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For the speed quantum leap to succeed

Strolling was yesterday – in the meantime, countries such as Germany and Great Britain are also turning to the high-speed data highways. Because by now, everyone is aware that only the entry into the gigabit age secures the competitiveness in the long term. High growth rates in fibre optic expansion should now make this possible. And the cable, wire and pipe industries have long been ready to play a decisive role in shaping the glass future.

Model disciples are countries such as Korea, Japan and Spain: They already have very high fibre penetration rates of 87, 84, and 81 percent, respectively, and are among the seven countries with a fibre share of 70 percent or more of the total fixed broadband subscriptions, according to the OECD (Organization for Economic Cooperation and Development). Germany, for example, is still lagging behind in the international comparison with a fibre optic expansion rate of less than 25 percent – which means 74th among 84 assessed countries.

Pressure to act increases

A not exactly flattering ranking that should be a thing of the past. That's why the federal government launched its gigabit strategy. According to this, fibre optic connections are to be available nationwide by 2030. In order to make this possible, digital and fast planning and approval procedures are implemented, among other things. In addition, alternative laying techniques are to be used more frequently for fibre optic expansion. In addition, the expansion within the scope of Gigabyte funding 2.0 will be supported by around three billion euros this year.

The pressure to act is increasing, and not only in Germany. Because the challenges are immense. For example, the

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implementation of Industry 4.0 in companies will require very powerful data carriers. Even in households, lightning-fast surfing is expected, because here, too, data rates are rising rapidly. On average, data traffic climbs by more than 30 percent every year. A case for fibre optic cables, whose light pulses rush through the line almost at the speed of light. They are thus many times faster than conventional copper cables and transport significantly more data. Other advantages according to “fibre optic Internet” are: In comparison, fibre optic cables require little space, do not develop heat and consume far less energy.

Measuring heads regulate the drawing process

To be able to play out their advantages perfectly, fibre optic cables require the highest precision – and this is guaranteed by measuring and control devices that, for example, Sikora manufactures. “In the various stages of production, measuring heads and processor systems measure, monitor and control the entire drawing process to ensure fibre quality and increase production efficiency.” The company offers a new technology for high-precision tensile force measurement in a stand-alone system that employs the principle of birefringence with a measurement rate of up to ten kHz. “This allows an even faster measurement of the tensile force irrespective of external production influences as well as direct control of the tensile force.”

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One-stop shop for plants

For a long time, Rosendahl Nextrom has been one of the fibre optic specialists who see themselves as a one-stop shop for production equipment. The company's core competencies include its manufacturing solutions for the production of optical glass, the drawing of glass fibres for telecommunications and special applications, the coating of fibres, the production of ribbons, proof tests and the production of glass fibre cables. For the loose and tight buffering of glass fibres, cable lines are required, in addition to hose extrusions for fibre bundles and fibre ribbons. In addition,

the company offers systems for the stranding of buffered fibres up to the sheathing process for fibre optic cables. Fibre optic systems that meet high standards are indispensable for fibre optic cable producers.

Coat as glass fibre protection

The protection of the glass fibre is also essential. A single fibre has a core, a cladding glass and an outer cladding. “The mantle ensures the guidance of the lightwave signals. The outer sheath gives the glass fibre flexible and robust properties due to its nature of plastic,” explains the glass fibre provider Telekom. This prevents the fibre from breaking during bending and losing its function as an optical waveguide. As a result, the optical signals cannot leave the core – unlike the copper cable, which transports data by means of electricity and loses large amounts of data over long distances. Cable manufacturers and suppliers of cable production systems are also required to supply precision products at this point of production.

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The sometimes special installation is also important. In addition to underground laying and above-ground laying on masts, outdoor fibre optic cables are “mainly blown with compressed air into small speed pipes, which were laid in advance in the ground or in jacket pipes” at Deutsche Telekom. The speedpipes have an inner diameter of four to eight millimetres and are often designed in a pipe assembly with up to 22 pipes. The fibre optic cables (ø 2.3 millimetres to 6.5 millimetres) are then blown into these speedpipes with special compressed air compressors up to 2,000 meters at a time, explains the company. Common fibre-optic earth cables include four cables with twelve individual fibres each.

Investments for Fibre Optic Expansion

Worldwide, the demand for cables and pipes for fibre optic technology is growing immensely. Germany as example: According to estimates by the ”Scientific Institute for

Infrastructure", the nationwide fibre optic expansion would cost around 80 billion euros, an enormously large package. Orders of magnitude, which would also have to flow more or less into the glass fibre market in some other countries and in some cases would also be likely to be carried out. In order to keep up with global demand, production needs to be expanded and new production facilities set up.

For example, egeplast is building a new microduct production hall in order to ensure delivery reliability for the expansion of the fibre-optic network in view of the increasing demand for the tube bundle, which consists of several microduct mono tubes. The new 11,000-square-meter production hall doubles the production capacity for microducts. Investments like these are likely to pay off accordingly, because fibre optics is the technology of the future. In the long run, only she will succeed in the worldwide speed quantum leap.

Trends and highlights from the wire, cable and tube industry can be experienced at wire & Tube Expo from 15 to 19 April 2024 in Düsseldorf. Current industry and product information can be found on the internet portal at www.wire.de and www.Tube.de and on linkedin: https://www.linkedin.com/showcase/wire-and-tube-leading-international-trade-fairs/.

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