

FIBER OPTIC PIONEERS IN THE NORTH



wilhelm.tel set itself the target of supplying Hamburg with FTTH solutions.

Brave pioneers shape the start of a new era. This also applies to fiber optic provision. Pioneers at many sites in Europe are currently demonstrating that Fiber To The Home (FTTH) and Fiber To The Building (FTTB) are no longer wishful thinking but rather a competitive strategy provided that the network operator acts quickly, practically and offers the market attractive products.

The wilhelm.tel company from Norderstedt, a small town in northern Germany, is just such a pioneer in FTTH. The ambitious local network operator took on no less a task than that of providing the neighboring metropolis of Hamburg with Fiber To The Building, high-speed Internet, telephone and cable TV (triple play) via optical fibers. Hamburg, with its population of 1.75 million, is approximately 25 times the size of Norderstedt, covers 755 square kilometers and due to its predominantly high population density offers the network operator very profitable conditions.

From several points of view, the current large-scale project appears to be a perfect example for towns, the housing industry and network operators, and that is also the reason why R&M is hugely committed to supporting the project within the scope of

its broadband initiative. wilhelm.tel started up in summer 2008 following meticulous network planning.

In close cooperation with 38 civil engineering crews, with its Hamburg partner willy.tel and solutions from R&M, wilhelm.tel was able to connect over 1200 buildings in Hamburg to a new, dedicated fiber optic Ethernet network using the high-speed process. Within a few months some 130 000 apartments were catapulted into the ultra broadband era.

This spectacular figure includes the entire housing inventory of SAGA GWG spread around every district. The municipal company SAGA GWG is Hamburg's largest housing company. SAGA GWG has a clear aim of offering renters greater convenience and better quality of life ... and a "quantum leap into the media future" as CEO Lutz Basse puts it.

100 MEGABITS PER SECOND IN EVERY APARTMENT

It will be possible over the course of 2009 to provide every housing unit with Internet connections with a guaranteed data transfer rate of 100 Mbps downstream and 5 Mbps upstream. wilhelm.tel can guarantee 99.999 percent availability based on the architecture and quality of the gigabit MAN. Added to this are free telephone calls within the wilhelm.tel network. All this is on offer for a low-cost flat rate without minimum contract term.

wilhelm.tel offers over 500 analog and digital TV and radio programs in around 10 languages through the new network. The local service for configuration of the receivers is free of charge. High-definition IP television is also being introduced.



The result: In many Hamburg condos virtually 100 percent of telephone and TV customers are switching to the dynamic provider from Norderstedt. Lutz Basse: "SAGA GWG has found a medium-sized partner in wilhelm.tel that offers our customers its product on favorable terms. The reactions of the renters who have decided to opt for the wilhelm.tel offer are extremely positive."

VENUS BOX AND VS COMPACT IN LARGE-SCALE USE

280 kilometers of cable routes and 1500 R&M fiber optic splice closures were laid underground in Hamburg for the new fiber optic network. R&M supplied 12 000 units of the Venus Box, 25 000 VS Compact connection modules and 1000 distribution cabinets specially designed for wilhelm.tel. The flexible, modular combination possibilities of the Venus Box and VS Compact provided an excellent basis for creating the transfer points in the basements of the apartment blocks in an efficient, safe and straightforward manner.

Due to its global commitment, R&M is aware of the most varied FTTH strategies on the market from Europe to the Far East. This experience also benefits project partners in Germany. Network planner Ulrich Scheu endorses the decision in favor of R&M: "We are only interested in solutions that can be implemented smoothly with tried and tested, high-quality technology." As one of the pioneers of the wilhelm.tel projects, he rejects experiments with unknown variables.

wilhelm.tel delivers the individual fibers or Ethernet signals in the Venus Box. VDSL switches or Ethernet gateways and VS Compact connection modules transfer the signals to the in-house networks. wilhelm.tel feeds telephony and Internet into the two-core copper cabling using Ethernet technology – it is possible to provide 100 Mbps bandwidth reliably where distances are less than 300 meters from the transfer point to the end customer's telecommunications outlet. The network operator ImmoMediaNet, a subsidiary of SAGA GWG, looks after the coaxial house distribution systems for the provision of cable television.

TWIN-TRACK: FREEDOM OF CHOICE FOR RENTERS

The main attraction of this FTTH project in Hamburg is its twin-track topology: The coaxial cabling that is present almost everywhere is not replaced but continues to be used. ImmoMediaNet has the CATV networks upgraded to meet the needs of HFC technology with 862 MHz bandwidth and return channel. The CATV infrastructure retains its capacity reserves as it need not be loaded with Internet and telephony.

Customers are at liberty to stay with analog TV reception. Even then, wilhelm.tel provides them with a choice of transmitters extended by 60 percent that other cable providers do not offer. Nevertheless, renters could still use cable modems at any time and thus receive television digitally and interactively, make telephone calls and access the Internet via the CATV network – a convenient freedom of choice.



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The network operators involved emphasize: "The parallel infrastructure is the most cost-effective solution today with an enormous performance potential for the requirements of the future." Only in this way will it be possible to implement a huge range of TV and radio services together with a virtually inexhaustible transmission capacity for interactive data services at justifiable costs. For the inhabitants of Hamburg the FTTH solution is the "master-stroke" that avoids a patchwork and makes many years of adaptations to increasing capacity requirements superfluous.

Based on this, they are already planning the next stage: The aim is to increase the broadband offer to 1 Gbps for all apartments by 2012. They are convinced that this step must come if you extrapolate the current growth rates in Internet data traffic and the take-up of triple play offers. The Hamburg route allows for complete substitution of old copper networks with fiber optic cabling in the medium to long term and at the same time permits the integration of other suppliers according to the open access model.

A state-of-the-art, structured home wiring system with star topology in accordance with EN 50173-4 has already been installed in some SAGA GWG blocks. More than 1000 kilometers of multimedia hybrid cable - consisting of coax and Cat. 5 cable – were used for this. In addition, empty pipes were laid into which fiber optic cables can be blown at a later date. All the requirements have thus been created for a fully optical supply right into the apartment at a later date.

TEN YEARS OF EXPERIENCE AND COMPETITIVE EDGE

The Norderstedt public utility companies have already been involved in the local telecommunications market for 10 years with their subsidiary wilhelm.tel. In 1999 they were the first in Germany to completely recable an entire town with fiber optics and provide it with a triple play service. A regional backbone with a performance of 50 Gbps links head-ends for feeding in cable television with the POP for the telephone and data network. In »



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280 km of cable routes and 1550 R&M splice closures were laid underground for the new fiber optic network.

Norderstedt itself, a circular Ethernet MAN was created with 14 points of presence (POP) and three Gbps backbone rings. Bandwidth bottlenecks such as those with DSL connections are unheard of in Norderstedt.

“We want to help our customers to use the many possibilities of state-of-the-art electronic media. Now more than ever before, information, communication and acquisition of knowledge depend on broadband telecommunication transmission routes. For this reason, we only supply customers via our own fiber optic network,” emphasizes Theo Weirich, CEO of wilhelm.tel.

The population of Norderstedt rewarded the commitment of its public utility companies and the attractive offers with an exceptionally high connection rate. Over 85 percent of all households in the small town receive television via wilhelm.tel’s fiber optic connection, two thirds of the customers also surf and make telephone calls over this network.

wilhelm.tel recommends that existing customers feed in a Cat. 5 Ethernet cable when refurbishing an apartment. wilhelm.tel has created the requirements for an Ethernet supply for 5000 apartments in condominium buildings in Norderstedt although a good CATV infrastructure already exists. Provision via Ethernet is more cost-effective than via coaxial cable. wilhelm.tel passes the price saving on to the customers. In the news service search-networking.de, Heiko Liebscher, technical manager at wilhelm.tel, is quoted as saying, “Our basic principle is that we want to own the most up-to-date infrastructure and with the appropriate medium for our high-quality and innovative content. And for us the medium is Ethernet.”

wilhelm.tel’s current partner in Hamburg is also a pioneer: willy.tel – a similar name was chosen deliberately – emerged in 2008 from the multimedia division of the Thiele Group that has been active in the radio and television market in Hamburg for 50 years. In 1999 the Thiele Group installed the first German triple play network based on a CATV infrastructure in selected urban areas. It is still running smoothly.



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Electrical termination of the VS Compact in the Venus Box



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19” fiber optic technology from R&M



Thiele and wilhelm.tel have been cooperating and utilizing well-defined synergies since 2004. Their first joint project was a multi-media network for 24 000 apartments. Contracts for 40 000 further apartments in Hamburg followed up to the launch of SAGA GWG's large-scale project.

Further towns and communities from the area surrounding Hamburg would like to benefit from the commitment of the alternative network operator. In specific localities they have formed citizens' action groups to exert political pressure and push forward the provision of high-speed Internet. A whole chain of local Ethernet fiber optic networks is being created. Soon several hundred thousand households will be served by wilhelm.tel and willy.tel. The management of the Norderstedt public utility companies is quoted in the *Hamburger Abendblatt* as saying, "If we go in somewhere, then it's blanket coverage."

Karl-Heinz Neumann, CEO of the Scientific Institute for Communication Services in Bad Honnef, encourages network operators like wilhelm.tel in their strategy: "Even if a supplier only exceeds a market share of 30 percent after two years, it is still worth expanding fiber optics into the basements of households." Long-standing industry expert Dr. Wolfgang Posewang, Editor-in-Chief of the specialist magazine *Cable!Vision Europe*, adds, "Although wilhelm.tel puts in considerable preparatory work, its strategy is sound and designed for the long term with the focus on top-class technology. As a result wilhelm.tel is positioned just right."

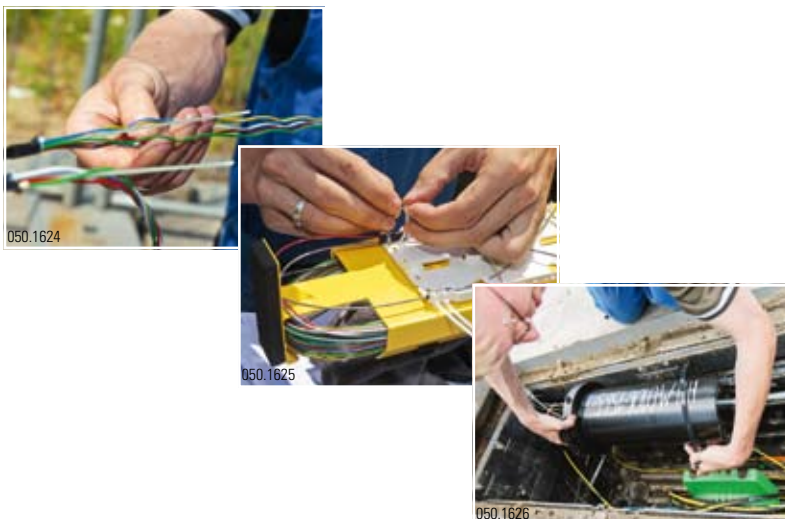
LOCAL SUCCESS: HE WHO DIGS WINS

Municipal public utility companies and their telecommunications divisions obviously find it easier to bear the cost of such projects. The industry news service *Portel* explains why this is so:

"An old truism of the utility companies goes: He who digs wins. This basic attitude of the energy, gas and water suppliers explains the huge success of local and regional telecommunications companies wherever they work closely with municipal suppliers and traffic companies. When the trenches under streets and pavements have to be re-excavated or opened up for maintenance work, empty pipes and fiber optics are simply put in at the same time and written off over long-term periods of anything up to 20 years or more. This immediately results in a whole range of financial synergies for the alternative network operators."

In addition to Norderstedt and Hamburg there are increasing numbers of sites in Germany that are opting for a broadband Internet supply that focuses entirely on fiber optics to the end user. R&M supports the FTTH projects with its own broadband initiative. The 13 sales offices of Reichle & De-Massari are present in all regions of Germany to provide service, expertise and project management. Support for public utility companies, regional and city carriers includes planning and the creation of functional specifications, individual product and system adaptations, sampling, logistics and qualifications for installers.

One challenge is that slightly different conditions prevail at every location. There are no national or international standards for FTTH systems. Generally speaking, it is necessary to plan individually and adapt the solutions. In this case the modular R&M systems can be used flexibly at all levels from the computing center or central network hub of a telecommunications company to the cabling of streets, buildings and apartments. At the same time, they offer a future-proof solution for decades of operation of fiber optic networks as they are easy to maintain and manage.



Various work steps during the installation of a splice closure



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