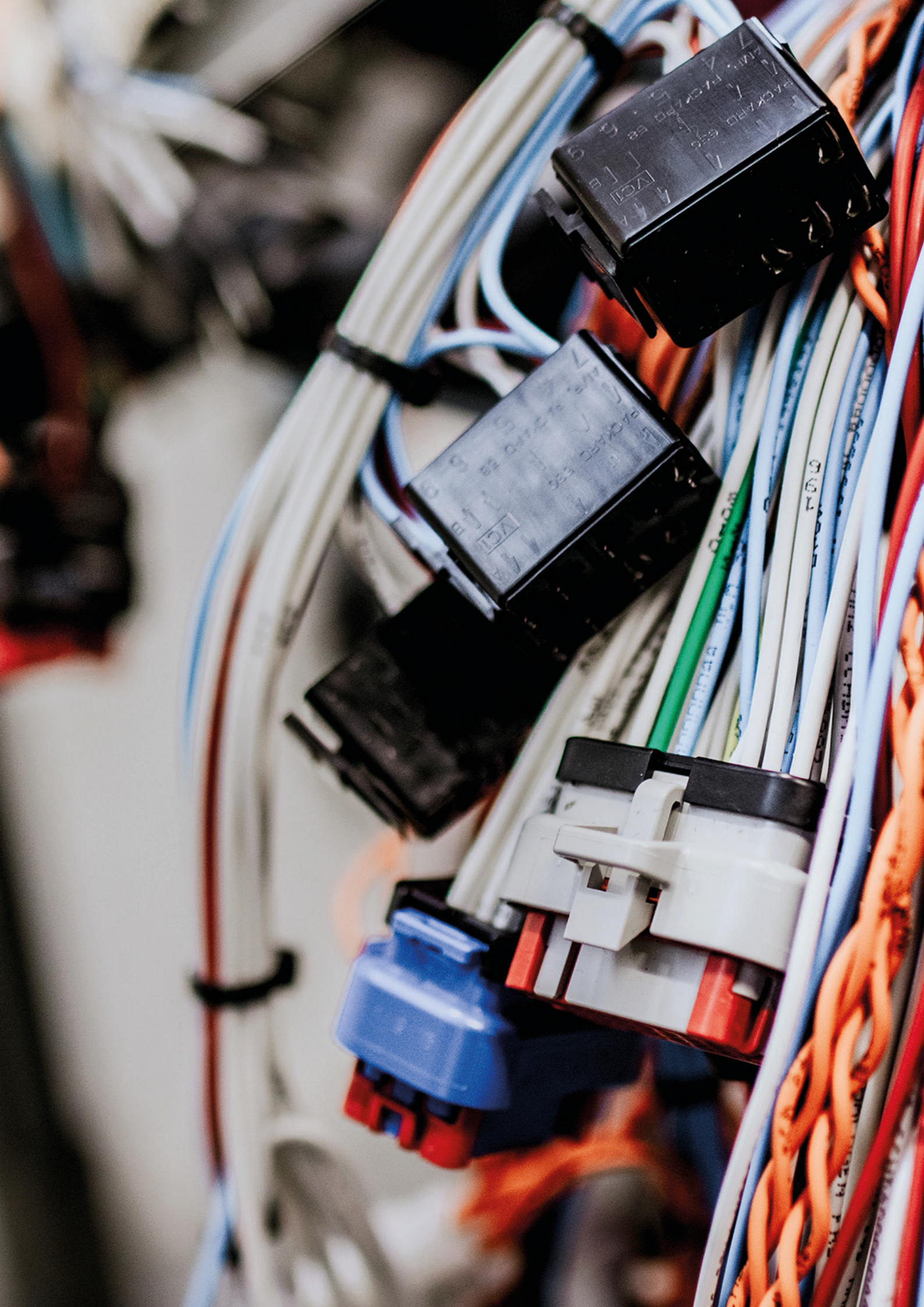


LAPP Harnessing Solutions

Your trusted partner for customised connectivity





Focus on your strengths – and leave the rest to us

The days when the manufacturing industry and the service sector could be clearly separated are over. We have long since understood that we cannot only provide components to make our customers successful, but also have to offer complete solutions that can be seamlessly integrated into their new or existing machine concept. When product and service are no longer treated separately but thought of together, our **LAPP Harnessing Solutions** are created.

We support you in your daily challenges

In an increasingly competitive market, it is crucial that you focus on your core competencies in order to drive innovation and increase efficiency. The production and management of C-parts, such as cable assemblies, can be an unnecessary burden. This area is cost-intensive, demand is declining, and competition is becoming ever stronger. At the same time, the pressure to develop new skills – such as in the area of software – is increasing in order to remain competitive.

The production of assembly solutions requires special expertise that is often difficult to develop and keep up to date. At LAPP, we understand these challenges and offer you the perfect solution so that you can focus your resources on what is important.

High costs in the production of assemblies

Assemblies make up only a small part of the overall product, but they incur disproportionately high costs. Specialists for production and assembly are hard to find, and managing small quantities requires a great deal of organisational effort. From procurement to logistics and production, avoidable inefficiencies arise that take up time and money. Leave these tasks to LAPP as your trusted partner, supporting you in the production of your cable assemblies – individually according to your wishes.

Risks due to poor quality

Did you know that more than 50% of all machine downtime can be traced back to problems with connections? Inadequate testing and verification options complicate quality assurance and lead to unplanned failures. Often, there is a lack of clear documentation of quality standards, which makes it difficult to trace the causes of problems. At LAPP, we ensure that your assemblies meet the highest quality requirements so that you can rely on seamless operation.

LAPP offers you customised solutions for your application, so that you can concentrate on your core competencies and increase your efficiency. We ensure that you no longer have to deal with the challenges and risks associated with C-parts – we take care of that for you.

Why LAPP?

Save time

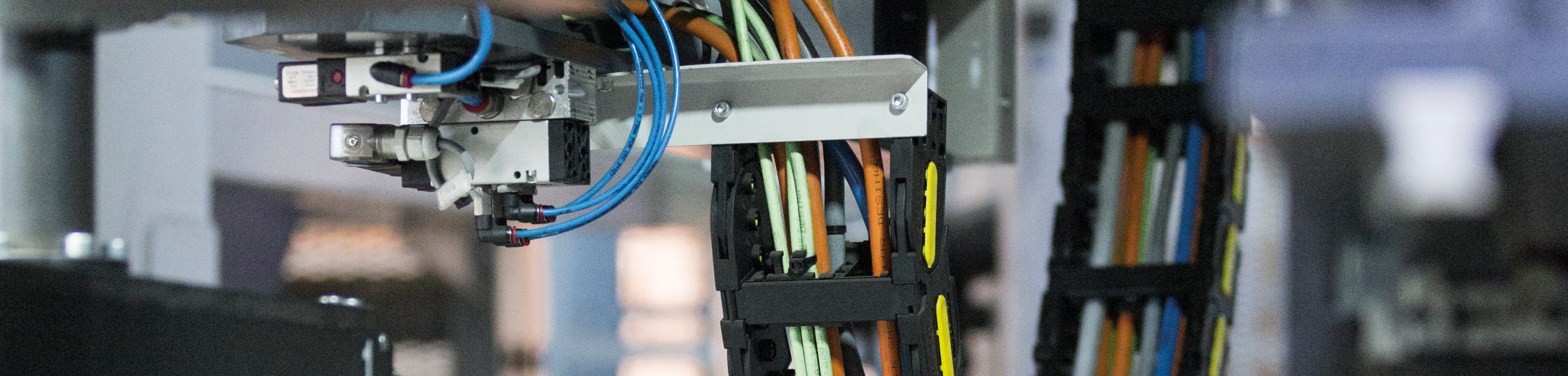
- in selecting the right components,
- by ordering fewer materials,
- with quick assembly thanks to plug & play solutions – all from a single source

Save costs and simplify your processes

- in creating parts lists and drawings,
- in delivery,
- in warehousing,
- for unnecessary MOQ, cutting losses, failures, etc.

Let's innovate

- We ensure the compatibility of the selected materials and offer modular solutions.
- We constantly carry out optimisation processes, taking into account the latest trends.
- We provide high-quality documentation, 2D and 3D modeling.



Advantages



Many possibilities, one solution

We support you in your search for sophisticated, customised and cost-efficient solutions. With LAPP Harnessing Solutions, we offer you a comprehensive range. From design and drafting, customised testing, delivery or on-site assembly support, small batch sizes or series production – we offer everything from a single source.

Why harnessing solutions from LAPP?

- Manufacturing expertise:** As a manufacturer, we are experts in components and have access to millions of items in our warehouse. Our ability to develop customised components is unique in the cable and connector industry.
- Innovative solutions:** Innovation is the cornerstone of everything we do – from new components to comprehensive solutions at all our locations.
- Industry know-how:** Our company has a history of over 60 years and employs more than 5800 people. Based on this know-how, we offer industry-leading solutions to a wide range of customers in a variety of industries.
- Quality promise:** Every single component used in a LAPP system solution has undergone a demanding development and testing process. With us, you are always on the safe side.
- Reliable global support:** With our extensive global presence, we offer our customers reliable support, no matter where you are in the world.
- Strength through LAPP:** As the LAPP Group, we have a solid foundation that we can rely on even in the most turbulent of times.

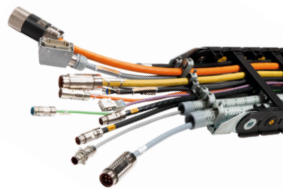
Standardised and automated processes



Configurators

Product configuration can be so easy. With the LAPP configurators, digital tools are available to help you. This means you can put together a valid configuration for your personal application online at any time and order the products via our Online Shop.

You will be guided step by step through the selection of the various products. At each selection step, the matching components are indicated. After completing the configuration, you can request an individual offer.



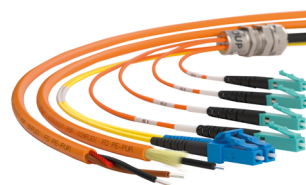
Cable chain configurator

Select the cables, then specify the application environment and choose the appropriate cable chain system: You will receive an individual chain configuration with clear information regarding dimensions and the components used.



Servo cable configurator

Thanks to our many years of experience in the production of servo cables and circular connectors, we can offer you the optimum cabling solution for every application. With our servo configurator, you can quickly and easily put together the perfect assembly for your application.



Fibre optic configurator

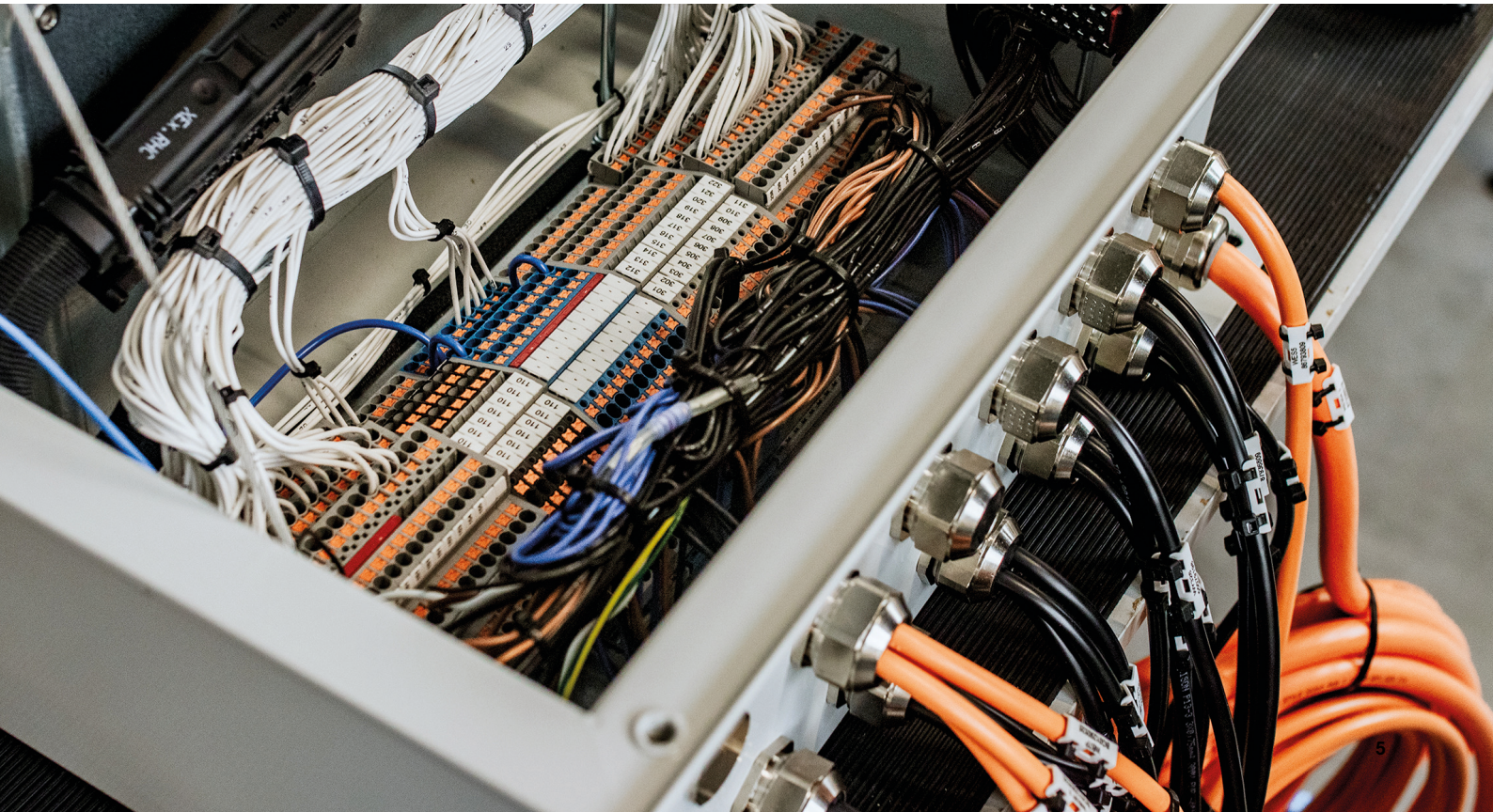
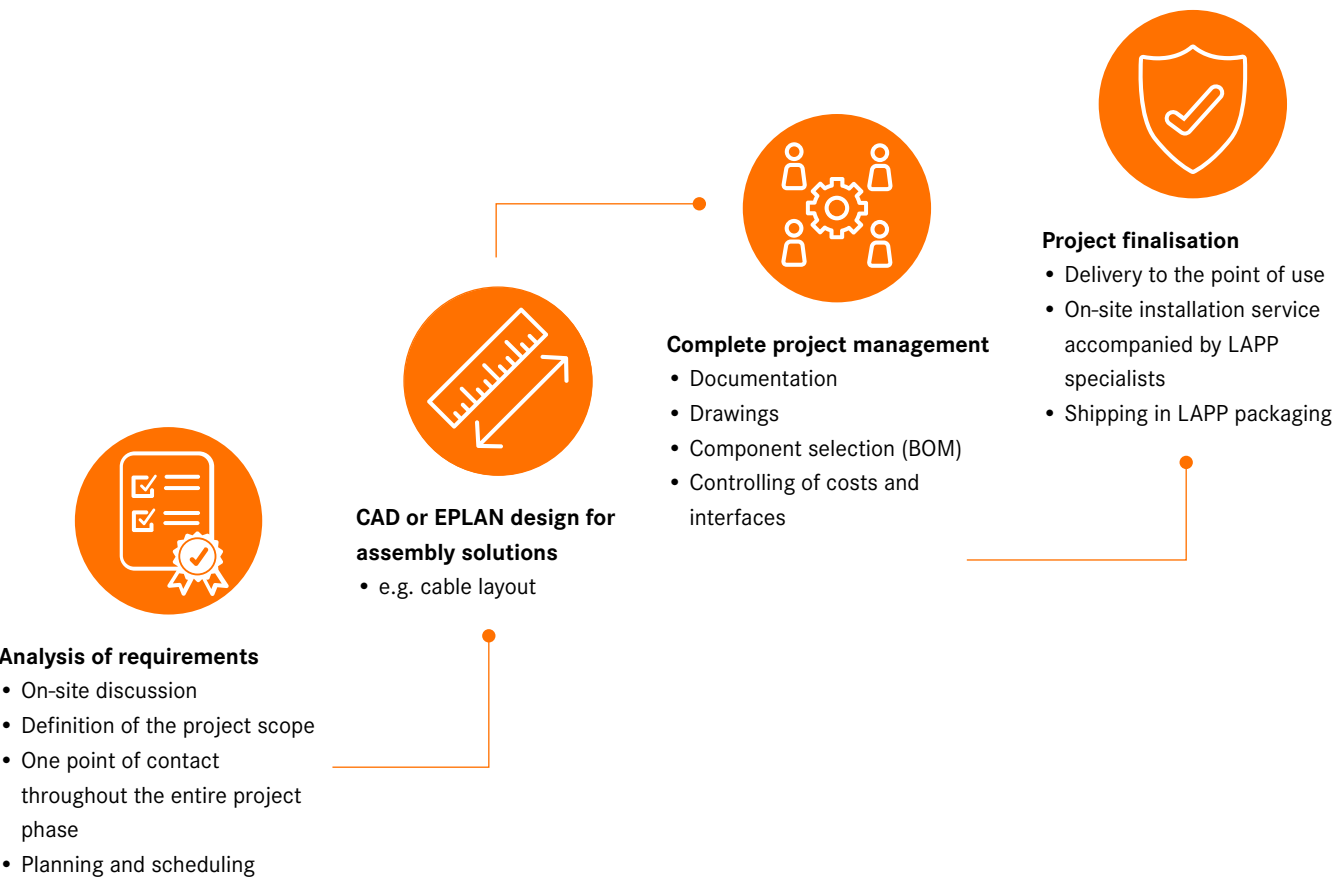
Fibre optic installations are becoming increasingly important for growing data volumes and requirements. LAPP offers high-quality fibre optic cable assemblies. With our FO configurator, you can quickly create your perfect solution.



Configure now
www.lapp.com/en/de/products/product-configuration/e/031001

Process for customer-specific requests

LAPP will support you through all project phases – from design to component selection to assembly. Our experts will be happy to support you every step of the way.



Our Services & Expertise

Customer documentation

An essential part of the overall production process at LAPP is the creation of comprehensive customer documentation. This includes bills of materials, drawings, and other relevant information that is essential for smooth collaboration with customers. Clear and detailed documentation is crucial to avoid misunderstandings and ensure that products meet specifications and requirements. This ensures a seamless transition from product development to serial production.

Technical Engineering

LAPP continuously invests in research and development to deliver new technologies and products that meet the increasing demands of customers. This includes the optimisation of components, the integration of systems and the refinement of production drawings, in particular through the use of 3D models. By integrating state-of-the-art materials and technologies, LAPP ensures that its products not only meet current market requirements but are also ready to take on future challenges.

Change Management & Product Revision

In a constantly changing market environment, effective change management is crucial. LAPP has implemented a structured approach to ensure that organisational changes and product revisions are carried out smoothly and efficiently. This includes ensuring continuity of production and maintaining the entire product life cycle. Through transparent communication, employee training and the adaptation of internal processes, LAPP ensures that changes are successfully implemented not only at the product level but also in the organisation itself.

Supply Chain Management

Supply chain management at LAPP is designed to ensure a smooth and efficient supply chain. With in-depth knowledge of market conditions and precise availability of suitable products at the right time, LAPP ensures an optimised supply chain. By working closely with suppliers and using state-of-the-art IT systems, the entire process from the procurement of raw materials to the delivery of finished products can be optimised, ensuring on-time delivery to customers and the fulfillment of high-quality standards.

Prototype

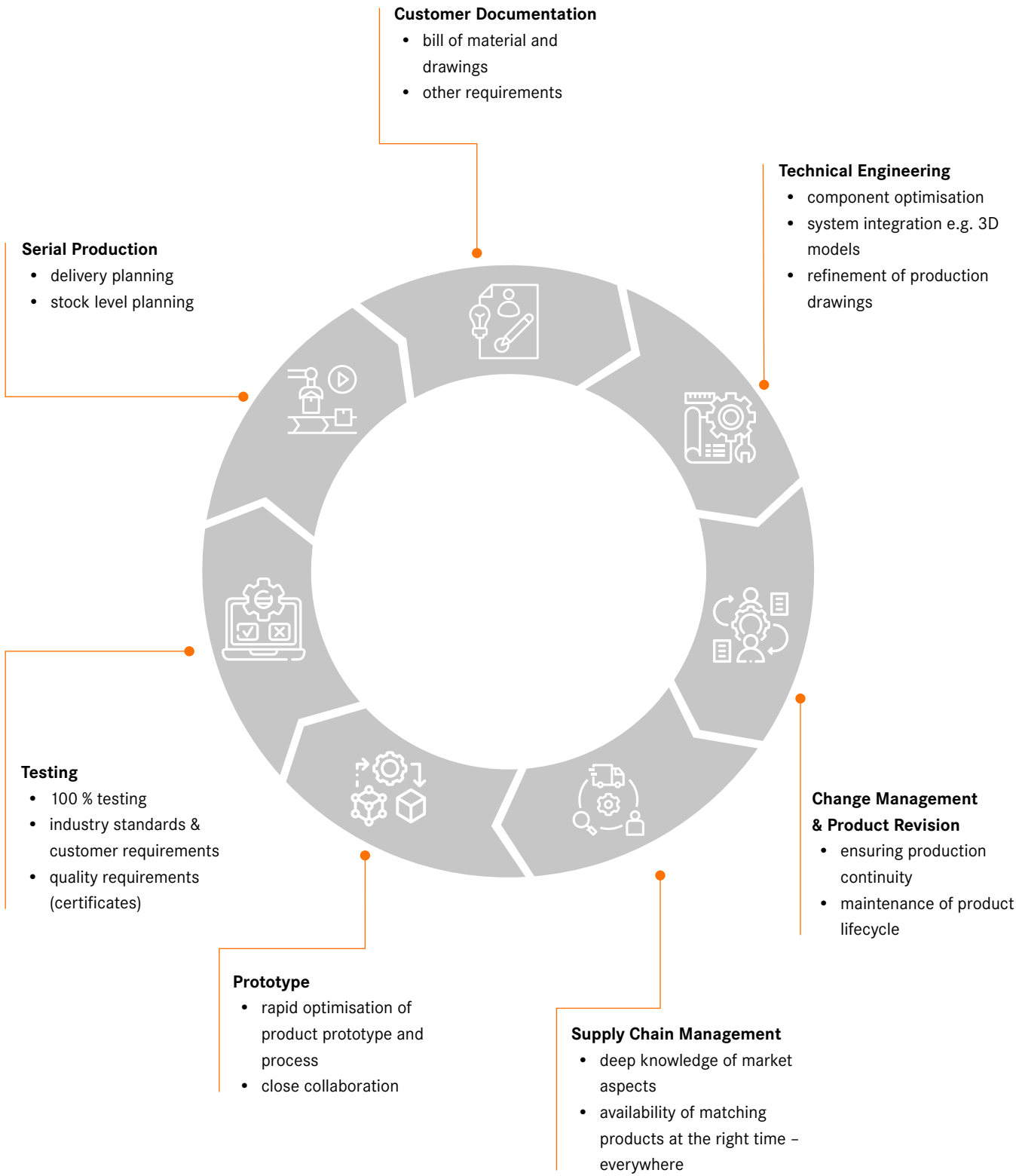
In prototyping, LAPP relies on advanced technologies such as 3D printing and simulation tools to quickly and cost-effectively develop and test new products. Rapid optimisation of product prototypes and processes, combined with close collaboration between development departments and customers, enables LAPP to deliver customised solutions. This promotes efficient market introduction and ensures that the prototypes are precisely tailored to the needs of the customers.

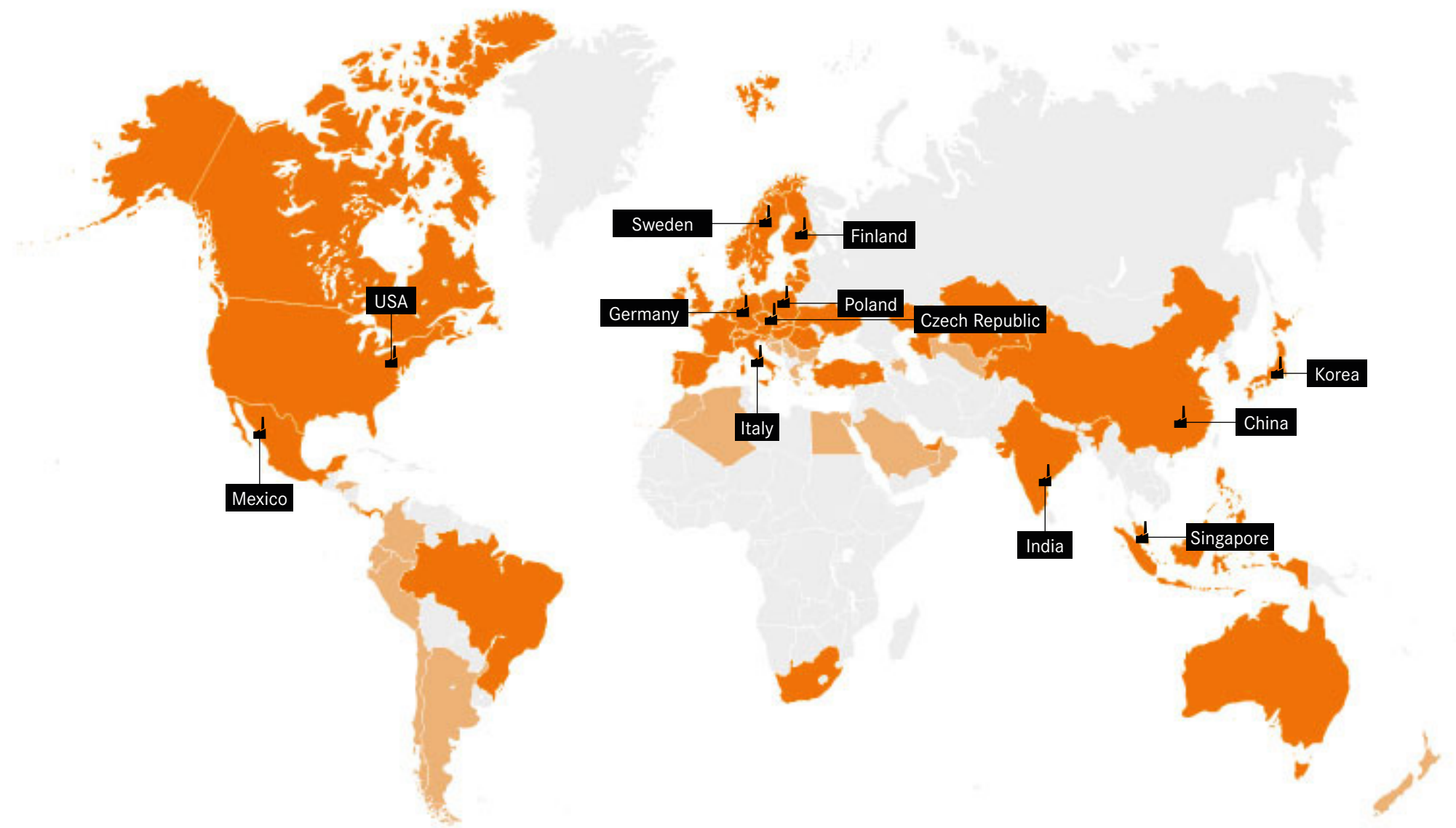
Testing

A central component of the development process at LAPP is a 100% inspection of each product to ensure that it meets the company's high quality standards. These tests are carried out according to the applicable industry standards and are based on specific customer requirements. Quality certificates confirm compliance with the standards and the durability of the products. In this way, LAPP ensures that all components function reliably even under extreme conditions and meet customer expectations.

Serial production

LAPP's serial production guarantees a high level of efficiency and reliability. This includes precise delivery planning and inventory management. Optimised production processes and close coordination between the various departments enable large production volumes to be handled without compromising product quality. The aim is to enable continuous production that meets customer needs while maintaining the flexibility to respond quickly to market changes. By combining these core areas, we set standards in cable and connection technology and remain a reliable partner for you worldwide.





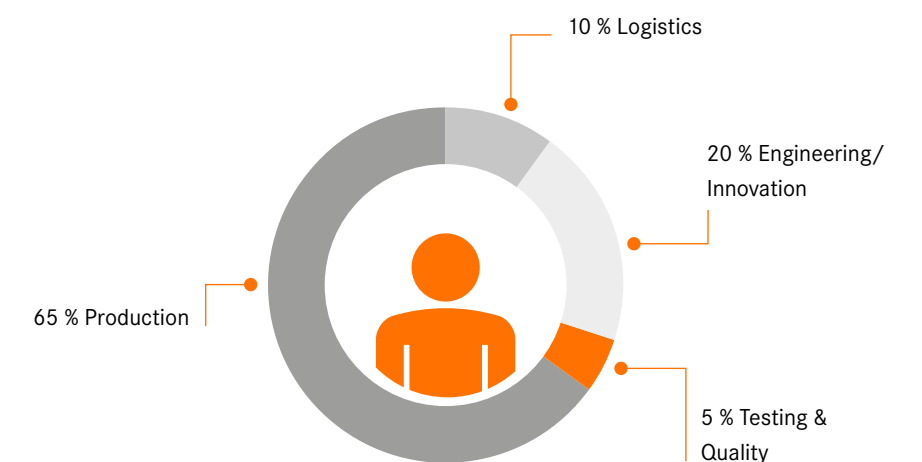
- Countries with LAPP sales companies in the global sales network
- Countries with international representations in the global sales network
- LAPP Harnessing Solutions production sites

LAPP Harnessing Solutions production sites: Always close to you

From industry-standard servo assemblies to customer-specific cable assemblies and complex system solutions – anything is possible. Optimising projects, advising customers better and standardising global activities is the idea behind LAPP Harnessing Solutions. To this end, we are constantly expanding our engineering, production and assembly capacities in America, Europe and Asia.

In the future, you can concentrate on your core business and protect your valuable internal resources. Leave the development of your connection solutions to LAPP.

With more than 920 LAPP Harnessing Solutions experts worldwide, we guarantee the highest quality and on-time delivery – 100 % tested.



Get in touch with our experts
www.lapp.com/en/de/service/contact/e/000040

LAPP Harnessing Solutions for Ponsse forestry machines

Customer reference

It all started with a mixed-breed dog named Ponsse and the inventive farmer's son Einari Vidgrén. Today, Ponsse Plc in Finland is one of the world's largest manufacturers of forest machines – the customised cable harnesses and assemblies come from LAPP.



The history of Ponsse is somewhat similar to that of LAPP. Oskar Lapp was an ingenious inventor and tinkerer who developed the first industrially manufactured connection and control cable ÖLFLEX® in 1957 and, together with his wife Ursula Ida Lapp, founded the company in 1959 that is now the world market leader for integrated solutions in the field of cable and connection technology.

Also in 1957, Einari Vidgrén became passionate about forest machine at the age of 14. At that time, he started working in the forestry industry with a frame saw and found that the work in the forest was very hard and laborious. Soon he had a brilliant idea: Einari Vidgrén developed a load-bearing forest tractor in a local village workshop in the late 1960s.

When Einari Vidgrén drove his first home-made forest tractor out of the workshop, the villagers were amazed at the brute ma-

chine made of recycled parts: "What kind of 'Ponsse' is that supposed to be?" they said. They named it after the mixed-breed dog Ponsse that roamed the village. His fur was mottled grey – not a pretty dog. But he was a persistent hunter. So Einari Vidgrén decided to name his machine Ponsse. The machine was perfect for use in the tough conditions of logging. Finally, Einari Vidgrén founded his forest factory in the village of Vieremä in Finland in 1970. The first years were difficult. It was not until the 1980s that Ponsse was on the road to success with new machine developments. With the introduction of the legendary forwarder PONSSE S15 in 1983, Ponsse became known to both competitors and customers. The machine's front frame, partly made of aluminum, made the machine significantly lighter than its competitors, which put it in a class of its own in terms of off-road capability. The first harvester, PONSSE HS15, was launched in 1987, followed by the first PONSSE measuring devices in

1988. In 1994, Ponsse became the world's first forestry machine manufacturer to be awarded the ISO 9001 quality certificate.

Today, the family-owned company Ponsse is listed on the stock exchange and employs around 2000 people worldwide. With 13 subsidiaries, 30 dealers around the world and 235 international service centers, Ponsse is active in harvesting markets in 40 countries and generates almost 80 percent of its turnover through exports – and has now delivered more than 20,000 forest machines all over the world.

The factory in Vieremä has also been enlarged from the original 300 m2 to four hectares. Ponsse forest machines are based on the environmentally friendly CTL (cut-to-length method), where trees are felled, delimbed and cut into different timber grades before leaving the forest. "Our product range covers all size categories of forest machines, from initial thinning and forest

energy harvesting to heavy regeneration logging, as well as all logging locations, from soft soils to steep slopes. We also have full range of forwarders even up to 25k load capacity. We want to contribute to our customers' success with our productive and reliable Ponsse forest machines and services," says Tuomas Yli-Marttila, Procurement and Logistics Manager at Ponsse. And he adds: "A big part of the components are coming from Vieremä, but we also have products coming from other European countries. About 60 % of the machines components are manufactured in Finland. All Ponsse forest machines are manufactured in Vieremä."

The portfolio includes forwarders for moving and transporting logs to the collection points for the trucks. Or harvesters for thinning and clear-cutting work. Their eight wheels make them particularly maneuverable even in difficult terrain, and they have such agile names as Cobra or Scorpion. The internal logistics are now based on pull control. The warehouse automation includes 15,500 storage spaces for small parts and components and 3,900 pallet spaces. Along the assembly line, the required parts and components are automatically taken from the warehouse and brought to the individual workstations by driverless transport vehicles.

The special production features and the extensive customer-specific variation of the products also require a lot of performance and precision from the material logistics.

And this is where LAPP comes into play. The cooperation began back in the 90s. Back then with the company Suomen johdinvalmiste oy, which was later bought by the SKS Group and renamed SKS Connecto. In 2018, LAPP took over the operations of SKS Connecto and renamed it LAPP Connecto Oy. LAPP is now the sole supplier of the cable harnesses and assembly solutions required by Ponsse. This is a business area that is grouped together at the connection specialist under the name LAPP Harnessing Solutions. The cable harnesses are assembled according to customer requirements. For example, UNITRONIC® LiYCY for data transmission in various parts of the machine, UNITRONIC® BUS CAN FD P for data

transmission in the booms, or ÖLFLEX® PUR S 27 7G1.5 for the power supply of the headlights.

Ari Reinikainen, Key Account Manager at LAPP Connecto Oy: "The cooperation with Ponsse has developed into a real partnership. We exchange information in both directions and openly discuss all daily matters." The direct proximity is an advantage. Ponsse is only one kilometer away from LAPP Connecto Oy. "We deliver the ordered products directly on site and on time according to the customer's schedule. This ensures lower stock levels for the customer, and it is possible to react quickly to changes in production," says Ari Reinikainen. A special feature in this partnership is that the customer involves suppliers in the design of its forestry machines right from the initial phase. LAPP helps with material selection already during the design phase. And very importantly, LAPP's own production adapts to new forestry machines so that production always runs smoothly and efficiently for the customer.

Tuomas Yli-Marttila: "For us, LAPP is a reliable partner at eye level – and has been for many years. We share the joys and challenges with each other. We really appreciate the expertise when it comes to finding the right cabling solution. And the good neighborliness is also a big plus." |



Reference products

Ponsse

ÖLFLEX®	ÖLFLEX® PUR S 27 7G1.5	
UNITRONIC®	UNITRONIC® BUS CAN FD P 1x2x0,5	
SKINTOP®	SKINTOP® MS PG 16 BRASS	SKINTOP® ST 9 SGY PA
	SKINTOP® MS 21 BRASS	SKINTOP® ST 16 SGY PA
	SKINTOP® ST PG 11 RAL 7001 SGY	SKINTOP® ST 21 SGY PA
	SKINTOP® ST PG 7 SGY PA	SKINTOP® MS-M20X1,5 BRASS
SKINDICHT®	SKINDICHT® SM 16 BRASS	SKINDICHT® SM 13,5 BRASS
	SKINDICHT® SM PG 21 BRASS	SKINDICHT® MR 16/11 BRASS
	SKINDICHT® BLK 9 LGY PS	SKINDICHT® MR 21/16 BRASS
	SKINDICHT® BLK 16 LGY PS	SKINDICHT® MR PG 29/21
	SKINDICHT® BLK 29 LGY PS	SKINDICHT® MR 16/9 BRASS
	SKINDICHT® SM PG 9 BRASS	SKINDICHT® MR 21/11 BRASS
	SKINDICHT® SM PG 11 BRASS	





The Vertical Lift Module SSI LOGIMAT® from SSI SCHÄFER.

Ready-to-install cable chains for storage towers

Customer reference

In factories, space is at a premium. SSI SCHÄFER, a solution provider for intralogistic products and systems based in the Siegerland region, 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.

Because of high demand, volumes exploded and the company was struggling to keep up with production. In 2014, the company decided to redesign the Vertical Lift Module SSI LOGIMAT®, with saving installation time right at the top of the wish list.

In order to get faster, since 2019 SSI SCHÄFER has been purchasing complete cable chains manufactured by LAPP at its plant in Otrokovice, Czech Republic. These chains contain all cables in the correct length and all connectors. For SSI SCHÄFER, all that remains is to install the chains and fit the connectors. The LAPP engineers were guided by the needs of the



An employee from SSI SCHÄFER during assembly.

customer. “We produce the entire electrical installation as a cable assembly and supply a system solution with huge variability for different machine designs. The joint development enabled us to offer a tailored solution that precisely meets the customer’s requirements,” says René Sedlák, Managing Director of LAPP in the Czech Republic.

LAPP always has all components in stock. The cable chains for the Vertical Lift Module SSI LOGIMAT® contain ÖLFLEX® servo cables and UNITRONIC® data cables – a total of five different cable types, all in the highly flexible version for moving applications, designed for millions of alternating bending cycles. The largest Vertical Lift Module SSI LOGIMAT® measures 24 metres in height and the cable chain covers a distance of around twelve metres. Before delivery, LAPP puts the chain through its paces, thereby ensuring consistently high quality – which customers themselves would not be able to guarantee without special expertise in connection technology.

One important customer requirement and a key argument in favour of LAPP is the need for all components to be UL certified. The Vertical Lift Module SSI LOGIMAT® goes all over the world, including North America, where there are different regulations and standards. As a manufacturer of cables and connection solutions, LAPP has set itself the goal of obtaining certification for as many of its components as possible for all markets. For customers, this reduces complexity and the number of parts, as fitting components in a system no longer depends on the country it will be operated in. For cable chains in particular, there are significant differences between Europe and North America. In the North American market, for example, every cable in a cable chain must be enclosed in a separate section. This aims to minimise electrostatic charge and prevent fires. |



Reference products

SSI SCHÄFER

ÖLFLEX®	ÖLFLEX® SERVO FD 796 CP 4G2,5+(2x0,5) ÖLFLEX® SERVO FD 798CP 3x(2x0,14)+(2x0,5) ÖLFLEX® SERVO FD 796CP 4G1,5+2x(2x0,75)
UNITRONIC®	UNITRONIC® FD CP PLUS A 4X0,34 UNITRONIC® SENSOR Li9Y11Y 3x1,0+16x0,5UL
SILVYN®	SILVYN® CHAIN SI325MC SILVYN® CHAIN AN325L060K SILVYN® CHAIN CFC325L060K
EPIC®	EPIC® SENSOR M12



Overall solutions instead of individual components: Cable assemblies for consistent series quality

Customer reference



Managing Director Boris Thomas demonstrates the pullCUBE pultrusion system

Originally, the North German family-run company Thomas GmbH + Co. Technik + Innovation KG produced bedroom furniture. However, as supplied glass fibre strips do not meet the high requirements, the company manufactures its own pultrusion machines for itself and other companies. The latest and particularly innovative pullCUBE machine incorporates assembled cable chain systems from LAPP – a guarantee of the desired robustness, quality, and durability.

In 1981 even Udo Lindenberg sang the song “Sandmännchen” from the “Schlafbehörde” in Bremervörde. This meant Thomas GmbH + Co. Technik + Innovation KG (TTI): The North German family-run company made its international breakthrough in 1956 with the invention of the slatted frame, leading it to prominence in pop culture. The approach to rock music fits in with TTI: “Rebellion against the status quo is part of the family’s blood, and from this comes a drive for innovation”, says Managing Director Boris Thomas, who is now running the company in the third generation. At the end of the 1990s, TTI opened its own mechanical engineering division specialising in pultrusion, an automatic process for producing fibre-reinforced plastic profiles. In this process,

dry fiber reinforcements are drawn through a resin bath and cured with the aid of heat before being cut to size as a finished profile. In this way, the company aims to become independent of suppliers when it comes to profiles for its laying systems and to ensure higher quality. Today, TTI is using the pullCUBE to build the world’s shortest pultrusion machine. Companies all over the world are interested in the innovative machine, so TTI is building it in series. This has consequences for the subcontractors: “We don’t see ourselves as a factory, but rather want to offer the consistent level of quality and robustness of series production”, emphasises Boris Thomas. TTI therefore purchases the cables and connectors for the pullCUBE ready assembled in the cable chain from the

global market leader for integrated connection technology, LAPP.

From slatted frame to mechanical engineering – and always rebellious

TTI, that is now a modern production plant with several parts of the building, has its headquarter in the middle of rural Bremervörde, between woods and residential buildings. The workshop of furniture carpenter Karl Thomas, founder of the family company, stood here back in 1935. At the time of the Second World War, he joined the socialist youth workers, was imprisoned for this and the workshop was closed for a long time. “My grandfather was a rebel, and this has consistently affected the entire family

since then”, says Boris Thomas smiling. In the post-war years, the Thomas family and their employees channelled their urge for rebellion into technological innovation. In 1956, the company invented the slatted frame, known as “Lattoflex”. At the end of the 1990s, TTI continued to improve this concept and developed the wing spring – an even more ergonomic laying system made of glass fibres and plastic instead of wood. However, the supplied glass fibre profiles prove not to be robust enough. Customers complain about broken bars – the birthplace of mechanical engineering at TTI, which now builds pultrusion machines to produce its own glass fibre profiles and sell them to third parties. 2008 is the year of TTI’s next revolution: for the first time, the patented radius pultrusion process can be used to produce bent glass fibre profiles. A moving mould instead of the usual rigid mould makes this possible. As components made of glass fibres and composites are playing an increasingly important role in many industries, there is a great deal of interest. For example, the American sports car icon Chevrolet Corvette in the eighth generation carries a curved front bumper created at TTI. In 2020, TTI finally presents its latest innovation: the pullCUBE combines all the



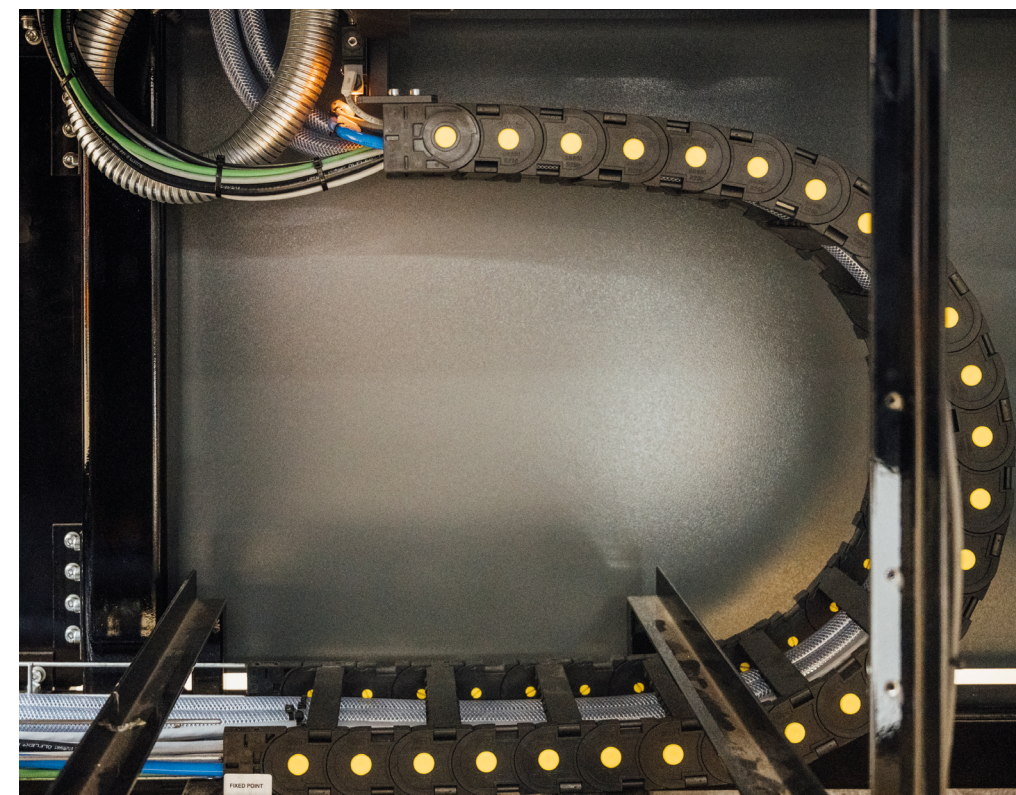
At 3.5 meters, the pullCUBE is the shortest pultrusion machine in the world

company’s pultrusion know-how in one compact machine – the shortest of its kind.

The shortest pultrusion machine in the world is flexible, safe, and efficient

A pullCUBE, which was just built for a customer at TTI, stands in the middle of the factory hall: With its rounded corners, the full cladding in the bottom and the glass windows in the upper half, the machine looks like a design item. The shortest

pultrusion machine in the world also offers practical advantages for users. The pullCUBE, which is just 3.5 metres long, including the mould, the gripping unit and an accompanying disc saw, can be transported very easily – all that is required is a forklift to load and unload the transport vehicle. And as everything is installed in one housing, there is no need for on-site assembly. The completely enclosed system is also a safe system that is unique in the world, as operators of the system cannot reach the grips, saw or hot surface of the mould with their hands. The compact dimensions also make it easier to position the machine exactly where it is needed, instead of having to look for where there is enough space for a conventional pultrusion line, which is at least 15 metres long. The pullCUBE is not only more compact but also more efficient than conventional systems, as it does not require a cleaning cycle. This means nothing is wasted on the profile, which enables users to save up to €144,000 per year with 200 days of production. In addition to these practical advantages, the design and user experience also played a major role in the development: “We focused a bit on the iPhone when designing the pullCUBE”, explains Isabell Ruröde, Operations Manager at TTI. “This includes the shape of the housing, but also the touch control panel with intuitive user guidance. This makes operation easy for all users, from beginners to professionals. And the device is very smart in the production environment. It looks just as valuable as it is”.



TTI relies on assembled cable chain systems from LAPP for the development of the pullCUBE

Suits TTI: LAPP supplies solutions rather than just components

Because TTI also builds the pullCUBE for other companies and therefore has particularly high demands on the quality and reliability of the machine, choosing the right partners was an important factor for the company: “At TTI, we see ourselves as a solution provider. Our customers do not just get a machine from us, but also our pultrusion expertise in the form of advice and support for their entire process. This is something we are looking for in our suppliers”. With LAPP, the right partner was found for connection solutions such as cables and connectors for the pullCUBE. TTI sources ÖLFLEX® cables, EPIC® connector components, SKINTOP® cable glands, SILVYN® cable protection and supply systems, as well as FLEXIMARK® marking systems from the Stuttgart-based company. LAPP supplies the components ready for installation to the assembly group for the movement axes of the saw, saw trolley and tool trolley on the pullCUBE. LAPP has been offering cable and cable chain assemblies as a service for many years, with a product range ranging from customised cable assemblies and servo assemblies according to common standards to fully assembled cable chains with electrical, pneumatic, hydraulic and steel construction.

LAPP experts analyse the customer’s requirements, develop proposals for optimising the connection solutions, create concept drawings and compile material lists. Based on this, LAPP arranges cable assemblies according to requirements. All the customer has to do is mount them in the intended location and plug them in. Thanks to quality control at LAPP, flawless operation is guaranteed immediately. Sebastian Achatz, Business Development Manager ÖLFLEX® Connect at LAPP, is delighted with the highly professional collaboration with TTI: “From the very beginning, TTI wanted to have a single-source supplier of cable chains for the pullCUBE. With our broad portfolio and our modern plants, we at LAPP can deliver ready-to-install cable chain assemblies of consistently high quality on request. All individual components are precisely coordinated with one another. This reduces assembly and process costs and

enables TTI to concentrate entirely on its core competence – the development and assembly of pultrusion machines.“

Two technology leaders at eye level

This simplifies the production of the pullCUBE and ensures consistent quality, but Boris Thomas experiences also further advantages of working with LAPP: “We are always looking for long-term partners that we know and who know us, who will help us to develop and further develop our products and who are technologically at least on par with us. This was precisely the decisive factor in our decision to work with LAPP”. Peter Engwer, Project Manager Applications & Cable Chains at LAPP, managed the project with TTI in the in-house technical department, selected the individual components, defined the material parts list, and created the production drawing. He is delighted with the joint success: “The pullCUBE is a fantastic machine that is really making international waves. With our assembled connection solutions, we are doing our part to ensure that TTI can offer its customers the desired quality”. Boris Thomas is also very satisfied with the collaboration and the connection solutions supplied: “This gives us the confidence that we have the ideal technology, we are benefiting from LAPP’s expertise in our development, and when you set up the machine, the cabling simply looks really good and professional – which is also a factor of our design requirements”. |

The pullCUBE offers unique safety due to its closed system as well as easy operation through a touch control panel



Reference products

TTI

ÖLFLEX®	ÖLFLEX® CHAIN 809
	ÖLFLEX® CHAIN 809 SC
UNITRONIC®	UNITRONIC® FD CP plus
	UNITRONIC® FD P plus
SILVYN®	SILVYN® CHAIN 325LI060150
	SILVYN® CHAIN 660A150250
EPIC®	EPIC® POWER M23
	EPIC® SIGNAL M23
	EPIC® HB with multi frame



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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