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# On land, at sea and in the air

Special cables for industry and application



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Cables are integrated into the underside of the kite which help the captain to control it.

Foto: © SkySails GmbH & Co. KG, Hamburg

## On land, at sea and in the air

### Special cables for every industry and application

*The available range of cables and leads is huge. Helukabel alone, for example, has a range of over 30,000 products. At the same time, however, applications are increasingly arising for which even these are inadequate. Even so, this is no problem. Since Helukabel completed its step up from trading company to manufacturer twenty years ago, it has been making special products for every type of industry and application - on land, at sea and in the air.*

→THE SPECTRUM of special cables is as wide-ranging as the requirements of their users. In straightforward cases it is simply a matter of e.g. producing the outer jacket in the user's company color, printing it with specific, customer-related information or extruding it in accordance with finer tolerances. "However, there is also an increasing number of applications for which the requisite cables have to be completely redesigned, from the cores and

shielding to the outer jacket", explains Jürgen Schambier (Fig. 1) Head of Special Cables at Helukabel.

#### Special cables capture the market

Manufacturers of machines, plants and every other type of technical product are required to decisively distinguish themselves from their competitors through their products. In such cases,

saving costs and, at the same time, improving performance can be achieved with catalogue goods only in the rarest cases. This even affects the cables used for energy supplies and data transmissions. No wonder, therefore, that Helukabel is able to record two-digit annual growth rates in the field of 'special cables', to the extent that they now account for a share of around 25% of total turnover. And the upward trend continues.

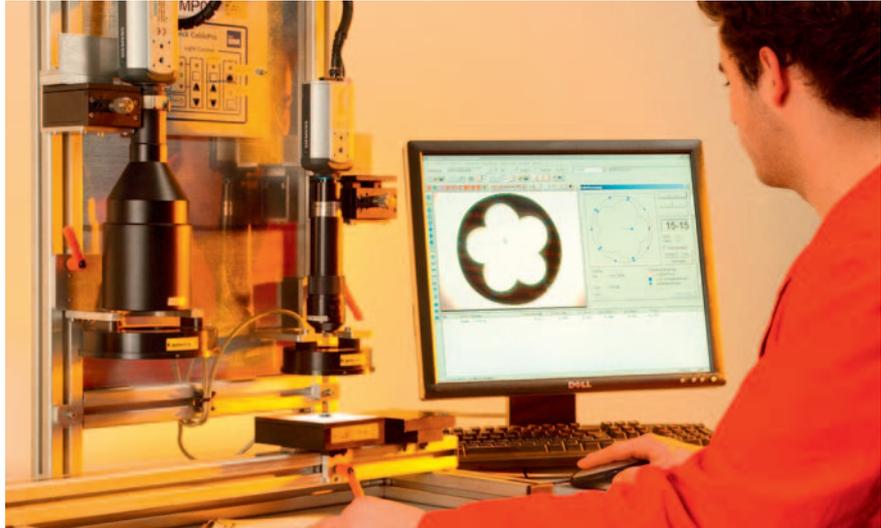


**Fig. 1.** "Users receive a genuine added value in special cables", says Jürgen Schambier, Head of Department, Special Cables at Helukabel

"What is crucial is to offer special cables to the user which make them more valuable by comparison with standard products from the catalogue", adds Schambier, reducing the formula for success to a single denominator. In particular, this may take the form of a longer service life, less weight or even combining different functions in hybrid cables. Since the expansion of the factory in Bad Windsbach to a production floor area of over 10,000 m<sup>2</sup>, Helukabel has been capable of making almost anything, so that the list of satisfied customers is peppered with well known names and reads like a "Who's Who" of the German economy. In many cases, their designers and buyers have long since recognized that investments in special cables pay off, no matter whether round or flat. For, in addition to particular technical specifications, their wishes are also generally fulfilled after short periods of amortization.

### **First it is configured, then checked**

In order to design a cable precisely in accordance with the requirements and wishes of the user, Schambier and his team of eleven technical specialists place considerable value on constructive communication with the customer, "The best situation is when our personnel are able to formulate a picture of the forms of use and the environmental conditions directly on site", adds the experienced technical specialist. For often it is the final



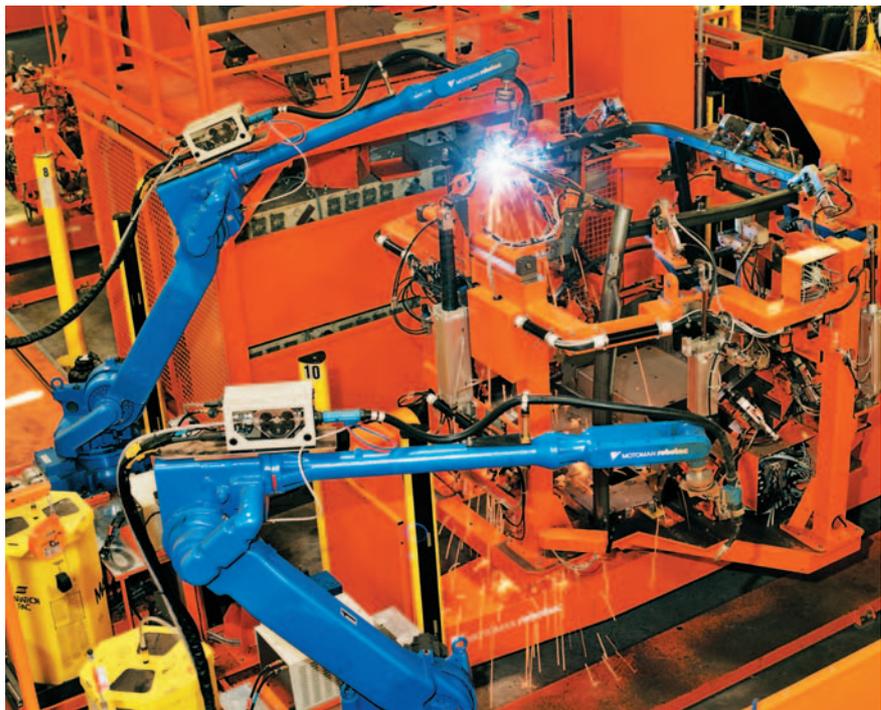
**Fig. 2.** Helukabel tests cables with the latest equipment in its own test center to determine whether the finished special cable and customer's sample actually comply with the characteristics required by the user

details which decide whether a particular solution will give prolonged service or otherwise. A forward-looking approach is therefore an indispensable factor in compiling the specifications of special cables.

One advantage to the customer is that Helukabel has the requisite manufacturing capacities at its disposal to permit minimal quantities of around 100 meters to be made as samples at a reasonable cost. They can also be function tested in the company's own test center (Fig. 2). For these purposes, the test

equipment includes hot and cold cabinets, a torsion bending testing system and mechanical rigs with energy supply chains for the coiling/uncoiling tests required by VDE standards.

In addition, a testing tower is currently being completed whose structure closely corresponds to the cable loop of wind turbines. "In this way, we aim to obtain a more precise understanding of the torsional stress on cable harnesses, given that their characteristics differ considerably from those of individual cables", says Schambier,



**Fig. 3.** The outer jacket of the "Roboflex recycle" lead, which is predominantly used in the body shells of car manufacturers, is not only resistant to welding beads but can also be recycled



Fig. 4. The halogen-free lead combines crush resistance with the advantages of PVC leads

explaining the investment in the unusual project. An investment which should pay off, since Helukabel already supplies a wide range of products and solutions of various quality standards, but always with the requisite permits in respect of flameproofing, torsion, etc. in the growth market for wind energy.

### Standing up to the demands of the sea

Wind is also in demand for the purpose of reducing the fuel consumption of large cargo ships. For this purpose, the firm of SkySails manufactures a propulsion system based on large traction kites (title illustration), the use of which can lower the costs of fuel by an annual average of between 10% and 35%. The first pilot systems are already in service on cargo ships. On board, with them, are special cables made by Helukabel. These help the captains with control functions and, among other things, must withstand the powerful tug when the kite opens. To achieve this, they are integrated into the holding cables by a special process (patent applied for) so that they can only be deployed within a narrowly defined permitted range.

Shipping again, but this time with different requirements. For diamond prospecting on the seabed and simultaneous geophysical investigations, Helukabel has designed a highly flexible, drum fed special cable. The high tensile Kevlar supporting braid of the combination lead (made of notch resistant polyurethane) is towed by a test boat and is precisely calibrated. Data supply cores in the lead permit, among other things, the live transmission of all the measured signals. In this case, the symmetrical construction of the lead provides precise

data transmissions to the monitoring unit. Fine strands of copper wire, short lay lengths and conductor clusters wrapped in special anti-friction films of plastic provide the special lead with the high degree of flexibility required.

### Advantages for the machine manufacturer

But it is by no means only 'exotics' who make use of the services of the special cable manufacturer. More and more designers of classic machines and systems are also using special cables. Mention should be made of the 'Roboflex recycle' type which is now in widespread use throughout the industry (Fig. 3). In particular, this replaces the leads which have been used for years in the welding area of body shells in the automotive industry whose cross-linking with energy-rich beta rays leads to considerable environmental pollution. The Thermoplast (not cross-linked) material developed by Helukabel for the outer jacket combines high resistance to welding beads with outstanding suitability for traveling power chains and robots, as well as offering price advantages over cross-linked systems. Above and beyond this, it is still sufficiently environmentally friendly to be recyclable.

"Our "Megaflex" type of lead (Fig. 4), with its unique combination of features is almost the complete all-rounder", is how Schambier proudly describes a successful design which, in a halogen-free configuration, offers the characteristics of classic PVC leads. Conceived as a special cable, it is nevertheless suitable for a wide range of applications, from use as a motor connecting lead for the frequency converter of a fairground carousel drive system to escalators and elevators in buildings. Its

most important characteristics are flexibility, oil resistance, drive stress and wear resistance and, needless to say, its flameproof properties and high resistance to chemicals. With it, almost no limits were applied to the dream of the designers - no matter whether it was used on land, at sea or in the air. ■ (rei)

### INFORMATION

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### → BACKGROUND

As a manufacturer of cables, leads and cable accessories, as well as data, network and bus systems, Helukabel also produces **special cables** and leads in its own factory.



### Helukabel makes special cables for specific customers in its recently expanded factory in Bad Windsbach

With this in view, the company invested around EUR 10 million last year in expanding the **cable factory** in Bad Windsbach (illus.). As a result, the production floor area was extended to over 10,000 m<sup>2</sup> and personnel strength increased by 30%. The cable factory which had existed since 1988 now serves as a **source of know-how** within the Concern for the business divisions associated with automation, robotics and renewable energies. According to information supplied by the management, the company boasts most **UL/CSA approvals** and conducts manufacturing operations in accordance with VDE, HAR, GOST-R and CCC standards, as well as complying with the specifications for cleanrooms and German Lloyd. Cables and leads made there are available with short lead times and are used on every continent. They ensure troublefree energy and data supplies in industrial plants, power stations and traffic infrastructures on a daily basis and, with the aid of associate firms, can also supply fully assembled products.