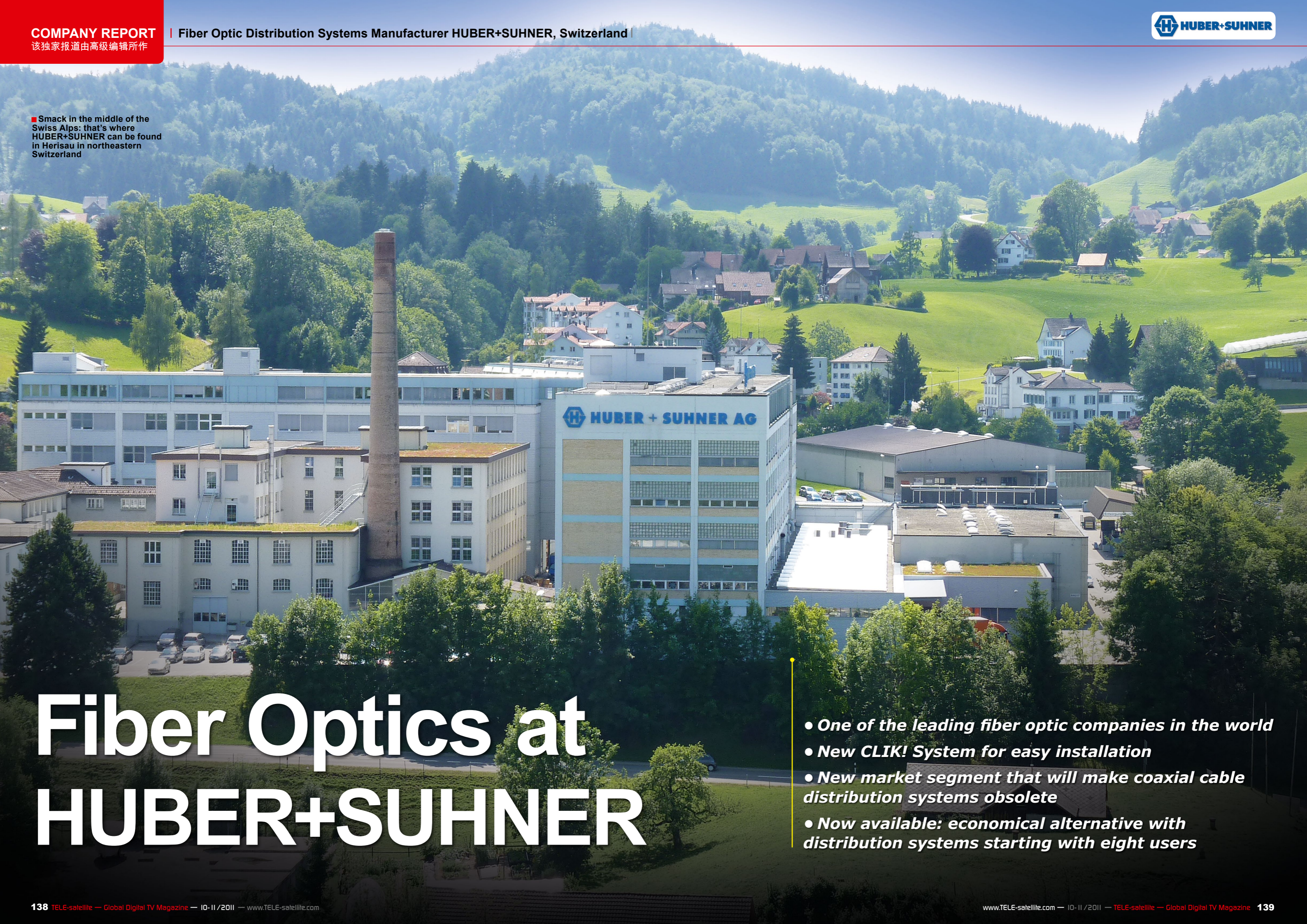


■ Smack in the middle of the Swiss Alps: that's where HUBER+SUHNER can be found in Herisau in northeastern Switzerland



Fiber Optics at HUBER+SUHNER

- One of the leading fiber optic companies in the world
- New CLIK! System for easy installation
- New market segment that will make coaxial cable distribution systems obsolete
- Now available: economical alternative with distribution systems starting with eight users



■ To the left is the original founding building of the company SUHNER back in 1869. To the right is the new reception building of the merged worldwide company HUBER+SUHNER.



From Satellite Dish Directly into Your Home With Fiber Optics

It's amazing! A company that has been in existence for more than 100 years is jumping into the new fiber optic distribution market with a new innovative "CLIK!" plug system. Maybe that's exactly the reason why such an old company like this would want to conquer a new technological field: how else would HUBER+SUHNER have gotten so old if they hadn't always developed brand new technologies? We took a look around one of their company locations in Herisau in northeastern Switzerland to get a better idea of what this new "CLIK!" technology is all about.

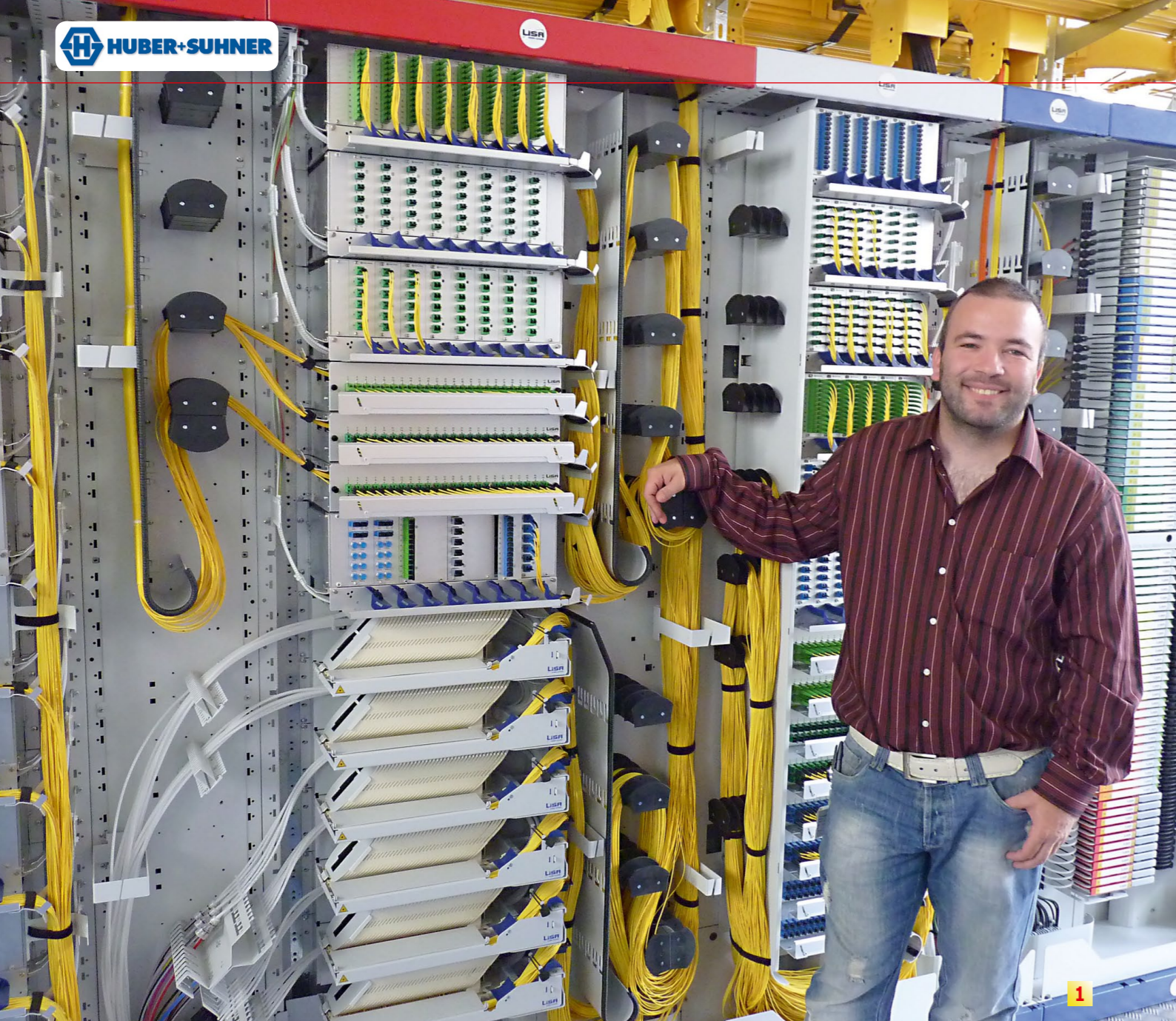
Over 100 years ago there were two companies that were founded and

both of them were involved in insulating the new electric cable at that time: the companies SUHNER in Herisau and HUBER in Pfäffikon, both in northeastern Switzerland. Towards the end of the nineteenth century, this area was known for its textile industry and as electricity made its way into the region, more and more electrical wiring was needed. The copper wire was insulated with cloth and then dipped in Gutta Percha, a natural form of rubber. Sure enough, HUBER was the first company in the region in 1894 to install electric lights.

The foundation was now laid to not only incorporate the latest technology in their production, but to use it

themselves. The two companies were competitors up until 1969 when they merged together under the combined name of HUBER+SUHNER. Since then the company has been well-known as a provider of professional connection solutions for the large telecommunications, transport and industrial companies around the world. This business segment makes up about 30% of their sales.

Since HUBER+SUHNER's emphasis is cable technology, the remaining business segments are divided into mass produced cable (40%), distribution technology (30%) and lastly standard products, that is, prefabricated cable in all lengths and types that can be or-



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1. Patrick Zaina is Product Manager for fiber optic connectors. Here we see him in front of a professional distribution cabinet consisting primarily of fiber optic splitters. The "CLIK!" system is a compact version for the distribution of satellite signals in smaller apartments.

2. Jürgen Silbereisen is one of the five "CLIK!" system design engineers. Here we see him programming an online calculator that installers can use to determine exactly what "CLIK!" systems components they would need for a specific distribution system. "The online calculator lets the installer plan for an optimal system. After entering in all the parameters, the software produces a list of components along with signal level calculations at every endpoint." You can find the calculator at www.clikulator.com

■ Marketing Manager Othmar Fuchs presents us with a "CLIK!" system brochure here in the main lobby.



HUBER+SUHNER
 Fibre Optic Cables and Distribution, Switzerland www.hubersuhner.com

Company Details

Engineers in Research & Development | Total Number of Employees

0 2500 5000

Average Turnover (Previous, This, Next Year Estimates)

0 500 1000 Mio SFr

Production Certificates
 ISO 9001, ISO 14001, IRIS, RoHS, REACH

Production Categories
 own brand CLIK!

Main Products
 Connectivity solutions for Radio Frequency, Low Frequency and Fiber Optic applications. Fibre optic distribution systems for professional and home use.

Fiber Optics at HUBER+SUHNER

www.tele-satellite.com/TELE-satellite-1111eng/huber-suhner.pdf

Fiber Optic Cable Production

dered by catalog. The company reaches roughly 800 million Swiss Francs yearly in sales with their 4500 employees. 950 of them work in the main facility in Herisau.

One division that is focused on the applications of fiber optic technology was founded in 2009. Patrick Zaina is the Product Manager of this division and he tells us more about the new "CLIK!" system that makes it easy to link fiber optic cables together: "Five design engineers worked on the "CLIK!" system from 2009 to 2010 so that we are now able to introduce it to the world." The system in a very easy way divides the signal from a fiber optic LNB nearly loss-free using matching splitters and delivers it to multiple end users. "A highlight of our system is the sophistication of our plug system", explains Patrick Zaina, "we designed it in such a way that the plugs are only negligibly larger than the cable itself making it very easy to pull these cables through an existing conduit or even just place them under a carpet."

Many installers are reluctant to work with fiber optic cables because the small glass fibers inside the fiber optic cable are extremely sensitive. "There are two problems: dirt and damage. Both of these problems were elegantly solved." The problem with dirt was solved very easily: a cap on the plug prevents any dirt from getting to the plug during the installation and is only removed when the cable is plugged in to the distributor.

The second problem involving breakage of the glass fiber was solved by HUBER + SUHNER in an even more elegant fashion: "The glass fiber is wrapped with a Kevlar coat that is generally unbreakable but at the same time is just as flexible as a normal coaxial cable." For the installer this means that this new technology makes installing fiber optic cable even less problematic than coaxial cable. "Initial feedback from installers shows that the installation of fiber optic cable is almost twice as fast as standard coaxial cable." These first installers are convinced users of this new technology. "We've calculated that a home distribution system with eight users of our "CLIK!" system costs about the same as a typical coax cable installation."

This calculation doesn't even take into account the fact that the installation of fiber optic cable all the way



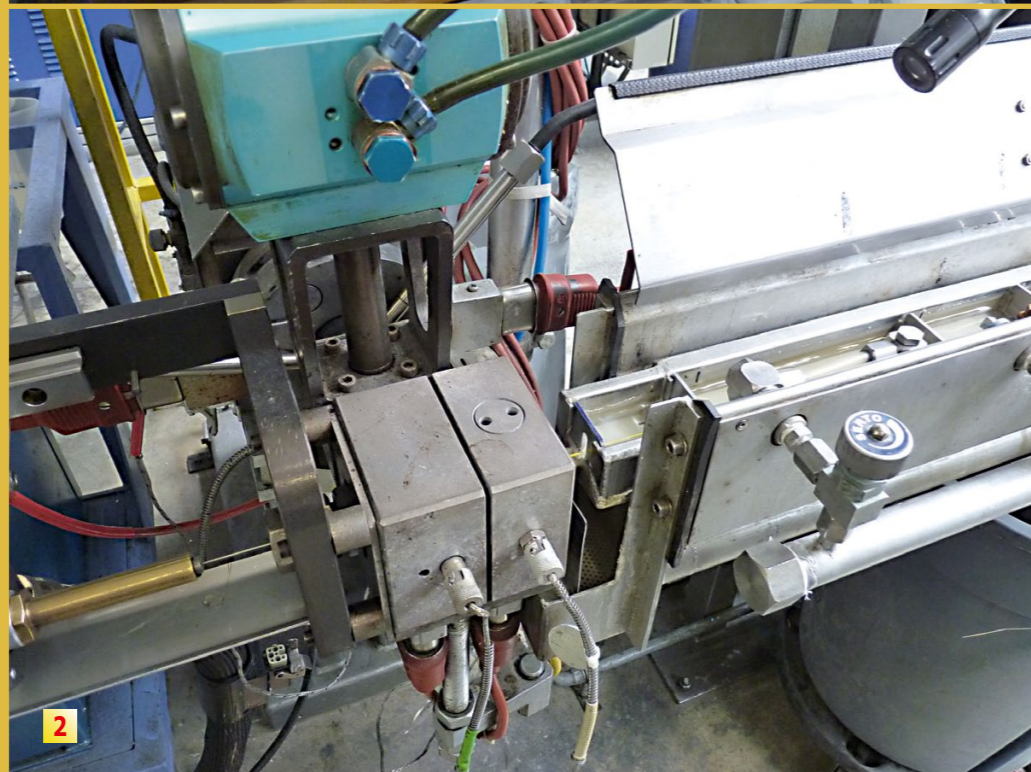
■ HUBER+SUHNER's production area in Herisau in northeastern Switzerland. All the different variations of fiber optic cable are manufactured here, from very thin cables for installation in the home to multicables for distribution systems up to extremely resilient cables for outdoor use such as with mobile telephone companies.

to the end user is absolutely future-proof; the ever increasing data rates are already exceeding the capacity of coax cable distribution systems. "So far more than 100 "CLIK!" systems have been installed mostly in Italy, here in Switzerland and also in Austria and Germany", Patrick Zaina lists for us. "Our prefabricated "CLIK!" cables start at around 10 Euros for a five-meter length. The longest length is 100 meters and costs around 60 Euros. The "CLIK!" distribution boxes cost under 70 Euros and for a four-way splitter the cost is under 110 Euros." These prices are extremely low considering this is a signal distribution system with essentially no signal attenuation. In order to be compatible with fiber optic systems that have FC connectors, HUBER+SUHNER also has the matching adapter cables.

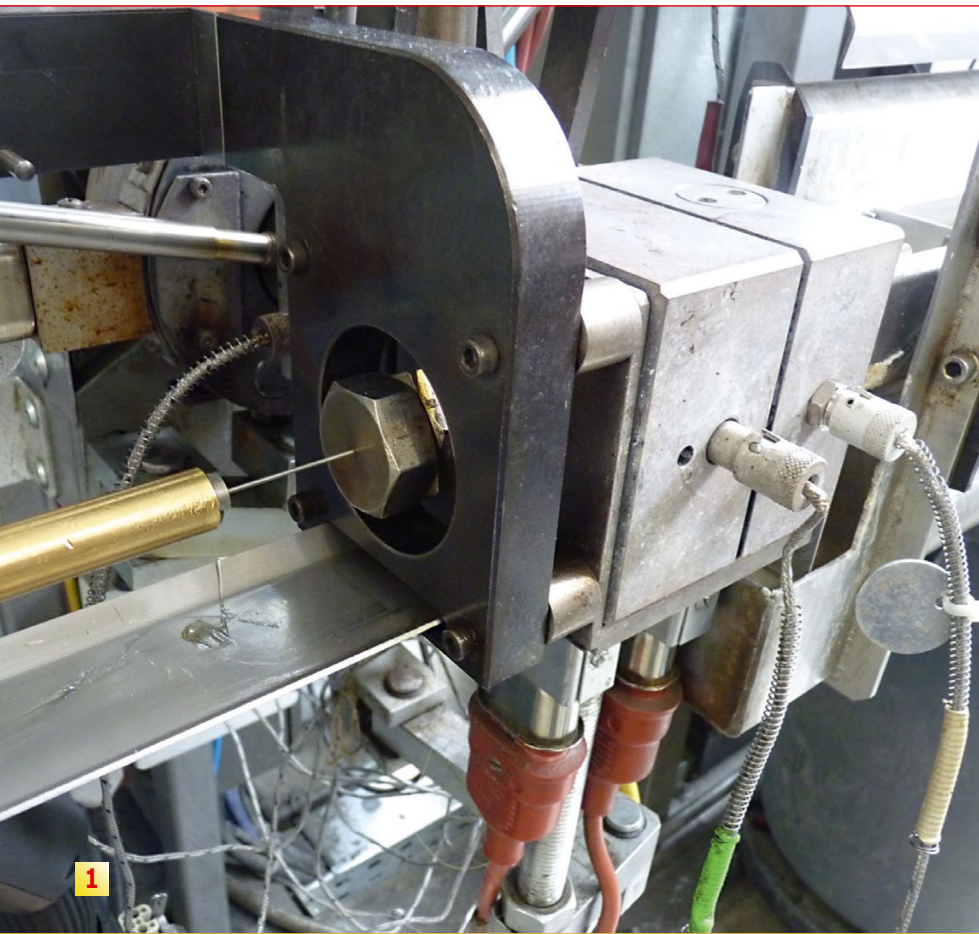
In taking a look at the future, Patrick Zaina states a harsh but simple truth: "If you don't work with fiber optic technology today, you'll be out of business tomorrow." And that's exactly how it is! As an installer, if you stick with laying coaxial cable forever and ever, you'll wake up one morning and notice that the world has passed you by.

"At the moment our system is made up of four-way and two-way splitters, each with different distribution requirements, that are used based on cable lengths and connectors", explains Patrick Zaina regarding the "CLIK!" system product palette. "By the end of 2012 we will also be adding three-way and five-way splitters; we are also working on wall sockets." The latter project caught our ears since at the moment there are no receivers that come with fiber optic cable inputs. But HUBER+SUHNER is planning for the day when these kinds of receivers will be available. Then you'll simply connect your receiver to the fiber optic wall socket. Then there will be no more coax cable at all! Today you still need coax cable to connect the receiver to the fiber optic converter box.

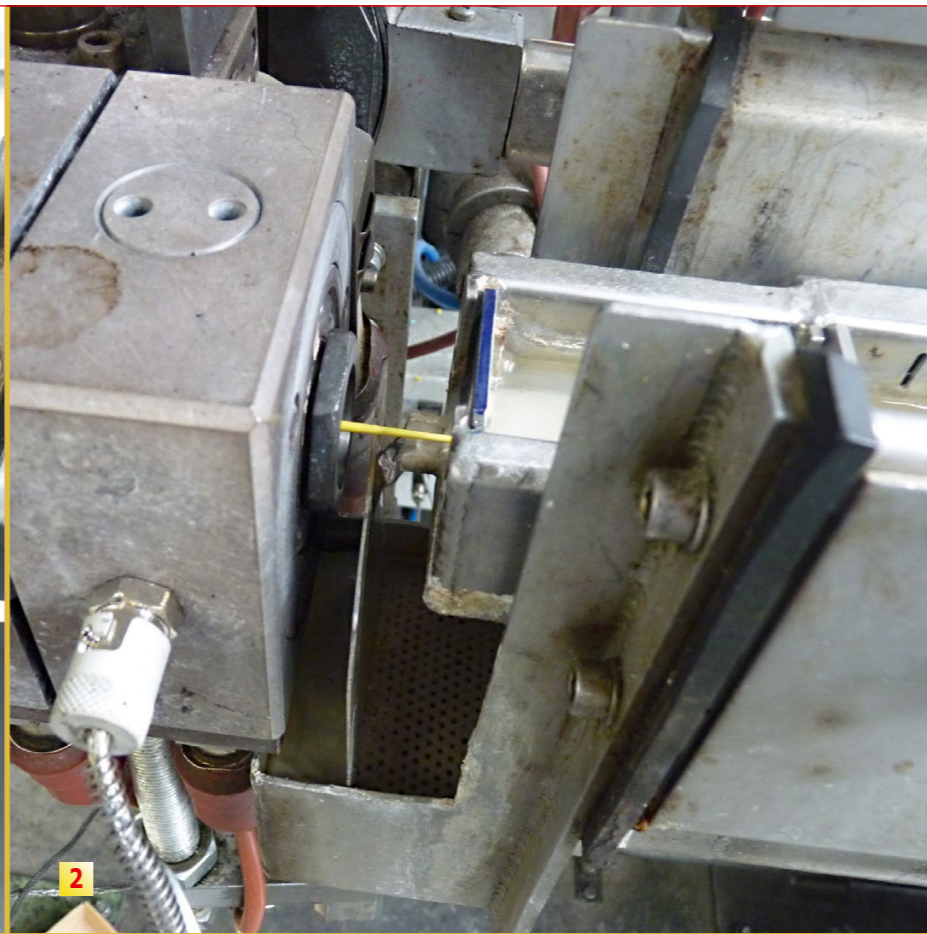
"Right now we are focusing on the European market", reveals Marketing Manager Othmar Fuchs, "But we already have interest from Asia and South America." Even in these locations, they are looking to convert to the new era of fiber optic signal distribution. The age-old company HUBER+SUHNER is once again at the forefront in developing the newest technologies and bringing it to the market.



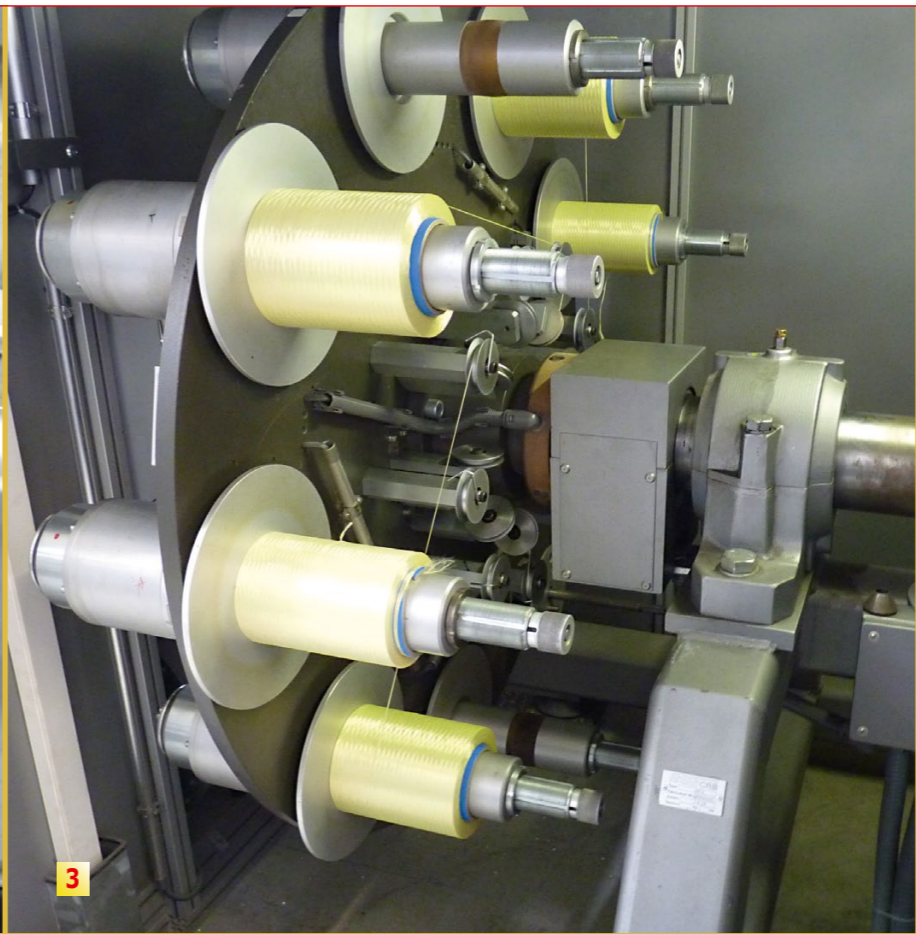
1. The originating material: One of these rolls contains roughly 14km of glass fiber without any sheathing; it's the pure glass fiber with only a thin protective cover.
2. The heart of the system: left, at a rate of about 100 meters per minute, the glass fiber goes in one side and comes out the other with its first "coat".



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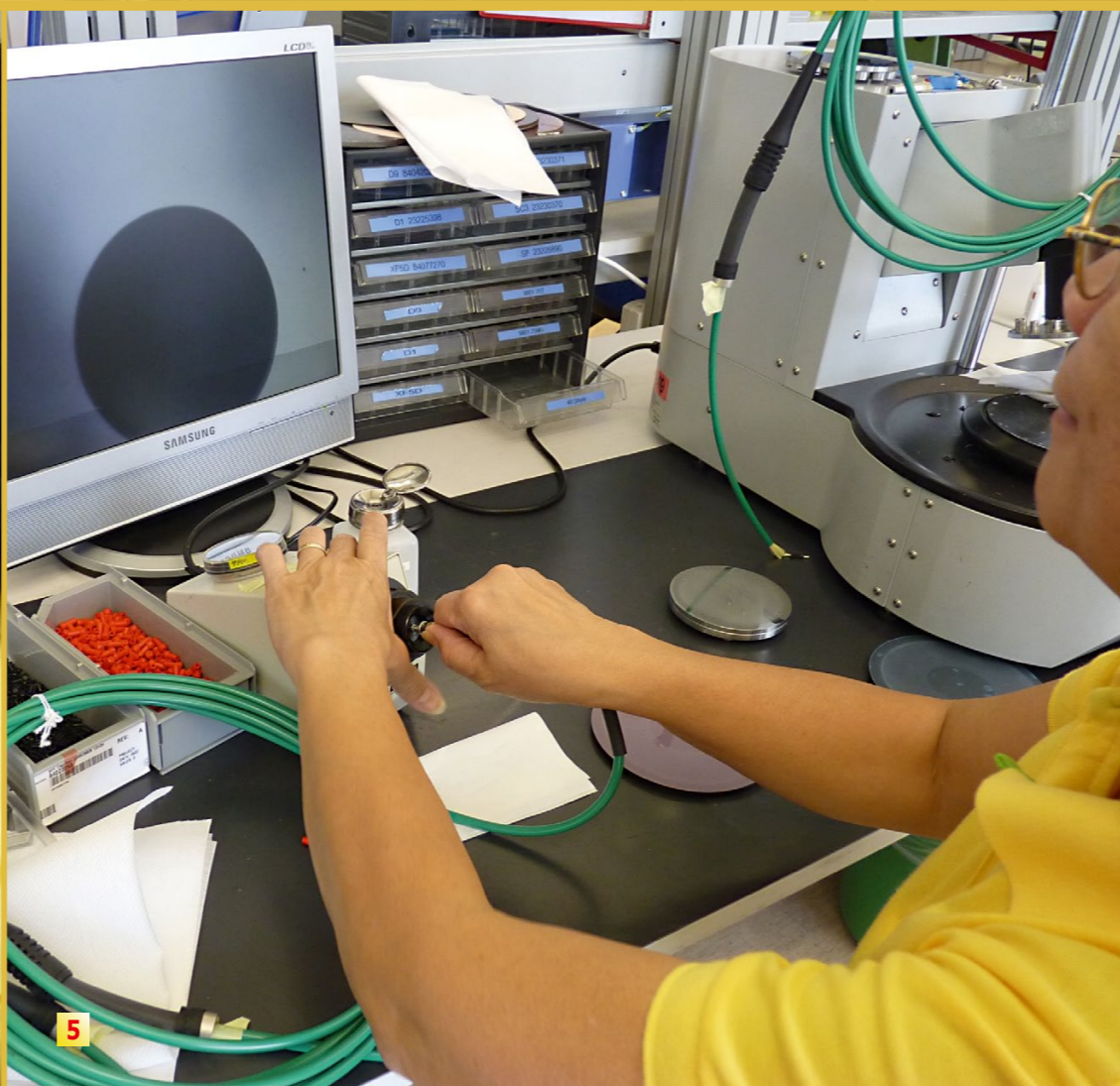


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1. Closeup: it goes in here....
 2. ...and comes out here.
 3. To improve adhesion, the just manufactured fiber optic cable is covered with a Kevlar thread.
 4. After mounting the plugs, the connection end is finely polished. The end surface is polished in this rotational polisher for 1-2 minutes.
 5. The polished connector is placed under a microscope so that the surface of the connection end can be inspected.
 6. Finished! The prefabricated "CLIK!" fiber optic cable is piled up in the storeroom. They come in various sizes. Here we see a box with 10-meter cables.



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