MOTIONLINE®

TO SUPPORT YOUR DEVELOPMENT:
A COMPLETE RANGE OF INNOVATIVE
CABLE SOLUTIONS FOR AUTOMATION

Nexans
BRINGS ENERGY TO LIFE

CHALLENGES TO AUTOMATION REQUIRE MOTIONLINE®

There are well over a million and a half industrial robots in operation worldwide, with 180,000 new robots installed every year, largely in automotives, chemicals, rubber and plastics, and food processing. The electrical/electronics industry has also increased installations. China is now the biggest robot market, with a share of some 20%. About 70% of total robot sales are currently in Japan, China, the US, Korea and Germany.

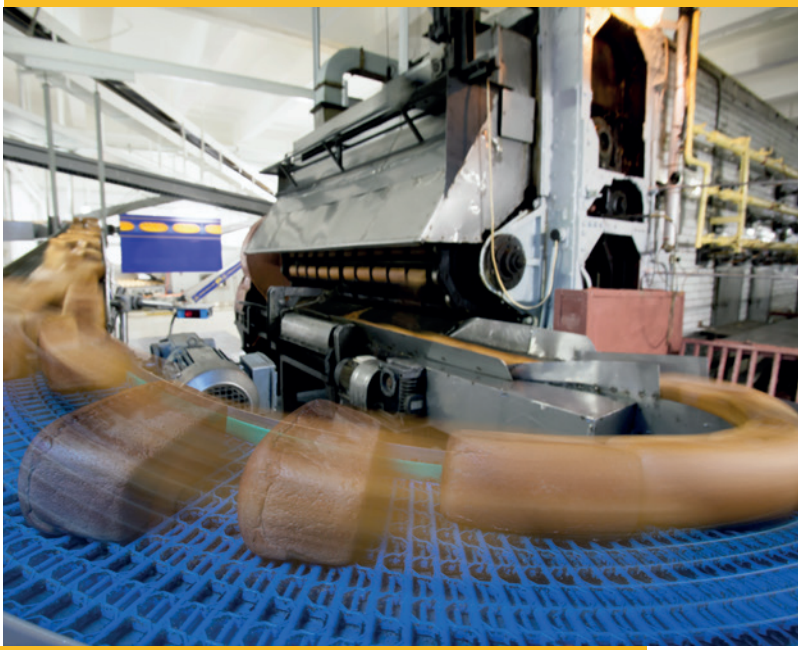
What drives this growth? Prices have fallen, and quality has increased. Robots now cost less than half of what they did in 1990. In the next few years, robot installations are set to increase by about 12% annually, driven by global competition, energy-efficiency, growing consumer markets, and a move towards flexible automation for producing customized goods.

Meanwhile, automation systems and process control have continued to evolve. Today's machines are electrically-driven, and control systems have much improved through Programmable Logic Controllers (PLCs), Distributed Control Systems (for heavy process, large-scale applications), and new PC-based Control Systems.

What robotic and machine tool manufacturers expect of a cable supplier:

- High performance for efficient integration and distributed control
- Quality, reliability and durability to avoid costly stoppages
- Availability and fast delivery for production line flexibility
- Resistance to harsh environments and imperviousness to EMI
- Safety for personnel, e.g. lead- and cadmium-free, and easy recycling
- Conformity to international standards, and crossindustry compatibility
- Excellent service, from testing to support and maintenance

Machine tools, robots and other production machinery require a complete range of dynamic and robust cables for production efficiency and process control.



RELIABLE AND FLEXIBLE CABLES

Technical improvements are increasing the use of robots in general industry and small and-medium-sized companies to improve product quality and reduce waste. Robots also take over dangerous, tedious and dirty jobs that are often unpleasant and unsafe for humans to perform.

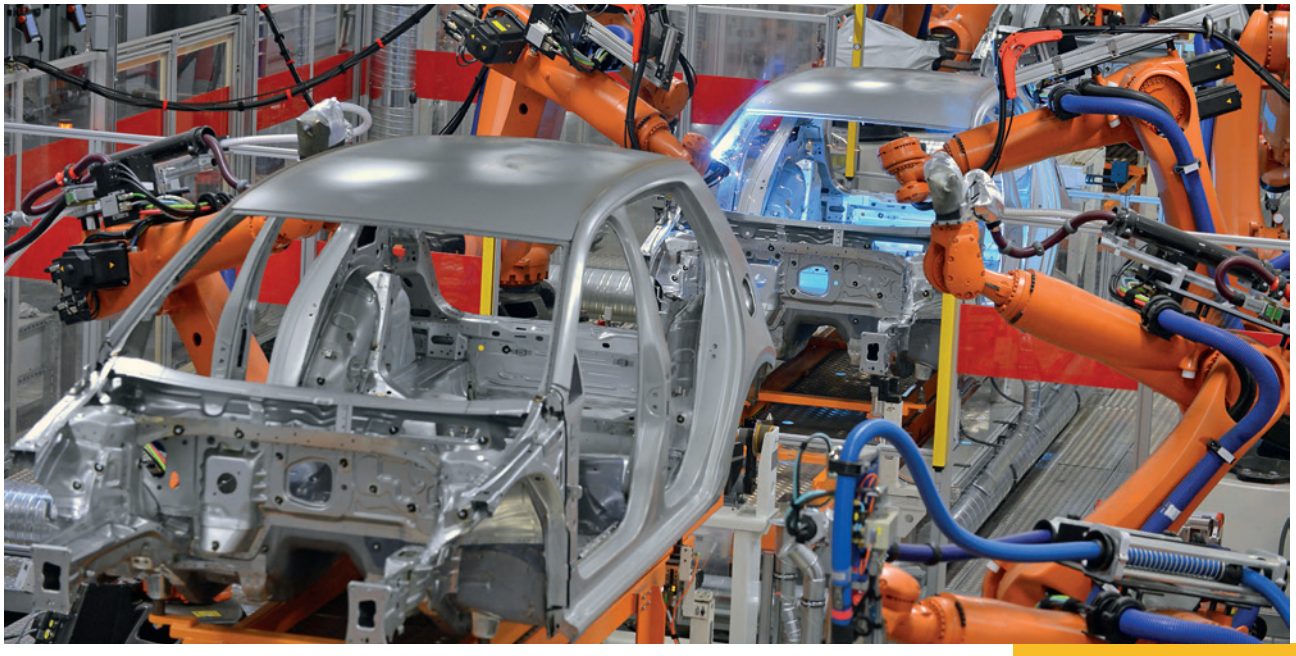
Under its MOTIONLINE® brand, Nexans manufactures a full range of dynamic cables to assure the interconnection, control and process efficiency of robots and flow lines. They conform to all major international safety standards, such as German (VDE), Canadian (CSA), American (ANSI), Chinese (CCC) and UL worldwide.

Nexans constantly innovates to deliver high-performance, reliability and extended life cycles. We supply everything from miniaturized control cables to industrial Profinet cables.

We respond to short lead times, and are permanently stocked with all standard cables. We also provide customized designs, easy connectivity, and modular solutions that can fit neatly into your production process.

MOTIONLINE® for robotics and machine makers

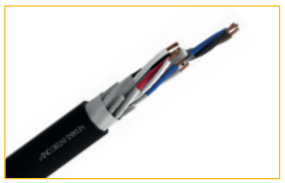
- A full range of products for power and control functions
- Innovation partner for leading component manufacturers
- Optimized conductor and insulation materials (no shrinkage and low hydrolysis)
- Special designs to maintain electrical parameters throughout the life cycle
- Easy strippability and connectivity for installation and replacement ease
- Fire- and heat-resistance for safety and performance
- Imperviousness to oils, fats and other chemical agents
- Technical support tailored to customer needs



MOTIONLINE® FOR DYNAMIC APPLICATIONS

ROBOTIC APPLICATIONS

Robotic cables



Carrying energy/data on one or several cores, they perform excellently under high torsion conditions, with low break susceptibility. Nexans manufactures over a hundred sizes (0.14 to 95 mm^2) in polypropylene (PP), thermoplastic elastomer (TPE) and our own Thermoplastic Modified (TPM) insulations.

> Nexans provides a wide range of robotic cables for the German KUKA Robot Group, the largest producer of robots in Europe and No. 2 worldwide.

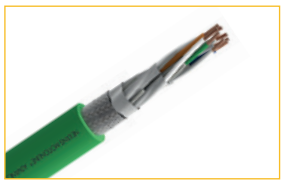
CHAIN APPLICATIONS

Power cables

These screened cables provide power to servos and motors for two-dimensional movements, and are available from 1.5 to 50 mm^2, ranging from 600–1,000 V. Depending upon specific types, cables contain one or two pairs to connect servo breaks and thermal sensors.

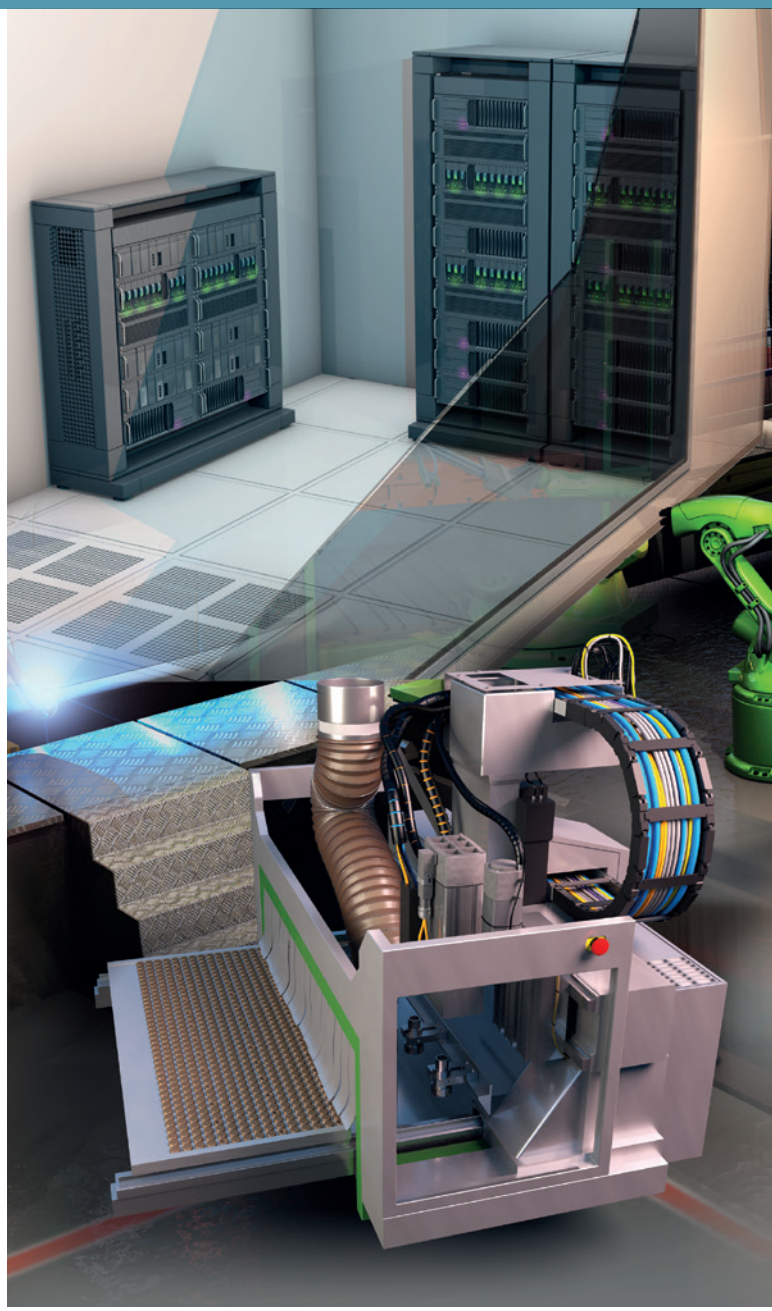
> Low capacitance cables are being produced for SEW, a German supplier for robot and machine tool manufacturers.

Encoder cables and Ethernet based encoder cables



Well-established standard encoder cables are more and more replaced by Ethernet based encoder cables. They provide position information of servomotors and other devices to drives and controls, with a small bending radius, these cables can deliver up to 10 million cycles in a drag chain.

> Maximum technical and commercial benefits to customers like DMG, Index, Grob or Fanuc Automation.



Hybrid cables

These cables combine power, control and data within a single cable. Often tailor-made, they deliver energy and control, thus supporting the trend towards decentralized control systems and drives.

> Nexans developed these special cables with leading German connector producers and harness makers to meet specific connector and environmental factors for all applications.

CONTROL APPLICATIONS

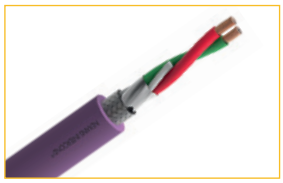
Control cables

Multi-standard, easy-to-strip miniature cables (up to 2.5 mm^2) with a small bending radius and long life (up to 5 million cycles) used for control purposes in assembly line machines.

> Incorporating our Thermoplastic Modified (TPM) insulation, the cable's improved dielectric quality has made FANUC Robotics a prime supplier for the machine tool industry.

INDUSTRIAL ETHERNET AND BUS APPLICATIONS

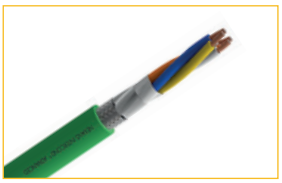
Profibus cables



A two-core round cable, available with different jacket materials for different applications. Delivering up to 12 Mbits/s, Profibus is still a leading standard in Europe, and widely used in the automotive industry. Superior mechanical and dynamic properties, as well as fast connections account for its continuing market dominance.

> Originally co-developed with Siemens in 1989, Nexans is today a member of the Profibus Association, developing cables with 14 other companies and connector manufacturers to create a complete system to assure interoperability.

Profinet / Industrial Ethernet cables



To merge office and factory LANs, Nexans offers symmetrical twisted and shielded copper cables with data transfer rates of 100 Mbit/s (CAT 5e) and up to 10 GBit/ 600 MHz (CAT 7). Profinet and Industrial Ethernet cables are available for high performance chain applications, as well as for static application.

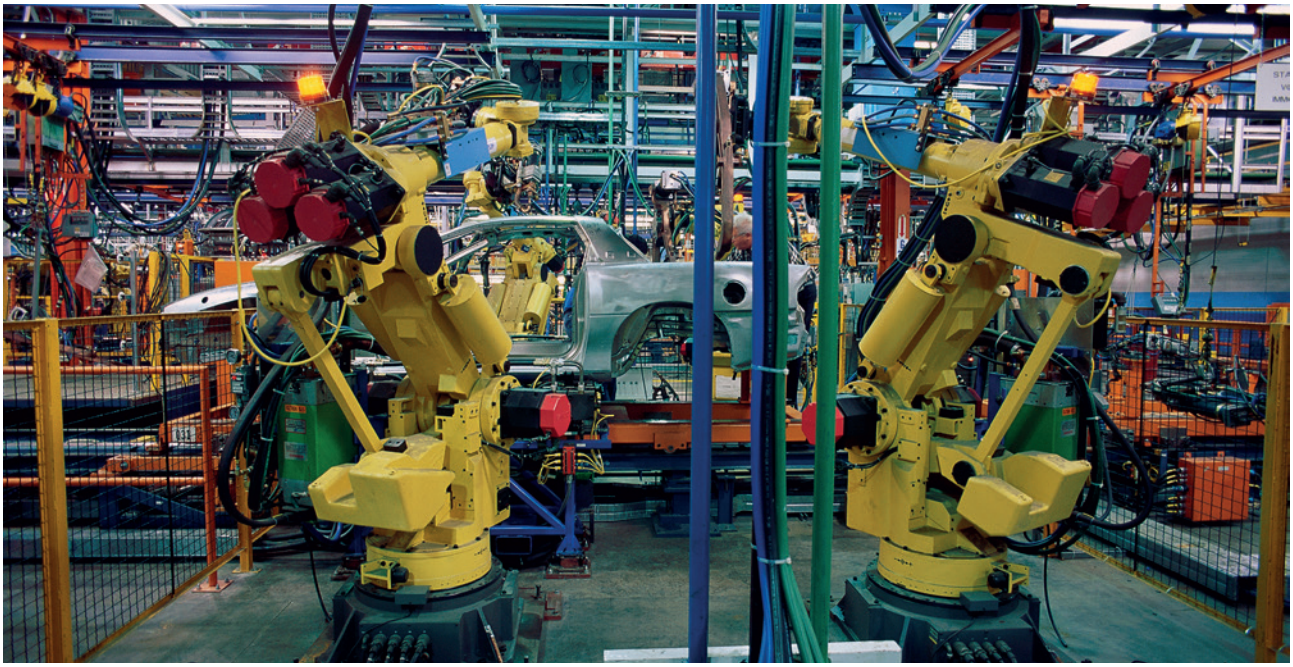
> CAT 7 Industrial Ethernet cables for drag chain purposes represent our latest development supporting the future trend of interconnected production systems, high performance vision systems, and other applications that combine high data volumes and tough mechanical and environmental requirements.

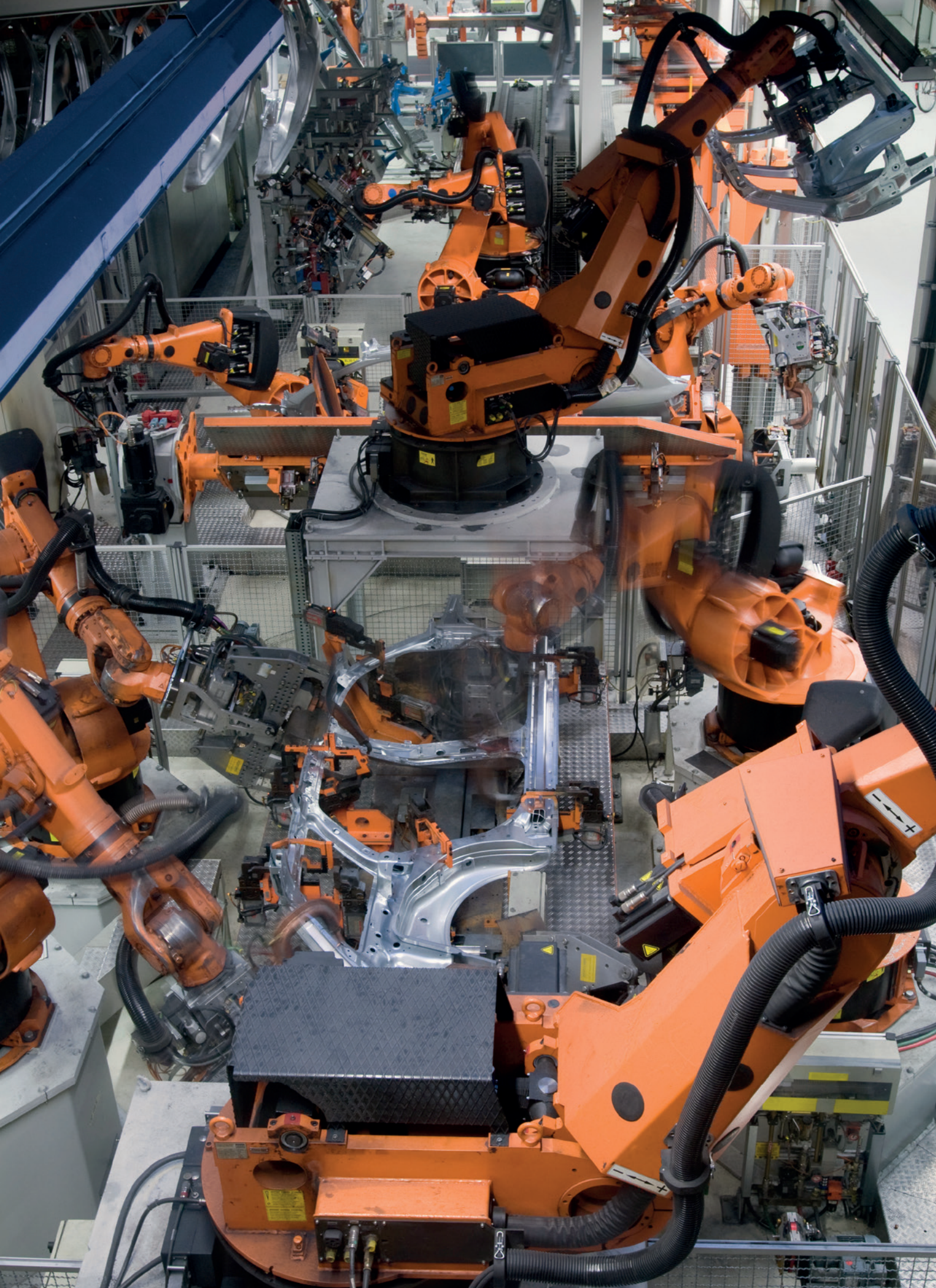
SENSOR APPLICATIONS

Sensor cables

To measure position, heat, liquid level, pressure, vibration, etc., Thermoplastic Modified (TPM) cables provide exceptional reliability in a 2–5 core cable, which is Halogen-Free and Flame-Retardant (HFFR).

> For Murrelektronik, we provide the largest selection of cable types and colors for sensor/actuator connectivity, tested to 5 million drag-chain cycles and more.





A SERVICE COMMITMENT THAT GOES A LONG WAY

GLOBAL EXPERTISE

Global players want a global cable partner who can deliver the goods, wherever high performance automation cables are used. That is why we fully comply with major standards, like VDE, UL, CSA, and the Chinese CCC. As supply chain managers in our own complex production facilities, we are doubly aware of our customers' needs.

LOCAL PRESENCE

Based in countries which are major producers and users of machine tools, robots and its required subsystems, we are highly sensitive to national needs, languages and cultures; and are committed to sharing our expertise through problem solving, adding value through cable design, and supporting local manufacturing practices.

TECHNICAL LEADERSHIP

We are inventors and standard setters for robotics and automation. Since reliability depends on quality, we are constantly re-engineering, redesigning and improving our products through better alloys, and more durable insulations capable of operating in high temperatures, and delivering superior performance for leading machine makers.

Nexans brings energy to life through an extensive range of cables and cabling solutions that deliver increased performance for our customers worldwide. Nexans' teams are committed to a partnership approach that supports customers in four main business areas: Power transmission and distribution (submarine and land), Energy resources (Oil & Gas, Mining and Renewables), Transportation (Road, Rail, Air, Sea) and Building (Commercial, Residential and Data Centers). Nexans' strategy is founded on continuous innovation in products, solutions and services, employee development, customer training and the introduction of safe, low-environmental-impact industrial processes. In 2013, Nexans became the first cable player to create a Foundation to introduce sustained initiatives for access to energy for disadvantaged communities worldwide. Nexans is an active member of Europacable, the European Association of Wire & Cable Manufacturers, and a signatory of the Europacable Industry Charter. The Charter expresses its members' commitment to the principles and objectives of developing ethical, sustainable and high-quality cables. We have an industrial presence in 40 countries and commercial activities worldwide, employing close to 26,000 people and generating sales in 2015 of 6.2 billion euros. Nexans is listed on NYSE Euronext Paris, compartment A.

Nexans
8, rue du Général Foy - 75008 Paris - France
Tel. : +33 (0)1 73 23 84 00 - Fax : +33 (0)1 73 23 86 38
www.nexans.com/motionline
marcom.info@nexans.com

Nexans
BRINGS ENERGY TO LIFE