

# CABLES MOVE – SOLUTIONS FOR AUTOMATION



AUTOMATION

### ■ Company

Since its foundation in 1926, MUCKENHAUPT & NUSSELT has concentrated on developing and production of cables.

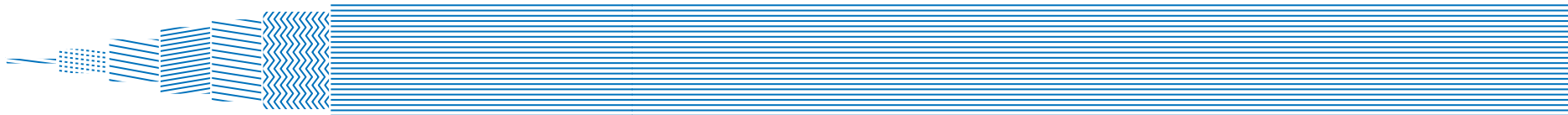
We are a special cable production company with around 100 employees, developing tailored solutions for our customers as a development partner and constantly putting innovations into practise. This applies both for the materials we use and the functions of our cables.

For each project, our work begins with accurately determining the customer's requirements and the individual application. On this basis, we are able to select or develop cables that do not compromise on functionality, quality and lifespan.

### ■ Areas of application: very varied

Our cables can be used for many applications and in a wide range of industries. Whether it's about long-lasting flexibility, specific wear resistance, industry-specific certifications or individual combinations of data and energy cables: We develop and produce exactly the cables that you need – for example, for the following industries:

- Elevators/  
conveyor technology
- Automation
- Crane/lifting technology
- Lighting industry
- Robotics
- Event technology



### ■ Production: flexible and fast

Our manufacture of cables in Wuppertal is exceptionally flexible. A diverse plant, based on short set-up times, enables quick production of customer-specific cables in the desired quantities.

We can produce both sample quantities (incl. less than 500 m) and large orders with short supply times for you.

### ■ Quality and sustainability

MUCKENHAUPT & NUSSELT works efficiently and guarantees high product quality. The cables are tested with required loaded in the company's own laboratory and test department.

As well as quality in all processes, we pay attention to ecologically contractual production. This is documented by the certifications in accordance with DIN EN ISO 9001 and DIN EN ISO 14001.

### ■ MUNFLEX® – a brand that stands for high-quality cables

For many projects, we can depend on the standard cables in our comprehensive MUNFLEX® range – and on the experience of more than 45,000 constructions. The cables from our brand are available in numerous varieties, incl. control and data cables and special cables (MUNFLEX®-Special).

### Digitisation and Industry 4.0: it depends on the cable

The digitised manufacturing of the (near) future is organised according to the principles of Industry 4.0. In other words: It's flexible, efficient, sustainable and – above all – intelligent. As part of this production, data will play a larger role than it currently does in today's automated manufacturing. Significantly more data is transmitted and the infrastructure of control technology hardware is increasingly decentralised.

This reveals great demands not just on processing power and IT infrastructure, but also on the cables themselves. Data throughput and transfer speed are also affected. We're happy to accept this challenge – on the basis of our many years of experience in automation technology.

### We take the lead when it comes to the fastest transfers

Fast and reliable data transfer: Today, this is a central requirement for cables used in automation technology.

Navigation demands or measured data must ultimately be exchanged instantly between the different levels of automation or measure and regulation technology. High mechanical loads can impact upon cable routes, particularly in industrial automation.



### Fixed or flexible – the perfect (cable) solution

Whether you need cable systems in these conditions for simple data transfer or want to secure an energy supply via the same cable – we can develop a tailored cable solution for you.

Whether you need a fixed transfer or cables in flexible continuous use: Our modular combination options, which are deposited in a database with more than 45,000 special products, provide us with the solution for almost any automation task. Our cables are always characterised by extreme durability and reliability.

Thanks to perfect shield, they are also insensitive to external disturbances and do not disturb their surroundings.

### Broad spectrum for automation

We produce a wide range of types of cables for use in automation. The spectrum extends from comparably simple round cables and control and data cables, which are adjusted to defined areas of use, to hybrid cables with data elements and integrated fibre optic cables.

Flexible cables and drag chain cables form a focus for constant-motion use with low bend radii and under adverse conditions.

We also have comprehensive experience in using different sheath materials (PVC, PUR, thermoplastic elastomers) for defined requirements (oil resistance, UV resistance, abrasion resistance). The same applies for the development and production of certified cables for critical applications (explosion protection, food production, clean room technology). We supply many customers with pre-finished pre-fabricated cables.

Either way: We develop exactly the cables that our customers need.

### ■ Always in motion: drag chain cables

Certain requirements apply when signal or energy cables are introduced to energy chains. In this case, chain-suitable cables must be used. MUCKENHAUPT & NUSSELT is a specialist in this area.

We have developed special types of stranding that effectively prevents the occurrence of “corkscrews”. This is an important prerequisite for the lasting durability of cables in energy chains. Another of these is the high abrasion resistance of the outer sheath which is in permanent contact with the chain. The cables are also designed for withstanding high tensile cables.

More requirements arise depending on the intended use. Some examples: Long traverse paths need to be tackled at crane facilities. Oil resistance of cables plays an important role for tool machines. In handling systems for semiconductor manufacture, typical conditions include narrow bend radii and clean room operation. In other applications, cables introduced into chains work in soiled environments, leading to high demands for wear resistance.



### ■ Cables for robotics – flexibility in three dimensions

In energy and signal transfer in robotics, cables perform combined three-dimensional movements, and often at high frequencies. In the view of cable engineers, this means: There are not just switch bending loads, as with drag chain cables, but also torsional loads.

Both the strand and the shielding and sheath must be adapted to this. Robotic cables from MUCKENHAUPT & NUSSELT meet this requirement. Our range includes torsionable cables such as motor, control and data cables.

### ■ Best connected – with real specialists in cables

Measure, control, regulate, communicate: The increasing networking in automation is also increasing complexity both in energy supply and in signal and data transfer. For manufacturers and users of cables in automated machines and facilities, this means, among other things: “Specialised” cables are increasingly used, including those which are, for example, well suited for servo drives, for measurement and regulation technology or for sensor-actuator networks.

These cables have impressively fast, reliable signal transfer and long life spans. MUCKENHAUPT & NUSSELT is your development partner for such tasks.

### ■ One for all: hybrid cables

Leading control engineers rely increasingly on the combined transfer of signals and energy via a plug connection and also via a cable. This can lead to real challenges, particularly for internal shielding between signal and energy cables. Our hybrid cables show that we can master this challenge.

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