

# Intralogistics

Connection solutions for  
machines and plants in intralogistics





# We fulfil your requirements for modern intralogistics – today and in the future.

In a world where markets are changing ever faster and competitive pressure is increasing, companies need solutions that are not only flexible, scalable and efficient today, but also in the future. Especially in intralogistics – one of the most dynamic sectors – it is crucial to processes quickly to new requirements. Whether through the automation of processes, the networking of systems or the optimisation of resources – LAPP offers you the right solutions successfully shape your logistics of the future.

## Your challenge – our solution

In intralogistics, companies are faced with a variety of challenges. The demand for faster availability of goods and flexible logistics processes is increasing, which places additional demands on the infrastructure. Added to this is the increasing need for automated and networked systems that have to work reliably and quickly at all times.

LAPP is your partner when it comes to optimising your logistics processes with innovative cable and connection solutions. We offer you customised solutions that both efficiency and flexibility. You can rely on our products to fulfil your requirements for modern intralogistics – today and in the future.

## Connection solutions for your automation

With customised connection solutions from LAPP we guarantee reliable communication and data transfer within your automated logistics systems.

Thanks to our cables and connectors, we can provide you with a stable connection between the machines and the central control systems to guarantee smooth and error-free communication.

With our LAPP Harnessing solutions, we also offer cable assemblies, servo cables and cable chain systems that ensure that your machines and plants are always with power – even with dynamic and rapidly changing requirements.

## Modularity – flexibility that pays off

The demands placed on intralogistics are not static. Seasonal fluctuations, unforeseen market developments or sudden changes in demand require a high degree of flexibility. Our modular solutions enable you to adapt your infrastructure to suit your needs.

## Dynamics – efficiency that moves

An important part of our solution is the integration of intelligent networking and Industry 4.0 technologies, which enable you to control all processes efficiently and to changes in real time. This allows you to align your logistics with the needs of your customers and markets at all times.

## Scalability – for sustainable growth

Growth and efficiency are inextricably. LAPP helps to organise your logistics processes sustainably with scalable solutions. Our products and systems enable you to continuously expand your existing infrastructure without losing efficiency.

Increasing networking, the use of IoT and the integration of automated storage and transport systems require a high degree of scalability in order to be able to react quickly to market changes or product innovations. Our solutions are designed to adapt flexibly to these changes – without having to fundamentally overhaul your entire infrastructure.

## LAPP: your partner for the future of intralogistics

Rely on LAPP's expertise to optimise your intralogistics processes and prepare them for the future. Our high-performance connection solutions and our expertise in connection technology make us your reliable partner in an increasingly digitalised and automated world.

With LAPP at your side, you can concentrate on your core competences, while we ensure that your logistics are always one step ahead.

## Learn more:



Intralogistics: Everything is in flux



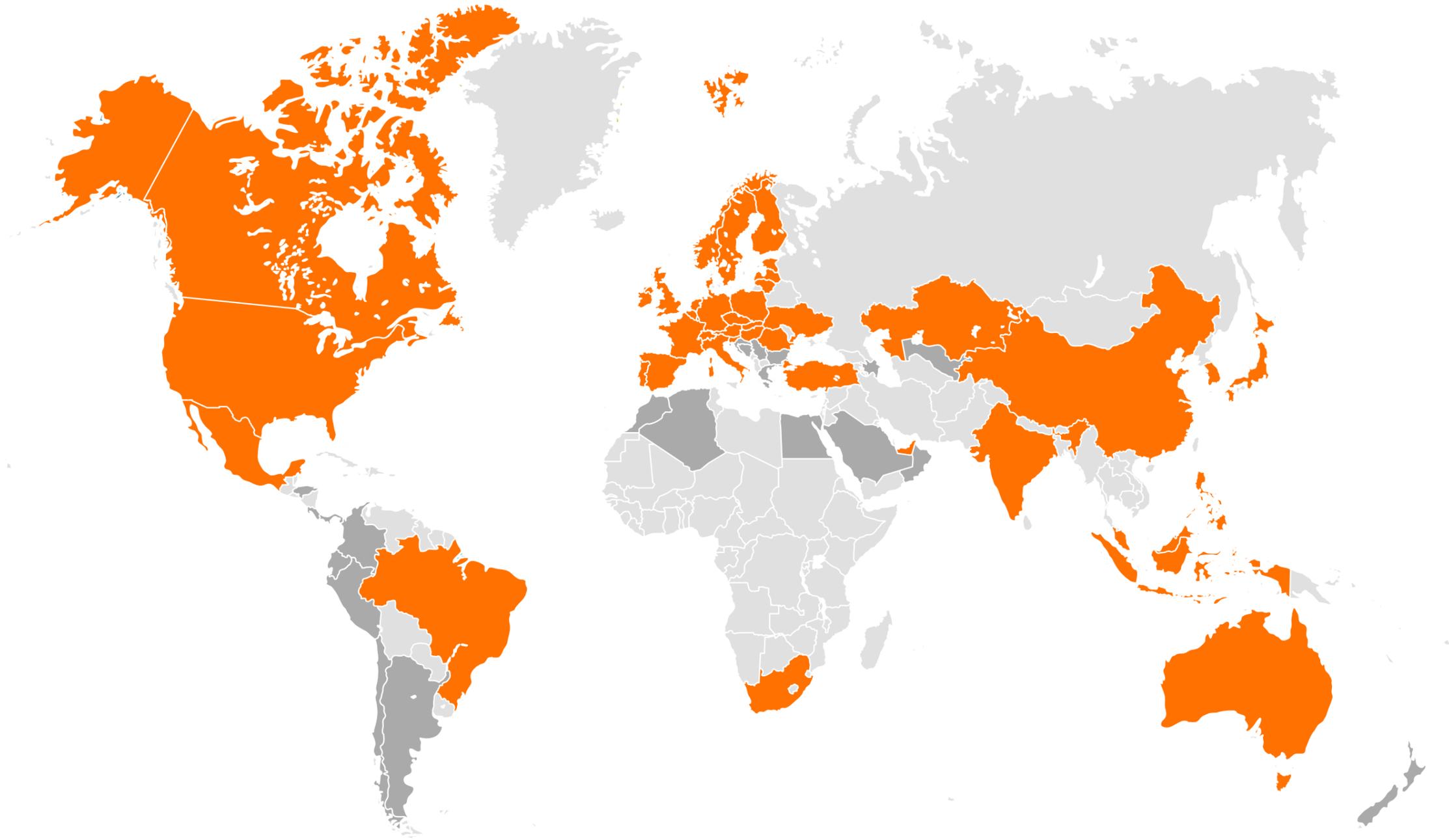
Intralogistics: "The signposts for the future are clearly today"

# Always close to you

LAPP is a globally active company that is close, fast and reliable to you worldwide. Thanks to our international network and locally based teams, we offer you high-quality products and customised solutions that perfectly tailored to regional market requirements. No matter where you are in the world – LAPP ensures that your requirements are met efficiently and with the utmost precision.

LAPP is your logistics expert because we have a global network that ensures a seamless and efficient supply chain. We support you from consulting to installation and take care of the integration and customisation of our solutions so that you can concentrate on your core competencies. With our expertise, we do everything we can to make your logistics processes efficient, sustainable and futureproof.

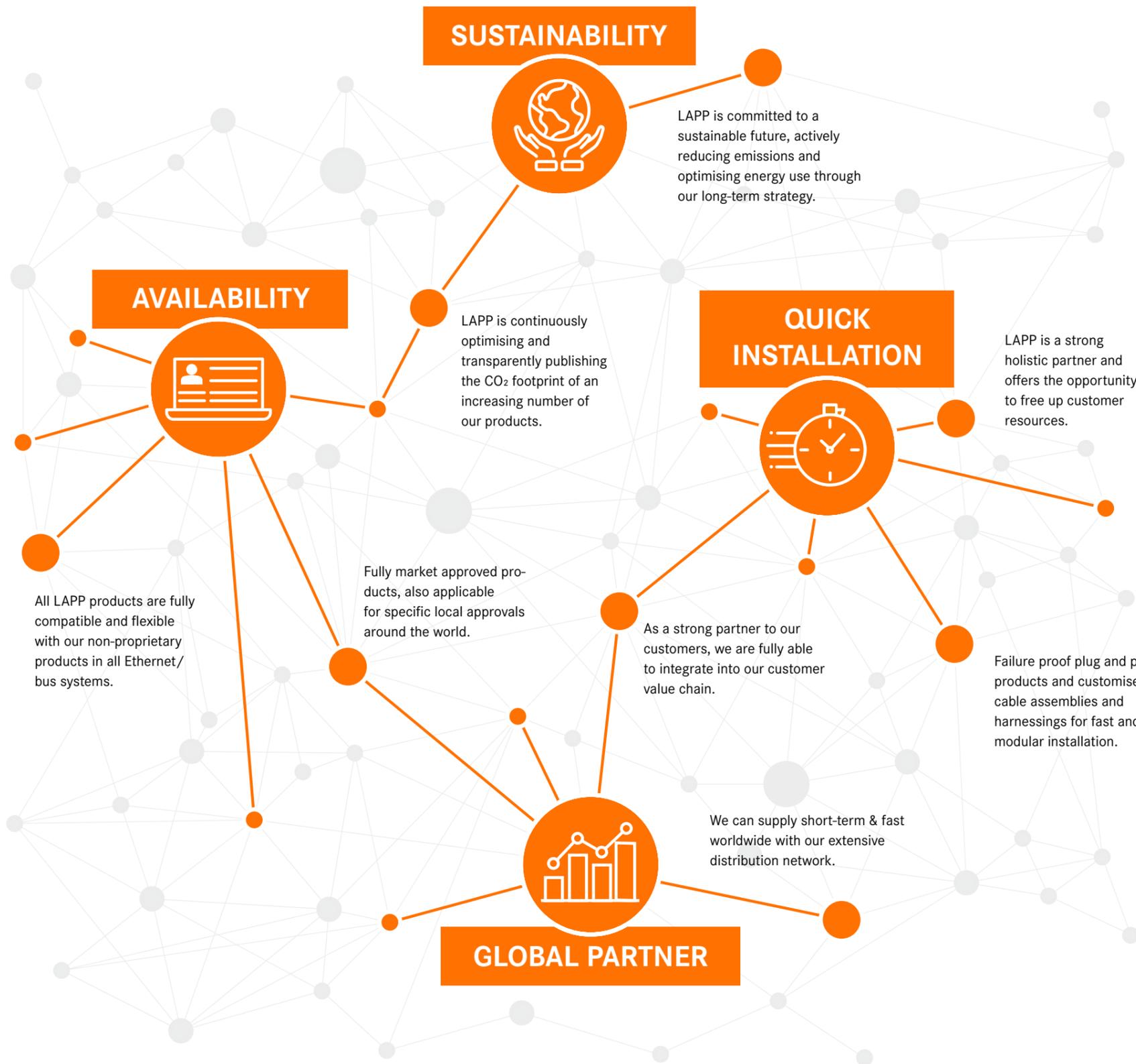
**Put your trust in LAPP - for a partnership that knows no boundaries.**



- Countries with LAPP sales companies in the global sales network
- Countries with international representatives in the global sales network



Get in touch with our experts  
[www.lapp.com/en/de/e/000040](http://www.lapp.com/en/de/e/000040)



# LAPP - your global partner for innovative connection solutions

With a global product portfolio, LAPP offers a comprehensive range of high-quality products that can be used in any intra-logistics and automation application. Our solutions are fully compatible and flexible – they fit easily into any Ethernet or bus system environment without the need for proprietary products. This enables seamless integration into your existing infrastructure.

As a holistic partner, LAPP offers more than just products – we also provide additional services that help you to free up resources. Our customised solutions are perfectly tailored to your specific needs and thoroughly tested. This allows you to concentrate on your core competences while we ensure that your logistics and automation systems run smoothly and are future-proof.

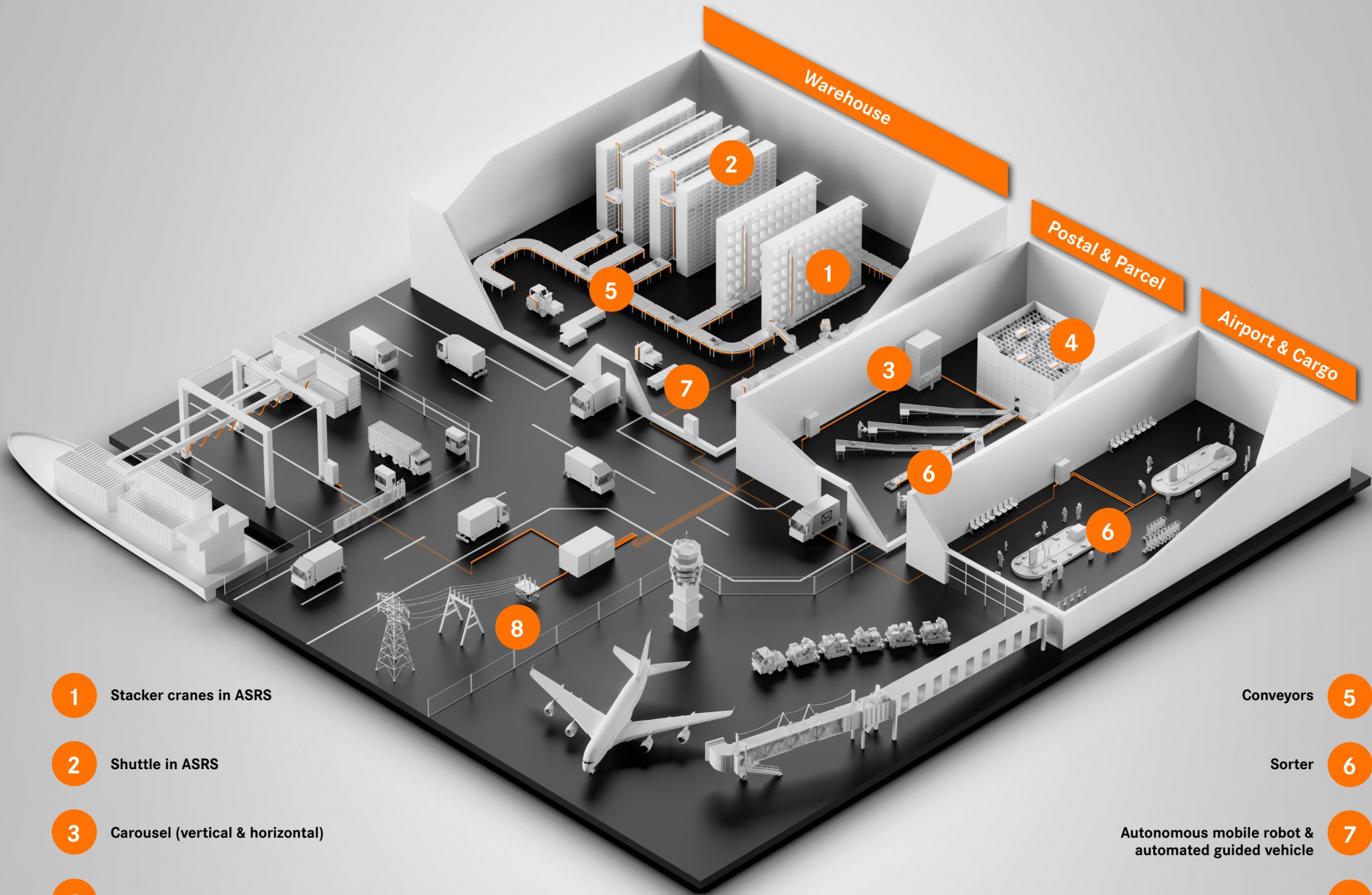
Our products are not only market-tested worldwide, but also certified for local approvals in various regions of the world. This guarantees that you can always rely on solutions that meet the highest safety and quality standards – no matter where you operate.

With LAPP, you have a strong partner at your side to help you organise your processes more efficiently and make optimum use of your resources.

LAPP supplies error-free "plug-and-play" products and customised connection solutions that enable fast and modular installation. With our expertise, we ensure that your systems are easy and efficient to implement, without complications or unnecessary delays.



Intralogistics at LAPP  
[www.lapp.com/en/de/e/083321](http://www.lapp.com/en/de/e/083321)



**1** Stacker cranes in ASRS

**2** Shuttle in ASRS

**3** Carousel (vertical & horizontal)

**4** Automatic small parts storage

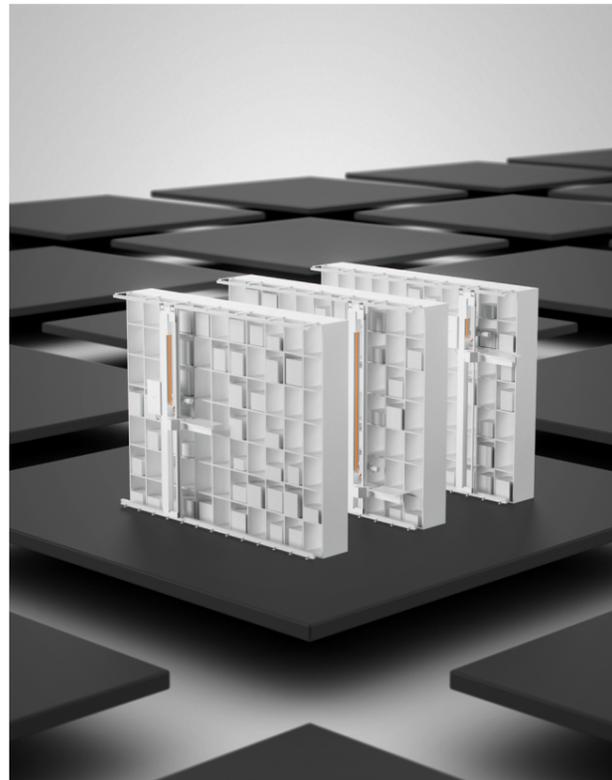
Conveyors **5**

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# The right solution for every requirement



## Stacker cranes in ASRS

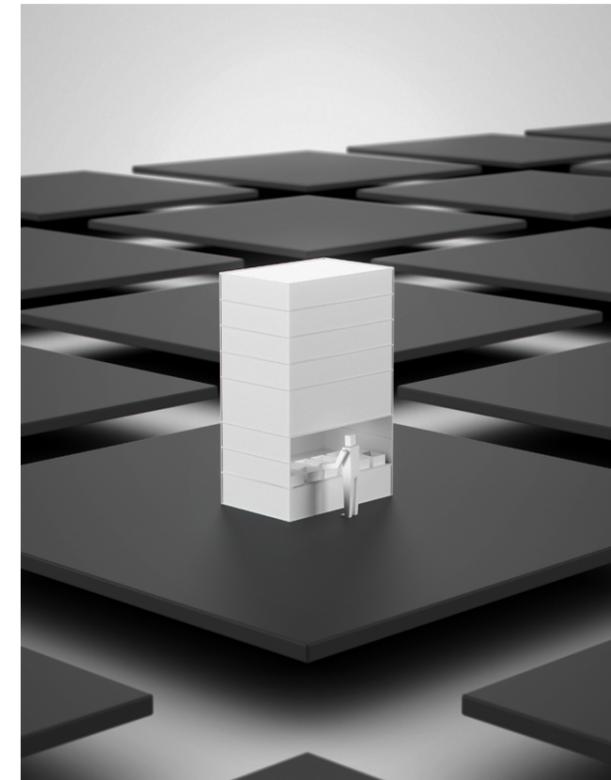
Stacker cranes are a central component of an automated storage and retrieval system (ASRS). These electrically powered, rail-guided cranes move vertically and horizontally within the high-bay warehouse for the storage and retrieval of goods. Depending on the system, the storage and retrieval machines can be between six and eight metres high, while larger models can reach heights of up to 46 metres. With a speed of up to six metres per second, they enable fast and efficient storage, reduce space requirements and significantly increase productivity in warehouse operations.

### Challenges:

- The assembly of stacker cranes is time-consuming and costly.
- The cable chain is often the weak point during maintenance.

### LAPP solutions:

- Complete stacker crane connectivity package for easy installation.
- Reduction of suppliers and complexity for shorter installation times.
- Highly reliable components to minimise downtime.



## Carousel (vertical & horizontal)

The carousel system is a sub-category of the ASRS and consists of containers that rotate on a predetermined track - either horizontally or vertically. The system rotates automatically until the desired container is in the correct position for removal. This technology operates at low to medium speeds and is particularly suitable for space-saving storage of small parts. The available space is optimally utilised thanks to the high storage density.

### Challenges:

- Series machines sold worldwide, where a certain variability of sizes and configurations must be covered.
- Too many different suppliers and connecting components that cannot be sold globally.

### LAPP solutions:

- Optimised cable chain design, can be used worldwide.
- Different variants for different carousel systems.
- Reduction of suppliers and complexity for shorter assembly times.

## Shuttle in ASRS

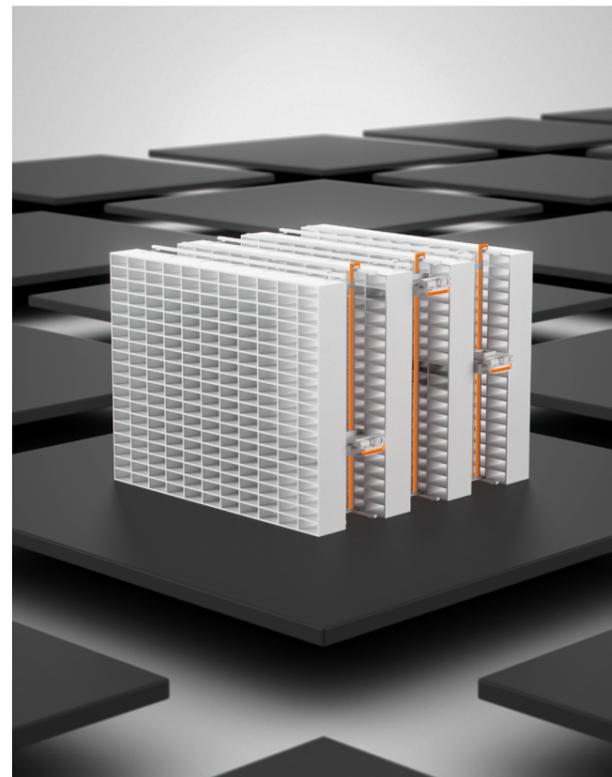
A shuttle system in an automated storage and retrieval system (ASRS) is a dynamic solution for storing and retrieving containers or pallets. The shuttles move autonomously within the rack structure and can operate either on a fixed level or between several level changes - through the use of rails or lifts. These modular and scalable systems enable a high degree of flexibility and can be expanded as required. High volumes can be achieved by using multiple shuttles.

### Challenges:

- High complexity of the system leads to high initial investment and maintenance costs.

### LAPP solutions:

- Cost reduction by offering prefabricated cable assemblies and modules.
- Reduction of suppliers and complexity for shorter assembly times.



## Automatic small parts storage

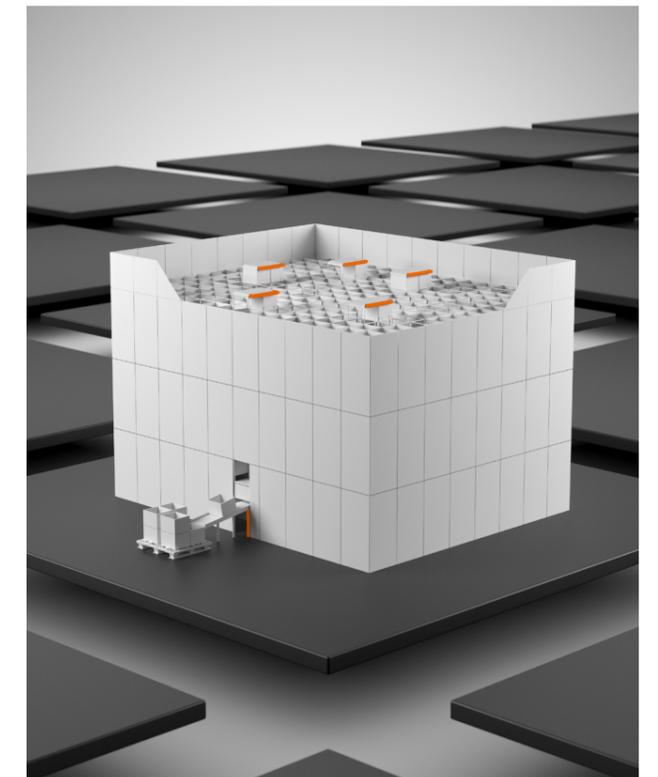
An automated small parts storage is an advanced storage system for the efficient storage and fast retrieval of large quantities of small parts. The fully automated and computer-controlled solution is often combined with ASRS systems, robotic arms, shuttles and conveyor systems to achieve a particularly high storage density. The use of modern control software ensures fast and error-free picking.

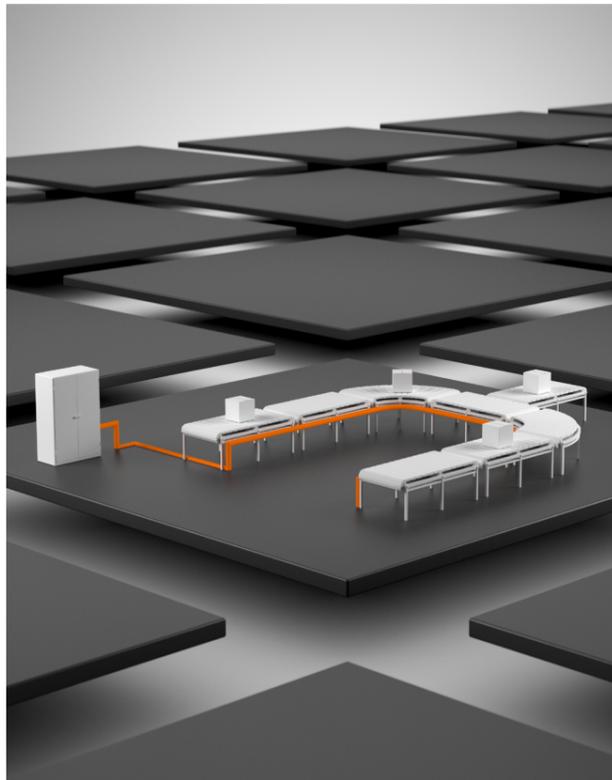
### Challenges:

- No series machine, high degree of modularity and customisation of sensor/actuator cabling required.
- Focus on automation, usually little expertise on the connectivity side.
- On-site installation is time-consuming.
- Requires a high quality and reliable cable system to minimise the risk of failure/maintenance.

### LAPP solutions:

- Design-in: Providing expertise for the best choice of cabling.
- Standardisation of connection elements to suit each customer's specific requirements.
- Plug & play solution for quick installation.





### Conveyers

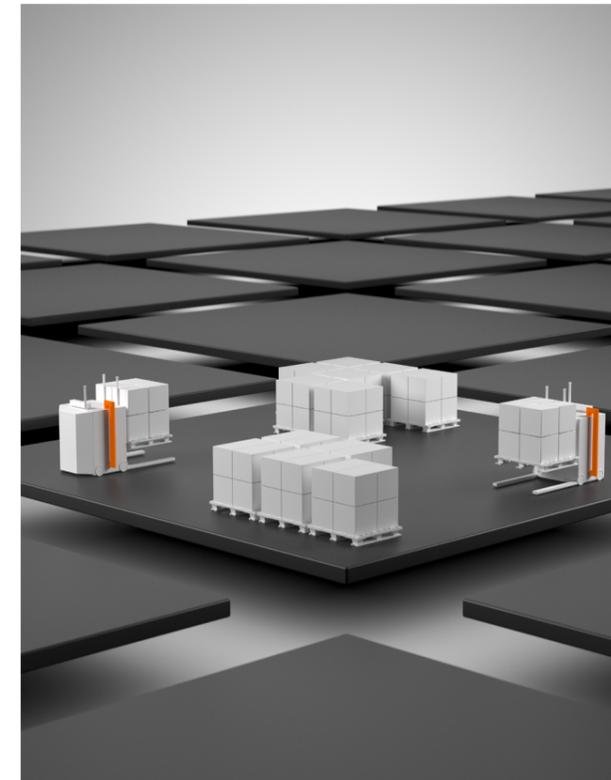
Conveyers enable the efficient transport, sorting and forwarding of goods within a warehouse or a production facility. Motorised rollers or conveyor belts are used. The systems can consist of individual modules or complex systems. Thanks to their modular design, they can be flexibly adapted to changing transport routes, types of goods or volume requirements.

#### Challenges:

- High level of modularisation for maximum flexibility or forwarding.
- High need for standardisation of components and interfaces to reduce complexity in all the different modules.
- On-site installation is time-consuming.

#### LAPP solutions:

- Maximum depth of added value for each component: connectors, cables, assemblies from a single source.
- E2E connectivity to realise a modular design.
- Mastering complex logistical requirements (e.g. just-in-time delivery for airport projects).



### Autonomous mobile robots & automated guided vehicles

Autonomous mobile robots (AMRs) and automated guided vehicles (AGVs) are intelligent, self-driving vehicles that coordinate their routes independently and adapt dynamically to their environment. While AMRs calculate the optimum route to their destination completely autonomously and take obstacles into account in real time, AGVs move along predefined routes. Both systems offer an efficient solution for in-house goods transport and significantly reduce manual labour.

#### Challenges:

- Need for highly compact robot design.
- High iterations of robot generations with improved software, sensors and construction in general.

#### LAPP solutions:

- Co-engineering and customised products to improve space requirements, weight, EMC and routing.
- Design, prototyping and delivery of complete cable assemblies.

### Sorters

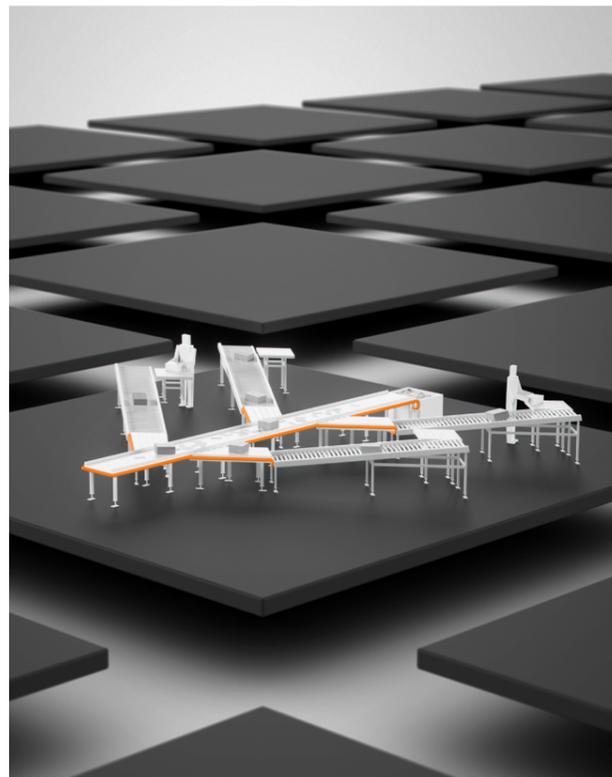
Sorters identify, process and automatically forward products to the designated storage or dispatch areas. The use of sensors, cameras, barcode scanners or robots in combination with data-driven software optimises the accuracy and speed of the processes. This technology reduces manual effort, minimises error rates and increases efficiency in logistics.

#### Challenges:

- Difficulty finding sorters that can be easily reconfigured or scaled.
- Fully customised solution leads to long lead time from purchase to delivery.

#### LAPP solutions:

- Providing modular cable systems that allow for easy reconfiguration and scalability without long downtime.
- Offering high-quality and durable cables that reduce the frequency of replacement and maintenance.



### System installation & infrastructure

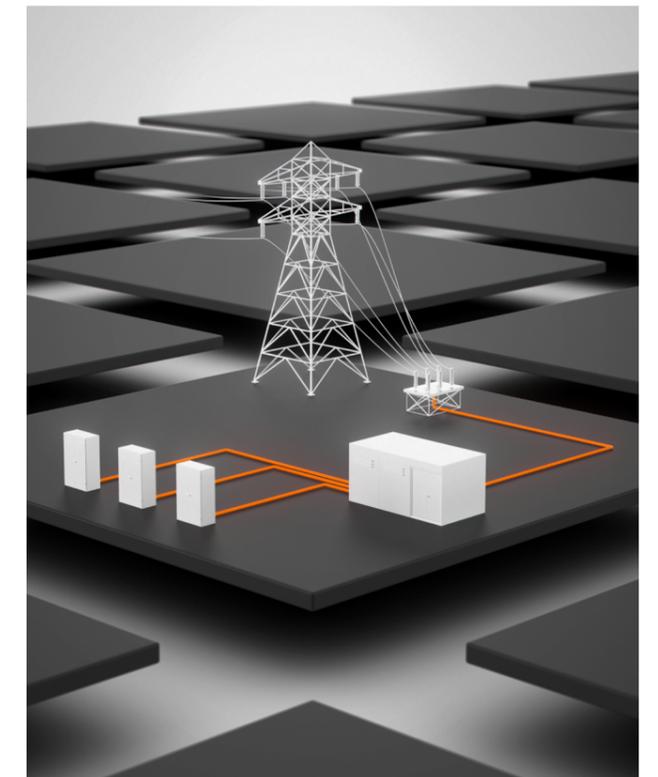
System installation and infrastructure includes the seamless networking of all relevant halls and systems - from external building connections to complete integration within intralogistics. High-performance cables ensure a stable power supply and enable the smooth operation of automated transport systems and highly complex warehouse solutions.

#### Challenges:

- Difficult installation of large cable dimensions without any flexibility.
- Difficult to source coordinated cables, cable lugs and crimping tools.
- Difficult last mile management for greenfield projects when delivery address is not yet available.

#### LAPP solutions:

- Support in switching to more installation-friendly cables or single-core variants.
- Complete system of products and tools for easy installation.
- Logistical service to coordinate last mile management with GPS data.





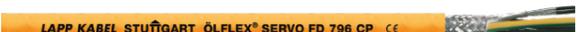
## Our services & expertise



## Connection solutions for intralogistics

	Stacker cranes in ASRS	Shuttle in ASRS	Carousel (vertical & horizontal)	Automatic small parts storage	Conveyors	Sorter	AMR & AGV	System installation & infrastructure
<b>Ready-made cable chain</b> Series-produced cable chain in different variants as a module for installation	✓	-	✓	✓	-	-	✓	-
<b>Data network cabling</b> Ethernet & Fieldbus cables by meter Patchcords & cordsets Data connectors Ethernet switches	✓	✓	✓	✓	✓	✓	✓	✓
<b>Sensor cabling</b> S/A cordsets M8/M12 Remote I/O devices	✓	✓	✓	✓	✓	✓	✓	-
<b>Motor connection (individual/assembled)</b> Servo cable, feedback, "clean design" connector M15-M40, HQ4/2 also EMC optimised or flatcable solutions	✓	✓	✓	✓	✓	✓	✓	-
<b>Infrastructure cabling</b> Low and medium-voltage cabling, aluminium and copper-based with coordinated connection technology & tools	-	-	-	-	-	-	-	✓
<b>Harnessing</b> Space- and EMC-optimised power, data and sensor distribution with precise routing and customer-specific connectors.	-	✓	-	-	-	-	✓	-
<b>DC power distribution</b> Portfolio of DC cables and connectors for energy-efficient distribution and recuperation	✓	✓	-	-	✓	✓	✓	✓

# Connection solutions for intralogistics

	Power and control cables ÖLFLEX®	Products
<b>Technical features</b>	<ul style="list-style-type: none"> <li>E.g. for deep-freeze applications ( -40 °C)</li> <li>Worldwide standards required: e.g. EN; UL/CSA</li> <li>CPR classification B2ca to Eca</li> <li>From permanently installed to highly dynamic applications in cable chains</li> <li>Halogen-free and low fire-retardant (HFFR, LSZH)</li> </ul>	 <p>ÖLFLEX® ROBUST</p>  <p>ÖLFLEX® CLASSIC (low temperatures)</p>  <p>ÖLFLEX® SERVO</p>  <p>ÖLFLEX® CLASSIC (halogen-free)</p>  <p>ÖLFLEX® CHAIN</p>  <p>ÖLFLEX® ROBOT</p>
	Data cabling solutions UNITRONIC®   ETHERLINE®   HITRONIC®	Products
<b>Technical features</b>	<ul style="list-style-type: none"> <li>Data cabling solutions from the sensor to the controller and for the network-backbone</li> </ul> <p><b>Fieldbus:</b></p> <ul style="list-style-type: none"> <li>CAN / DeviceNet / Profibus / ASi</li> </ul> <p><b>Industrial Ethernet:</b></p> <ul style="list-style-type: none"> <li>PROFINET / EtherCAT / EtherNet/IP</li> </ul> <p><b>Optic Fibers:</b></p> <ul style="list-style-type: none"> <li>POF / PCF / GOF (OM1, OM2, OM3, OM4, OS2)</li> </ul>	 <p>UNITRONIC® BUS ASI</p>  <p>ETHERLINE® PN FLEX</p>  <p>HITRONIC® TORSION</p>  <p>ETHERLINE® ACCESS</p>  <p>UNITRONIC® ACCESS</p>  <p>ETHERLINE® LAN</p>



To our product portfolio  
[www.lapp.com/en/de/e/081191](http://www.lapp.com/en/de/e/081191)

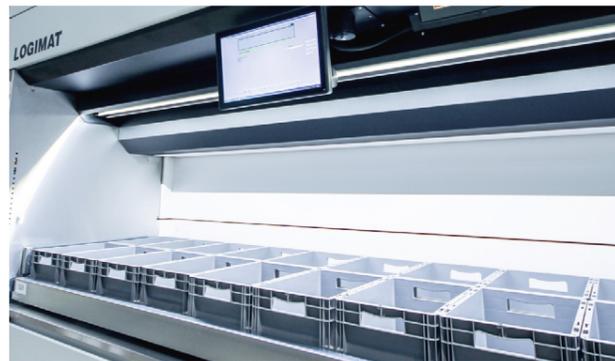
	Connectors EPIC®	Products
<b>Technical features</b>	<ul style="list-style-type: none"> <li>All standard sizes e.g. H-A, H-B, H-Q etc.</li> <li>Modular inserts</li> <li>M8 / M12 – A, B, C, D, X, L, T-coded</li> <li>Sub-D (Profibus, CAN)</li> <li>RJ45</li> </ul>	 <p>EPIC® Rectangular connector</p>  <p>EPIC® Circular connector</p>  <p>EPIC® DATA Sub-D</p>  <p>EPIC® DATA M8/M12</p>  <p>EPIC® DATA RJ45</p>  <p>EPIC® POWER M12L</p>
	Cable glands, cable protection and guiding systems, marking systems & tools SKINTOP®   SILVYN®   FLEXIMARK®	Products
<b>Technical features</b>	<ul style="list-style-type: none"> <li>Metal, plastics, EMC cable glands</li> <li>Multiple introductions</li> <li>Crimping tools</li> <li>Cutting tools</li> <li>FC - Stripping tools</li> <li>Marking systems</li> </ul>	 <p>SKINTOP®</p>  <p>SKINTOP® MULTI</p>  <p>SILVYN®</p>  <p>FLEXIMARK®</p>
	Harnessing solutions	Products
<b>Technical features</b>	<ul style="list-style-type: none"> <li>Customised assemblies</li> <li>According to your specifications, from the motor connection cable to the ready made cable chain or module</li> <li>Standard and customised solutions</li> <li>Sensor-actuator cables</li> <li>Servo assemblies according to various industry standards</li> <li>All common manufacturers</li> </ul>	 

# Customer references

Assembled cable chain

Motor connection

Just-in-time delivery



Network cabling

Infrastructure cabling

Just-in-time delivery



## SSI SCHÄFER

In factories, space is at a premium. SSI SCHÄFER, a solution provider for intralogistics products and systems, recognised this and came up with an ingenious solution that has become established in an increasing number of factory halls: the Vertical Lift Module SSI LOGIMAT® that is up to 24 metres high and contains motorised drawers that can be pulled out and moved downwards. This means that the drawer with the required component can be delivered to the issuing hatch in just a few seconds.

### LAPP solutions

- Cable chain with ÖLFLEX® servo cables and UNITRONIC® data cables - a total of five different cable types, all of which are highly flexible.
- The largest vertical lift module with cable chain up to 24 metres.
- Before delivery, LAPP tests the cable chain to ensure consistently high quality - which customers could not guarantee even without specialised expertise in connection technology.

### Customer benefits

- Improved design of the complete module by LAPP.
- Full integration into the customer's order and configuration systems for automatic configuration of BOM, order, production and delivery.
- An important customer requirement and a decisive argument in favour of LAPP is the need for all components to be UL-certified for the global sale of the machine. This reduces complexity and the number of parts, as the assembly of components in a system no longer depends on the country in which it is operated.



Read more

## SEAP AUTOMATION

The new Terminal 3 at Frankfurt Airport is setting new standards for air travel - including baggage handling. The technology for this is supplied by SEAP Automation, the cables by LAPP.

### LAPP solutions

- 85 kilometres of cables in various designs (e.g. with or without shielding or in a particularly flexible design), such as ÖLFLEX® servo and control cables, UNITRONIC® data and ETHERLINE® network cables.
- Increasingly, pre-assembled patch and sensor/actuator cables are also being ordered, totalling 2,100 units.

### Customer benefits

- LAPP delivers many kilometres of cable to the construction site on time. The NYCWY supply cables in particular have to be delivered just-in-time.
- In addition to the quality of the products and the reliable logistics, LAPP repeatedly impresses with its planning skills and support in tricky situations, for example when parts have to be reordered spontaneously.



Read more

Motor connection

Special hybrid cable

Customised solution



### TRANSPORTER INDUSTRY INTERNATIONAL GROUP (TII GROUP)

From the Arabian desert to narrow megacities to the freezing cold of Siberia: The modular heavy-duty transporters of the Transporter Industry International Group move the heaviest loads worldwide, such as construction machinery, ships and space shuttles, and must be able to withstand all harsh conditions such as extreme temperatures. In order to significantly reduce the risk of material wear and installation costs on site, the long-established Swabian company relies on solutions from the Stuttgart-based company LAPP for its connection technology.

#### LAPP solutions

- LAPP special cables according to TII specification.
- Power and data cables and hybrid cables that can withstand extreme conditions such as high and low temperatures, UV radiation and harsh environmental conditions.
- Standard LAPP portfolio such as ÖLFLEX® CLASSIC available via online shop.

#### Customer benefits

- Development of a customised solution that meets the requirements of the application.
- Space saving: hybrid cables fit exactly into the limited space within the vehicle frame and are not exposed to harsh environmental conditions.
- Reduced installation time thanks to just one supply cable and one control and data cable - convenient on-site connection of just two compact cables - saves time and effort and reduces the risk of failure.



Read more

Sensor cabling

Infrastructure cabling

Reliable delivery



### INCHEON AIRPORT IN KOREA

Incheon Airport in Korea wants to assert itself as the leading air transport hub in East Asia and is therefore expanding a second passenger terminal. 2024, Incheon Airport is set to become the third largest international airport in the world with a handling capacity of 106 million travellers per year. Connection solutions from LAPP ensure safe and reliable operation.

#### LAPP solutions

- Halogen-free data cable UNITRONIC® BUS ASI (G) 2X1.5 YE FRNC.
- Highly flexible ÖLFLEX® CLASSIC FD 810, suitable for cable chains.
- Flame-retardant cables.

#### Customer benefits

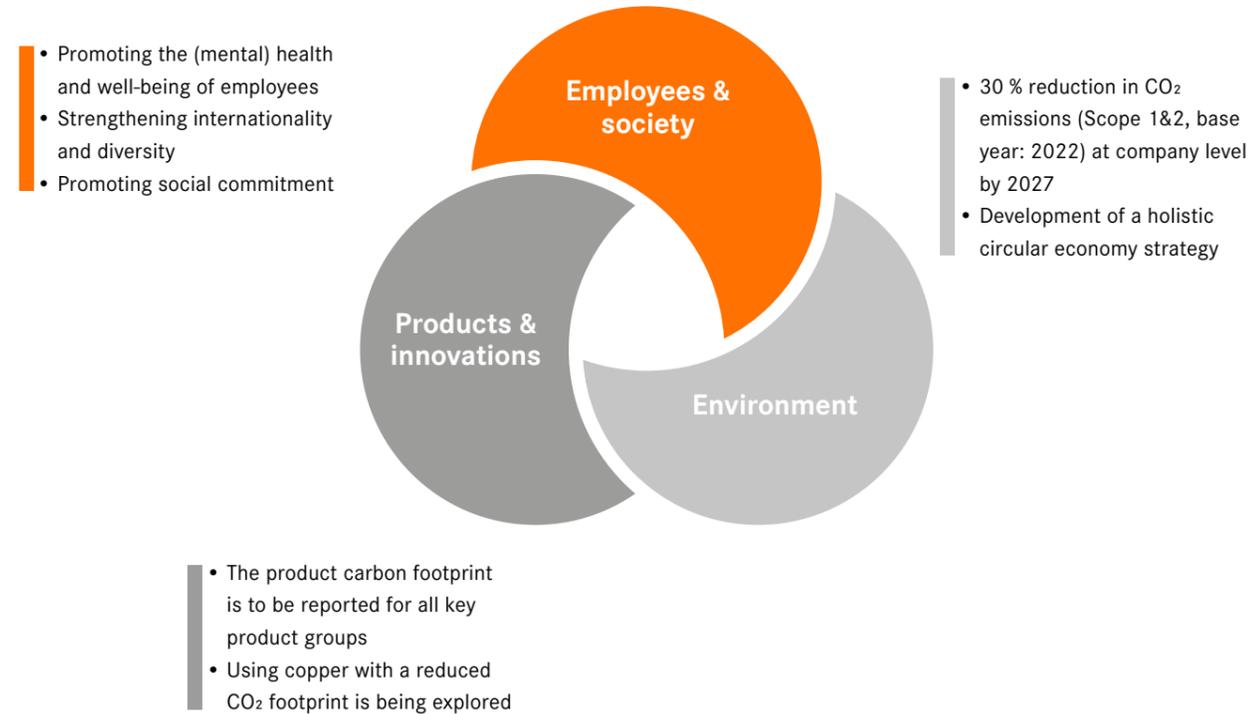
- Customised connection solutions for passenger boarding bridges and baggage transport.
- Reliable delivery service for a wide range of products, which has already proven itself in previous expansion stages.



Read more

# Our sustainability commitment

Sustainability is a central component of the LAPP strategy and is deeply rooted in our corporate culture. We have set ourselves the following milestones with regard to our sustainable actions, which are an integral part of all business processes. These are regularly checked for compliance.



## Employees & society



LAPP has always been actively involved in social matters and social commitment. We support numerous social initiatives and organisations around our company locations. Our corporate culture is characterised by openness to the world, tolerance and diversity. Our aim is for all LAPP companies to initiate a social project at least once a year. Diversity and internationality are the cornerstones of our success.

We promote intercultural cooperation and offer training on the topics of anti-discrimination and anti-harassment, with the aim of ensuring that at least 75 % of managers are trained in these areas. We also attach great importance to the mental wellbeing of our employees and offer comprehensive support and resources for coping with stress. A trained mental health first aider should be available in every LAPP company.

## Environment



Sustainability and environmentally friendly business operations are a priority at LAPP, which has been using 100 % green electricity in Germany since 2019 and relies on photovoltaic and geothermal systems worldwide. The majority of our production facilities and sales companies are ISO 14001-certified, and 20 companies in the EMEA region work closely together on energy management as part of an ISO 50001 matrix certification.

Our goal is to reduce CO<sub>2</sub> emissions (Scope 1&2, base year 2022) at company level by 30 % by 2027 and we are also working on a holistic circular economy strategy to avoid waste and reuse resources. By optimising our packaging and reducing plastic materials, we are also helping to protect the environment. Our internal initiatives have already led to a reduction in the thickness of plastic film and a reduction in hazardous waste thanks to linerless labels.

## Products & innovations



Our products and solutions not only stand for the highest quality, but also for sustainability. We measure and verify the environmental impact of our products and focus on the use of renewable resources. One example of this is the ETHERLINE® FD P Cat.5e, the first Ethernet cable with a bio-based jacket, which reduces the CO<sub>2</sub> footprint by 24 % in relation to the material of the outer jacket.

We are focussing our portfolio on sustainable industries such as solar and wind energy and offer innovative solutions for the energy transition. We are also setting standards in the field of electromobility and rail transport with user-friendly and certified system solutions. Our aim is for all of LAPP's key products to have a product carbon footprint and to investigate the purchase of copper with lower CO<sub>2</sub> values.

At LAPP, we are aware of our responsibility and work continuously to develop sustainable and innovative solutions, and we invite you to join us on this journey and shape a sustainable future together.



Sustainability at LAPP  
[www.lapp.com/en/de/e/001011](http://www.lapp.com/en/de/e/001011)





**ÖLFLEX®**  
Power and control cables



**UNITRONIC®**  
Data communication systems



**ETHERLINE®**  
Data communication systems  
for Ethernet technology



**HITRONIC®**  
Optical transmission systems



**EPIC®**  
Industrial connectors



**SKINTOP®**  
Cable glands



**SILVYN®**  
Protective cable conduit systems  
and cable carrier systems



**FLEXIMARK®**  
Marking systems

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