MUCKENHAUPT & NUSSELT

MANUFACTURING OVERVIEW

OUR SOLUTION: YOUR CABLE.

THE COMPANY

MUCKENHAUPT & NUSSELT focuses on the development and production of cables since its foundation in the year 1926.

We are a specialized cable manufacturer with around 100 employees, working as a development partner for our customers to create tailor-made solutions and consistently implement innovations in practice. This applies to both the materials used and the functions of the cable.

In every project, our work begins by precisely determining the requirements of the customers and their individual applications. Based on this foundation, we can select or develop cables that make no compromises in terms of functionality, quality, and lifespan.

Our solution: your cable.

„Innovation has been ingrained in our region since the 19th century. We carry on this spirit through constant modernization and further development."

Christian Muckenhaupt, Managing Director

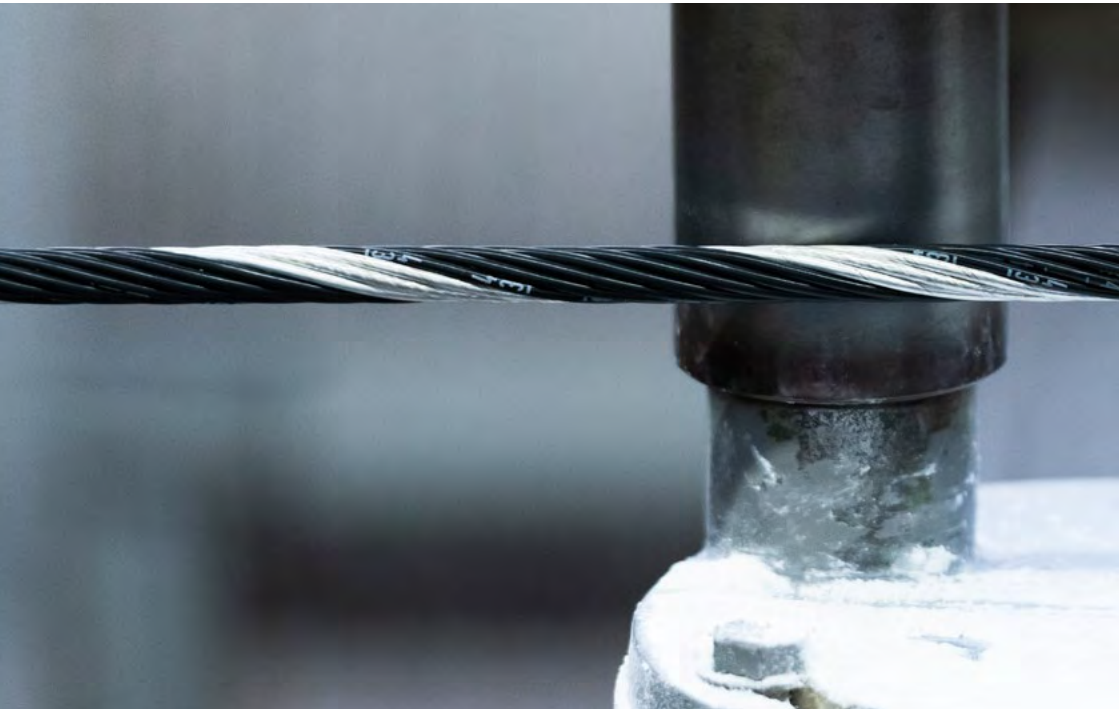
APPLICATION AREAS: HIGHLY DIVERSE

Our cables are used in a wide range of applications and across various industries. Whether it's for enduring flexibility, exceptional wear resistance, industry-specific certifications, or custom combinations of data and power lines, we develop and manufacture precisely the cables you need. For example, in the following industries:

- Agricultural Engineering / Forestry
- Automation
- Crane/Lifting Technology
- Event Technology
- Elevator / Conveyor Technology
- Renewable Energy
- Robotics
- Special Applications

PRODUCTION: FLEXIBLE AND FAST

Our cable production in Wuppertal is highly flexible. A diverse range of machinery designed for short setup times enables the rapid production of custom cables and wires in the desired quantity. We manufacture for you both sample quantities (even less than 500 meters) and large orders with short delivery times.



QUALITY AND SUSTAINABILITY

MUCKENHAUPT & NUSSELT operates efficiently and ensures high product quality. In our in-house laboratory and testing field, the cables are tested for the required stress levels.

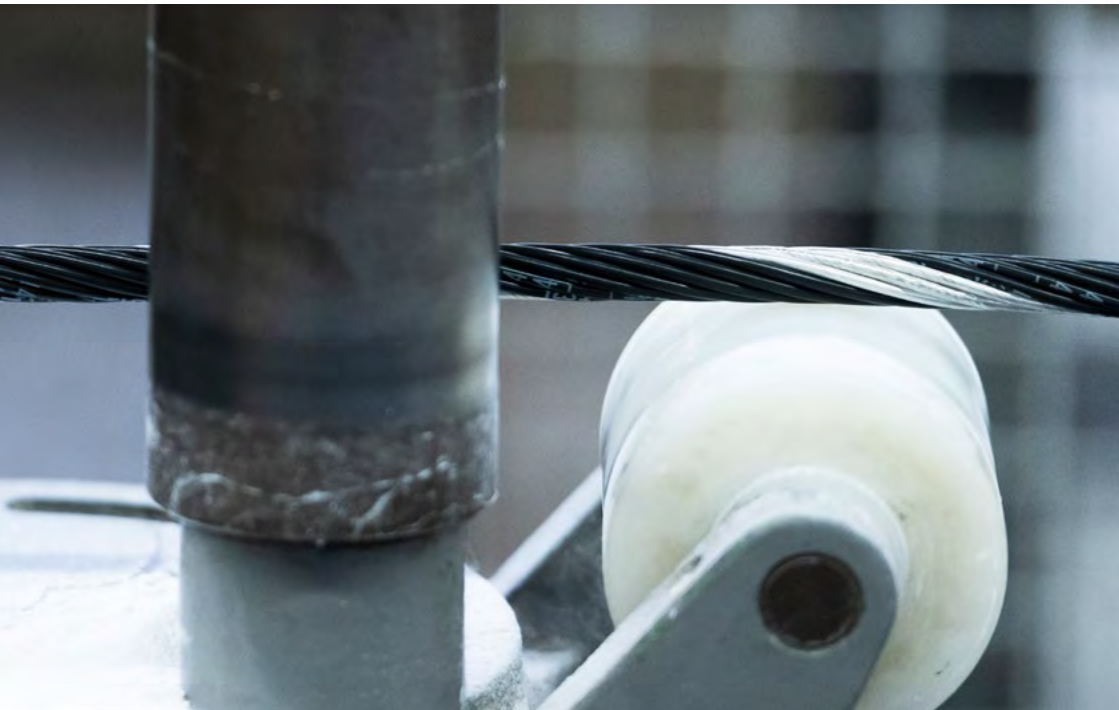
In addition to maintaining quality in all processes, we prioritize environmentally friendly production, as evidenced by certifications according to DIN EN ISO 9001 and DIN EN ISO 14001.

MUNFLEX® – THIS BRAND REPRESENTS HIGH-QUALITY CABLES

In many projects, we can rely on our long-standing development expertise, drawing from experience with over 50,000 constructions.

This design pool expands annually by 700 to 1,000 new designs.

The cables of our in-house brand are available in numerous variants, including control and data cables, as well as special cables (MUNFLEX®-Special).



MANUFACTURING OPTIONS

MATERIAL

ISOLATION

- PVC (polyvinyl chloride)
  abrasion-resistant, flexible at low temperatures, heat-resistant, oil-resistant, transparent, various shore hardnesses
- PE (polyethylene)
  various shore hardnesses
- PP (polypropylene)
  various shore hardnesses
- XLPE (cross linked Polyethylen)
  various shore hardnesses
- TPE-E (polyester)
  copper- and hydrolysis-stabilized, various shore hardnesses
- TPU (polyurethane)
  abrasion-resistant, flame-retardant, glossy, halogen free, low adhesion, oil-resistant, spiralizable, UV-resistant, various shore hardnesses
- TPE-R (TPV) (thermoplastic rubber)
  abrasion-resistant, flame-retardant, heat-resistant, low adhesion, UV-resistant, various shore hardnesses
- HFFR
  cold-flexible, flame-retardant, halogen-free, low smoke

SHEATH

- PVC (polyvinyl chloride)
  abrasion-resistant, flexible at low temperatures, heat-resistant, oil-resistant, transparent, UV-resistant,various shore hardnesses, weather-resistant
- PE (polyethylene)
  various shore hardnesses
- XLPE (cross linked Polyethylen)
  various shore hardnesses
- TPU (polyurethane)
  abrasion-resistant, flame-retardant, glossy, halogen-free, low adhesion, oil-resistant, spiralizable, UV-resistant, various shore hardnesses
- TPE-E (polyester)
  copper- and hydrolysis-stabilized, various shore hardnesses
- TPE-R (TPV) (thermoplastic rubber)
  abrasion-resistant, flame-retardant, heat-resistant, low adhesion, UV-resistant, various shore hardnesses
- HFFR
  cold-flexible, flame-retardant, halogen-free, low smoke, oil-resistant

All extrusion materials are PFA-free, meaning they are free from per- and polyfluoroalkyl substances.

MANUFACTURING OPTIONS

FLAT CABLES

- Width up to 90 mm
- Up to 24 elements arranged in parallel (shielded and unshielded cores or core groups, support elements, tubes)
- Cores or groups of cores separated by bridges
- Surface qualities (glossy, low adhesion, partially or fully with diamond pattern, square or round design)

ROUND CABLES

- Cable diameter up to 50 mm
- Layer-stranded up to 24 cores in one layer pair and core group twisting > 100-core
- Special designs (support elements, hoses, support braids, various according to customer requirements)

CROSS SECTIONS

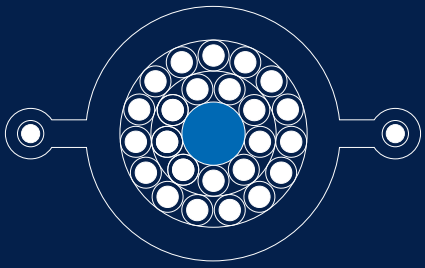
- Core cross sections of 0.14 mm^2 up to 185 mm^2
- Total cross-sections for cables up to 200 mm^2 (including shields)

MANUFACTURING OPTIONS

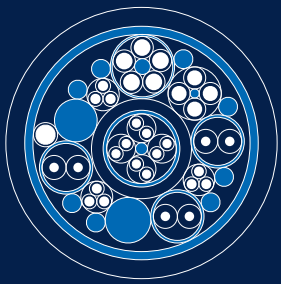
CABLEDESIGN

FLAT CABLE

2TY ROUND CABLE



ROUND CABLE



ALL CONFIGURATIONS

In round or flat cable designs, as well as in various special configurations. However, for customer/application-specific system cables, the variability is virtually unlimited.

CONDUCTOR DESIGNS

From coarse-stranded, finely stranded, ultra-fine stranded to highly flexible copper wires in bare, tinned, or other surface finishes, as well as from Cu-Alloy or as mixed strands with steel wires or reinforced with tear-resistant threads. The designs range from simple stranding to special cable constructions.

TAPING / SEPARATION LAYERS

Through various manufacturing processes, foil/strips made of PP, PE, Polyester, PTFE, fabric, non-woven fabric, etc., can be applied. In addition, winding with textile threads is also possible.

SUPPORTING ELEMENTS / SUPPORTING BRAIDS

Supporting elements (Aramid, natural fiber, or steel) are typically centrally positioned in round cables and laterally arranged in flat cables. Supporting braids made of Aramid, natural fibers, or special plastics provide additional strain relief and torsion protection for specific application scenarios (suspended operation or drummable application). There is also the option of integrating the supporting braid into the jacket.

SHIELDINGS

As individual, element or overall shielding in the form of

- foil shields (St)
- spirals (D)
- braids (C)
- mixed braids (Ct) (metal with textile threads)

made of bare copper, tin-plated or other special materials.

REINFORCEMENTS

Braidings or wrappings made of, among other things:

- galvanised steel wires
- stainless steel wires
- aramid threads
- or other materials

FURTHER COMPONENTS

The following can also be installed as components of system cables:

- tubes made of PE, PA, PUR, PTFE, FEP etc.
- coax cables
- special data cables
- supplied cables/elements

PRODUCT CERTIFICATIONS

UL-758 AWM (AVLV2.E113308)

Material combinations core/sheath according to cULus (UL-758 and CSA 22.2) are also possible.

CORE STYLES

PVC	80°C	300 Volt	1729
PVC	80°C	300 Volt	1007
PVC	80°C	300 Volt	10053
PVC	80°C	750 Volt	1011
PVC	105°C	1000 Volt	10012
PVC	90°C	1000 Volt	10557
XLPE	90°C	1000 Volt	30052
TPE	80°C	300 Volt	11883
TPE	90°C	300 Volt	11884
TPE	90°C	600 Volt	11885
TPE	90°C	1000 Volt	11886
PP	80°C	300 Volt	10467
PP	80°C	1000 Volt	10492
TPU	80°C	1000 Volt	10553
TPU	80°C	1000 Volt	10587

SHEATH STYLES

PVC	80°C	300 Volt	2464
PVC	80°C	1000 Volt	2570
PVC	105°C	1000 Volt	2586
TPE	90°C	300 Volt	21529
TPE	90°C	300 Volt	22344
TPE	90°C	300 Volt	22345
TPE	90°C	600 Volt	21530
TPE	90°C	1000 Volt	21387
TPE	90°C	1000 Volt	22021
TPE	90°C	1000 Volt	22022
TPU	80°C	300 Volt	20911
TPU	80°C	300 Volt	20870
TPU	80°C	300 Volt	20233
TPU	80°C	1000 Volt	20234
TPU	80°C	no voltage rating	20235
TPU	80°C	no voltage rating	21897

This is an excerpt of our UL styles. You can get more information from our sales department: vertrieb@munu-kabel.de.

All core/sheath material combinations are possible for cables with UL marking, whereby the temperature and voltage class of the cores must at least correspond to those of the sheath.

With this »modular system« almost all customer-specific cable solutions with approval for the North American market are possible.

UL-STYLES BEI M&N

All UL styles approved for M&N can be viewed at:
https://tinyurl.com/5n8ak92r

PRODUCT CERTIFICATION ACCORDING TO NATIONAL AND INTERNATIONAL STANDARDS

As a symbol of product safety and quality, numerous product certifications are in place for both the European and North American markets. Therefore, the manufacturing facility of MUCKENHAUPT & NUSSELT is subject to continuous monitoring by VDE, UL, and KEMA.

HAR

- H03VV-F Flexible PVC cables
- H05VV-F Flexible PVC cables
- H05VV5-F Oil-resistant PVC control cables
- H05VVC4V5-K Shielded oil-resistant PVC control cables
- H05VVH6-F PVC flat cables
- H07VVH6-F PVC flat cables
- H05V3V3H6-F PVC flat cables, resistant to cold

VDE EXPERT OPINION WITH PRODUCTION MONITORING

- VVDE reg. no. 7008:
  MUNFLEX®-Y flat cable 450/750V, suitable for outdoor use, application up to -40°C.

ECOLAB® CERTIFICATION

Material resistance to aggressive cleaning and disinfecting agents. Valid for our jacket materials TPE-R (TPV) flame-resistant and TPE-R (TPV) halogen-free.

ECE R118 IN CONJUNCTION WITH ISO 6722 / ISO 14572 / ISO 19642

Resistance to flame propagation. Valid for the MUNFLEX®-Special products in the following dimensions: 7x0.75 mm², 18x0.75 mm², 2x1.5 mm², and 1x6.0 mm².

Cables for all areas of application

MUCKENHAUPT & NUSSELT develops tailored solutions for a wide range of industries. Below, you will find some application areas where our cables already meet high standards.

Challenges are our passion, and we excel at finding solutions. Please feel free to reach out to us. We would be delighted to become your development partner as well.

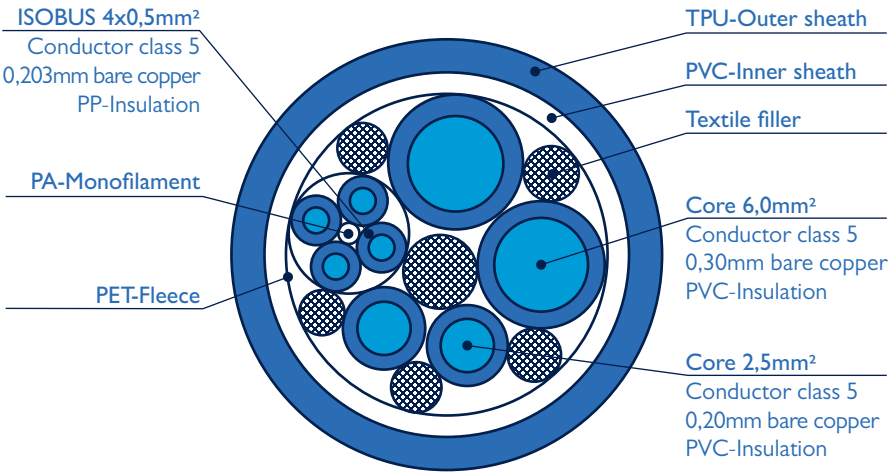
Our Solution for Agriculture & forestry

Cables in forestry and agriculture are frequently exposed to extreme conditions: moisture and dust, extreme temperatures and intensive cleaning methods are everyday impacts they have to cope with.

Much is expected of them: in addition to a high degree of movability and mechanical load-bearing capacity, new requirements are increasingly added for the cable technical construction.

We prepare cables for demanding uses by designing and producing them for a long life under difficult conditions from the outset. Our process begins with careful selection of suitable materials and includes precise processing in our individual production, which also enables economic production of smaller quantities.

Bus-compatible data cables (ISOBUS) and hybrid cables are increasingly being used. In this way, we also address the latest agricultural trends such as precision farming and ever more complex control technology – and we contribute to the automation of individual agricultural machine functions.

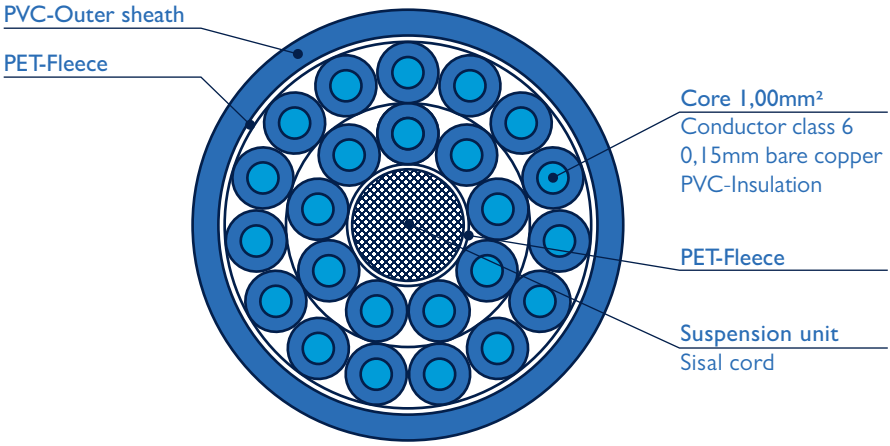


Our Solution for Elevator & conveyor technology

We develop and produce tailor-made elevator cables to your specific requirements and working in close cooperation with you. We select suitable materials depending on the expected load profile. The cables can also be individually printed on request, for example, with your company logo.

Our solutions meet the highest safety and reliability standards for all types of elevators – from passenger to goods elevators. We allow for strict fire protection requirements and offer a wide range of allowable materials based on our comprehensive experience.

In addition to energy supply and fire protection, we also take care of the necessary communication technology to ensure emergency calls in case of failures. Our cables are specially designed for high mechanical loading during daily operation and are characterised by their outstanding flexural fatigue strength and high wear resistance – even under changing climatic conditions.



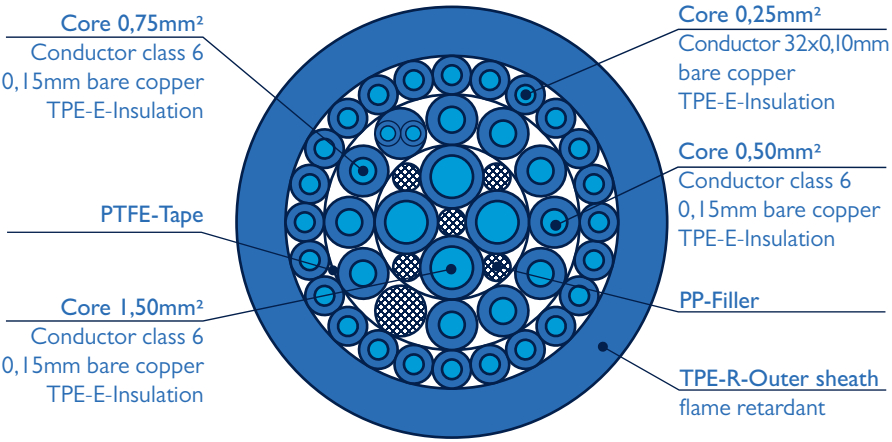
Our Solution for Automation

Whether you need cable systems for pure data transfer or must also ensure the energy supply with the same cable. Whether you need fixing laying or continuous flexible use. Our modular combination options allow us to solve virtually every automation problem.

In automation and sensor systems, fast data transfer is a basic requirement for cables. After all, control commands and measured data must be exchanged between the various levels or an automation of instrumentation and control system completely without delay.

Our products set themselves apart through their absolute durability and reliability – indispensable, because high mechanical loads can affect cable drag chains and cables, especially in industrial automation.

Thanks to perfect shielding, our cables are also resistant to external interferences for maximum electromagnetic compatibility (EMC).



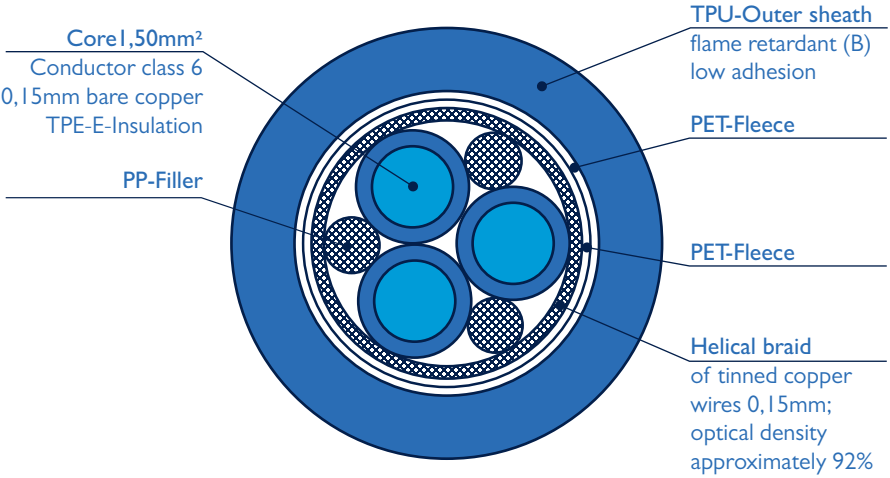
Our Solution for Renewable energy

Renewable energy such as solar and wind power are key technologies for achieving climate targets. They are also technologies with high innovation frequency and particular material and cable technology standards.

Our cables are already used in the direct installation of wind power converters. Not only onshore, but also offshore.

For example, we produce diverse cables for the wind power sector. We supply torsionable cables for data and control applications, which are installed freely hanging in the tower. Particularly in the offshore sector, we must demonstrate resistance to fluids such as seawater, ozone, oil and UV radiation. These properties must be assured under rough environmental conditions within a wide temperature range.

In this fast-growing and innovative market you have a new challenge, we take care of your application-based cable solution. In doing so, we jointly help to advance the development and spread of renewable energy.

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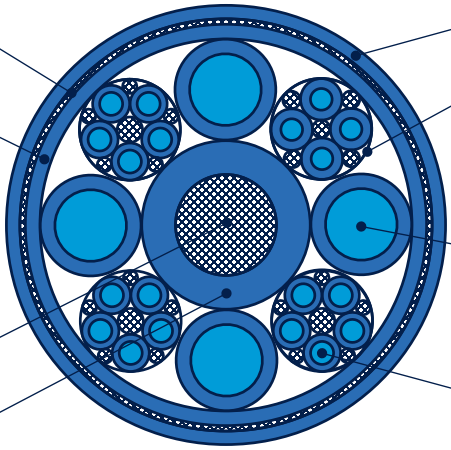
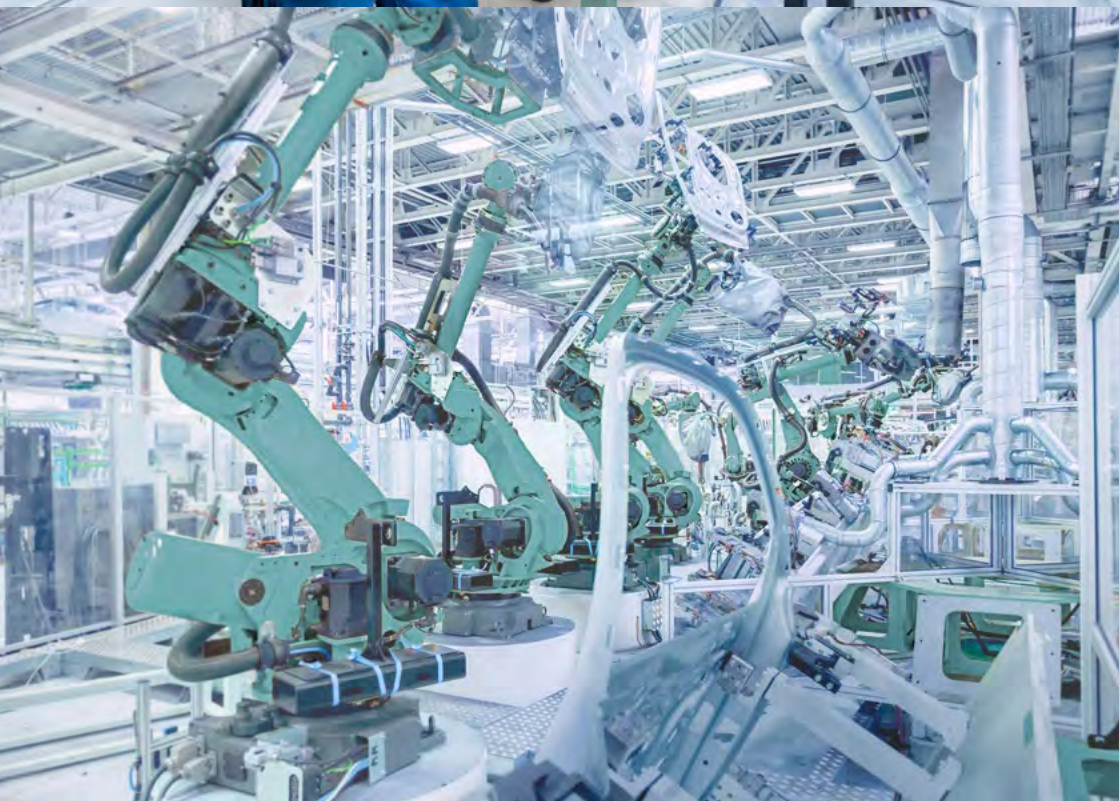
Our Solution for Crane/lifting technology

We offer tailor-made cables for overhead, dockside and mobile cranes, which are durable, economic and robust. This makes it easier for you and sometimes more difficult for our cables: we also develop high-quality solutions for this industry, both with support braiding or even carrying elements (Suspension unit).

Our solutions are specially developed for harsh operating conditions in construction and loading technology, where cables are exposed to mechanical loads and chemicals. We have extensive expertise in flexible, highly stable reelable cables. We develop cables that meet extreme outdoor requirements such as UV-radiation, low temperatures, rain and rough marine climate and are resistant to lubricants and aggressive fluids.





Our Solution for Robotics

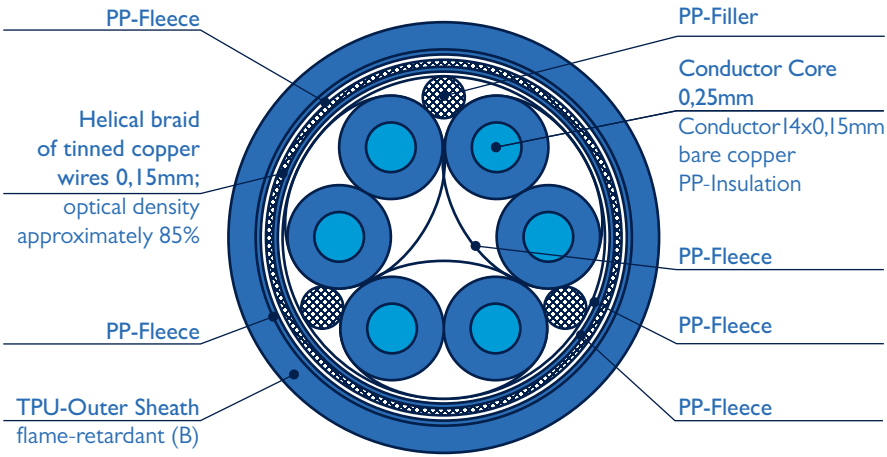
Industrial robots never become bored with their permanently monotonous movement sequences. This means high mechanical loading for cables.

Cables for robotics must be application-based and designed and developed to meet specific needs.

For example, additional properties such as heat resistance or absolute watertightness are required to equip robots for welding or underwater work.

Regardless of the functions and equipment level, we are always ready to meet the challenge.

Abrasion resistance plays a central role when choosing the sheath material. Whether in self-supporting applications, chain-guided or for robot cables routed in flexible tubes or joint axes, the impact on the sheathing is very high. Depending on the application, other requirements such as oil, UV or heat resistance are also necessary. We mostly use highly abrasion-resistant polyurethane types for robot applications.

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Our Solution for Special applications

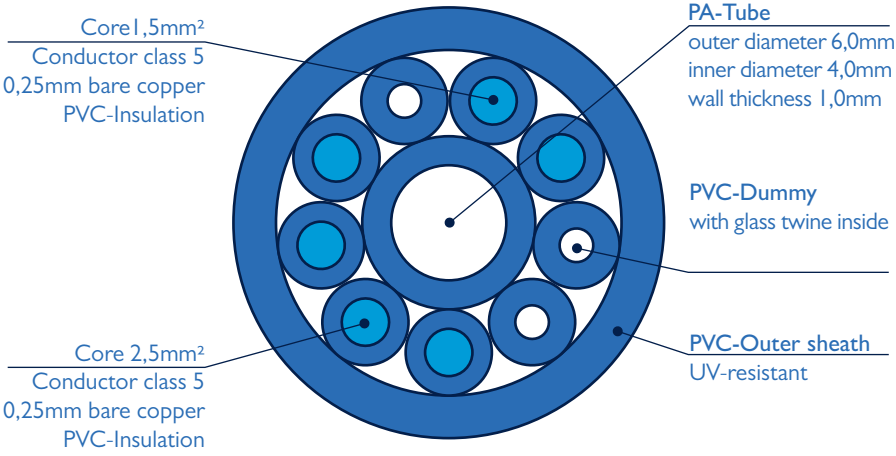
The areas in which cables are used are so diverse that it is difficult to register them individually.

The industries listed by us are therefore merely focal areas and examples of our development work and production expertise. Any application and customised special solution beyond these is feasible.

As experts and development partners for cable installation, no challenge is too large for us. Whatever your requirement and specification, ask us. We are sure to find the right solution – from the cable construction through to the choice of material.

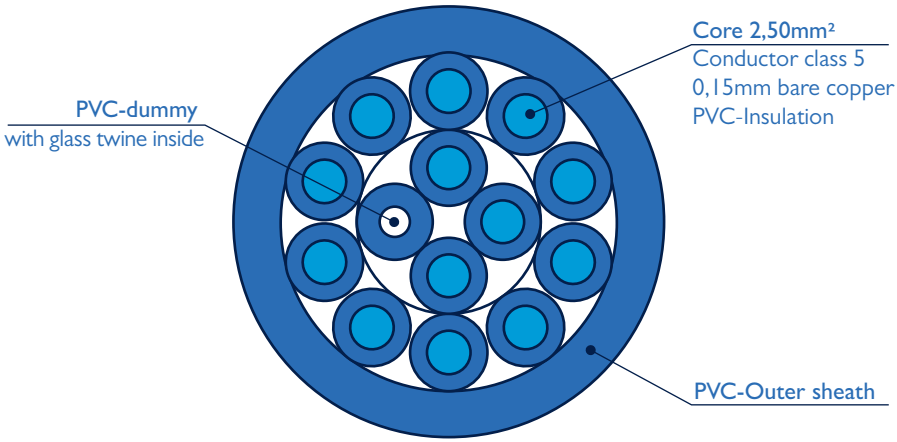
Examples of our special applications

- Electronic hit registration in fencing - particularly lightweight and flexible
- Measuring technology for the oxygen content in water - water resistant and precise
- Doner kebab knives - grease resistant and hygienic
- Transport cart for liquids - heat resistant and robust, reelable
- Compressed air chain lifting gear for highly-explosive atmospheres - tensile strength and flexible
- Underwater diving lamp - water resistant and non-slip



Our Solution for Event technology

Flawless functioning is decisive in event technology. Cables must be robust, durable and usable in diverse ways – whether for concerts, theatres, events or trade fairs. They must meet extreme requirements depending on the area of use: from audiovisual technology to the light installation through to mechanical controls and safety systems. Our cables are heat resistant, watertight, compatible with different systems and suitable for indoor and outdoor uses. They withstand changing temperatures and harsh installation and transport conditions and are available as a halogen-free version.



Still have questions? Contact our experts!

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