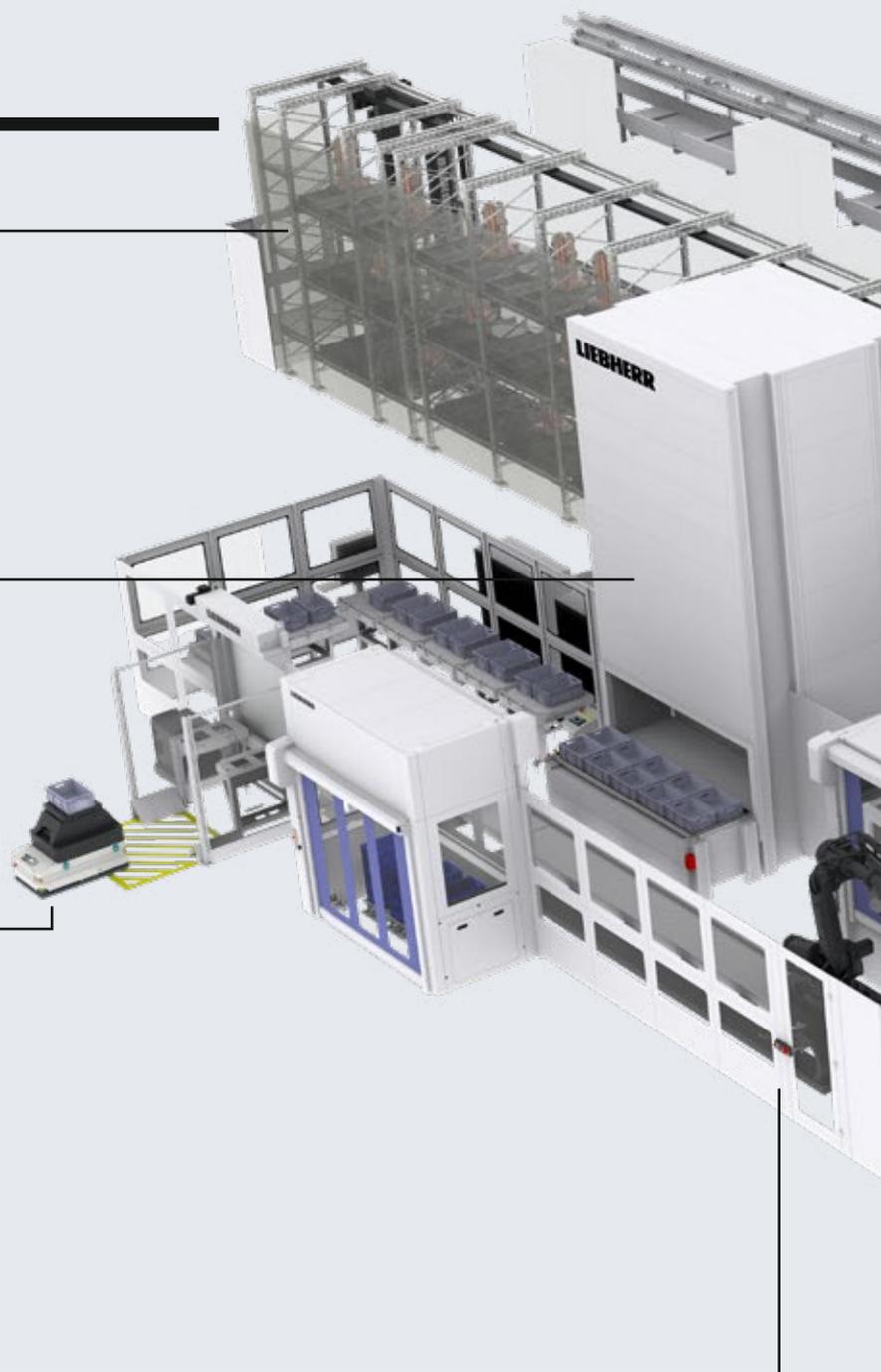
If parts are to be stored without pallets, here for example at the line inlet, additional storage systems are suitable.

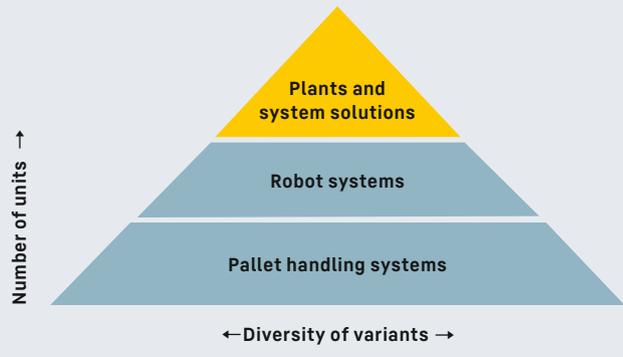
Automated quality assurance

Here, an AGV is used to transport random samples away for quality control, for example as part of statistical process control (SPC). The manufacturing system control system stores random samples according to the quality strategy and communicates with the AGV, which brings the random samples into a measuring room. After a successful inspection, the parts are fed back into the system.

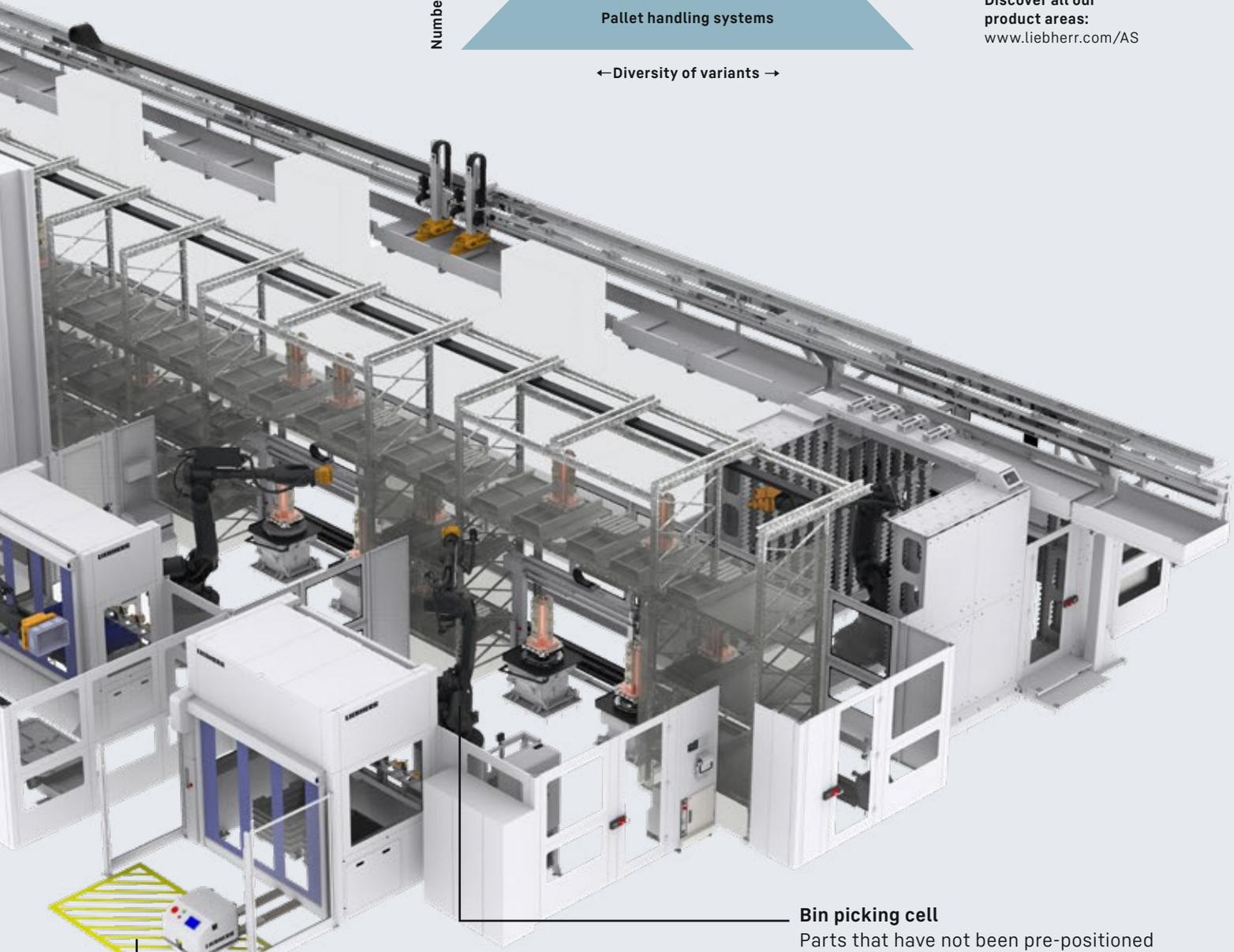
Flexible cells

Liebherr integrates robots in various ways. In this system, the robot is responsible for commissioning orders. It gathers workpieces and either transfers them to the buffer store or rejects them.





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Taking the burden off intralogistics
 Parts delivery can also be carried out by an AGV. The Liebherr control system can be designed in such a way that the system independently re-orders raw material which is then delivered by AGV.

Bin picking cell
 Parts that have not been pre-positioned are fed into the flexible manufacturing system. A vision system scans the parts, and the LHRobotics.Vision software calculates how to remove the parts without collisions and what path the robot should take to the depositing point in the clamping fixture. The robot picks up the workpieces and sets them up on pallets which are fed into the pallet handling system. Machines could also be directly loaded in the same way.

Project and quality management



As a system supplier, Liebherr is responsible for all aspects of project planning, including system specification and interface clarification with subcontractors. Each project is assigned a project manager, who acts as the central point of contact and is responsible for the entire order processing. With modern ERP and project management systems, we guarantee smooth project processing.

Control books, interface specifications and system descriptions are created in collaboration with the customer in order to ensure compliance with the applicable laws, standards and guidelines. The content of these documents provides the design specifications for all the manufacturers and suppliers involved. In this way, Liebherr is able to take on responsibility for the overall system's CE conformity.



Quality and sustainability

Quality is central to the goals of the Liebherr Group. Alongside this, protecting people and the environment is firmly rooted in our company values. It is for this very reason that we have set ourselves the key objective of ensuring that our products and processes are of high quality and sustainable.

We have been certified according to ISO 9001 (quality), ISO 14001 (environment), ISO 45001 (occupational safety) and VDA 6.4 (Code of the German Automotive Industry Association for manufacturers of production equipment and systems) for a number of years now.

“The highest quality in everything we do”

To fulfill this specification, quality management pays close attention to the strong collaboration between individual departments. The goal is a uniform process philosophy. Quality is no longer an individual point at the end of the production chain, but a supporting process throughout all phases of product development.

A team of specialists for product and process quality are responsible for this task. On the one hand, the aim is to reduce costs arising from poor quality (e.g. warranty use cases) and, on the other, to reduce costs in the product development process (process quality).

Quality assurance is made possible by a coordinated system of intermediate tests and final testing of the finished product. The quality of the processes is constantly



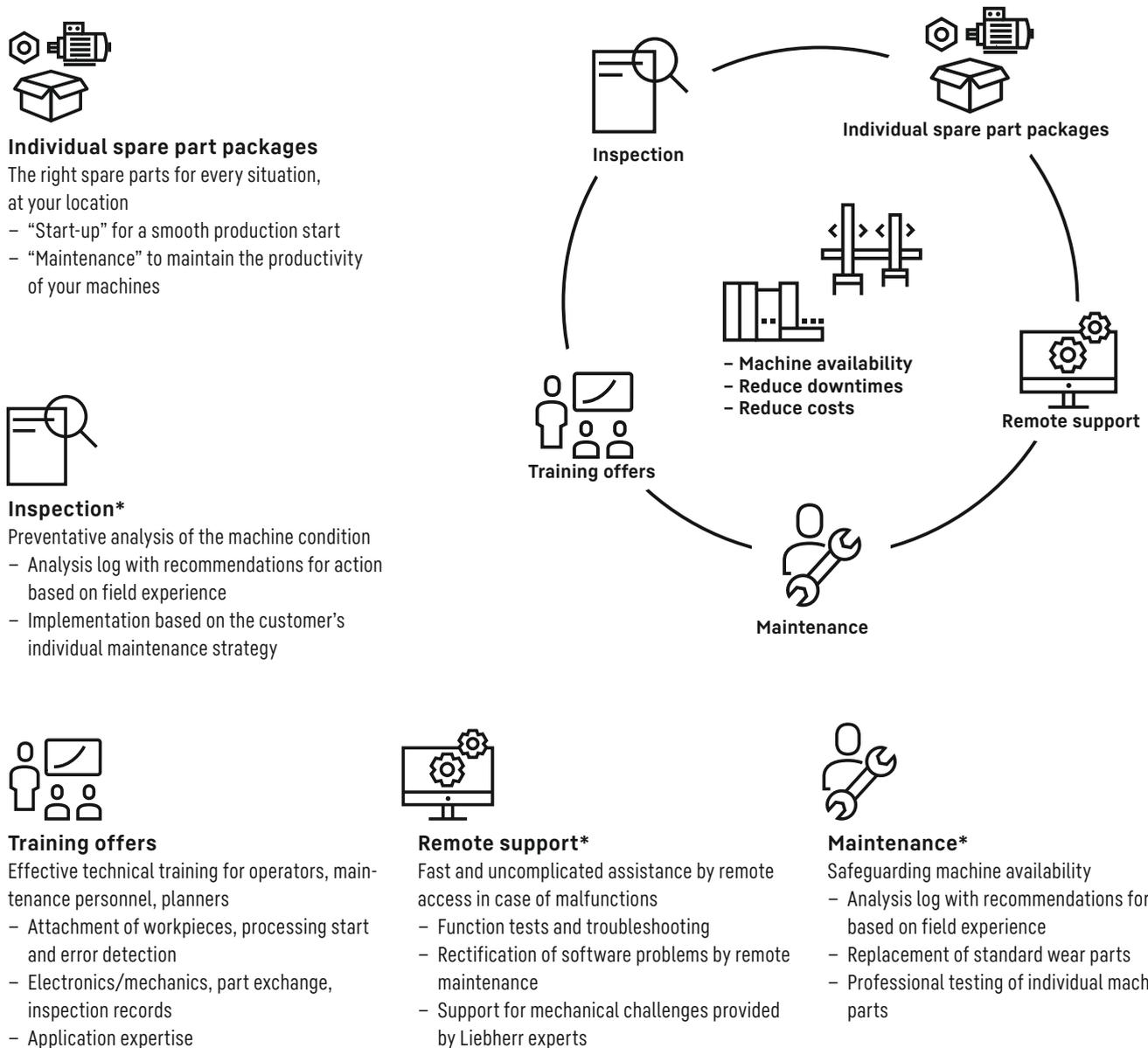
monitored and optimized throughout the entire product development process with a meticulously coordinated “Quality Gate Systematics”.



Service over the entire life cycle

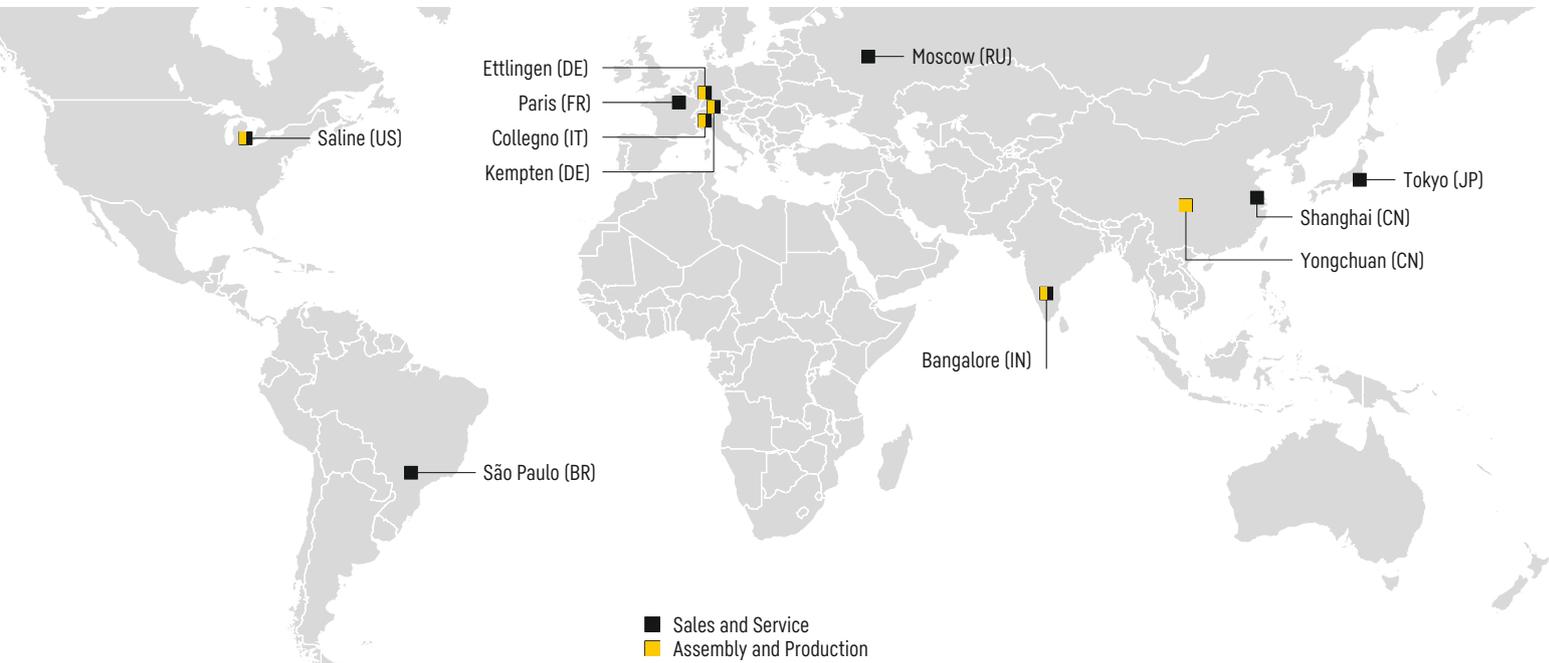
Worldwide presence and spare parts availability

With our main location in Kempten, Germany and global offices and service support points, we guarantee fast response times, which enable us to dispatch a service engineer to the customer location immediately if necessary. Our range of services includes inspections, training offers, individual spare part packages, remote support and maintenance or conversion of systems.



*individually or as part of the contract

Your solution provider



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