

# GIGABIT NETWORK FOR HOME & BUSINESS WITH POF - POLYMER OPTICAL FIBRE

RETROFIT EXTENSION UP-GRADE

SELECTED EXAMPLES FOR SOLUTIONS

**home**ibre

# NETWORK RETROFIT AND REFURBISHMENT WITH POLYMER OPTICAL FIBRE (POF)

In residential as well as commercial buildings, for the optimal use of digital services, a decent in-house cable network infrastructure is essential to meet all your personal digital requirements.

Under ideal circumstances a main glass-fibre-cable connection of your real estate is combined with a subsequent comprehensive in-house cabling, also for optimal WiFi-supply. Especially in old, complex structured and thick walled buildings multiple Wifi access-points may be required to provide a comprehensive Wifi-coverage. To obtain the highest possible WiFi data-throughput, each WiFi access-point requires a stable and secure broadband network connection, by means of a router or modem.

Retrofitting of an existing building structure with network cables is usually hard and complicated. Constructional interventions can be time-consuming, laborious and costly. Installation using

cable trays is often undesired for aesthetic reasons or practically not feasible. In protected historic buildings certain constructional interventions may be even prohibited.

The sustainable and future-proof solution is an in-house broadband cable-network using POF (Polymer Optical Fibre). The very low cross-section paired with superior slipping performance makes the POF data-cable unchallenged for pulling into existing electrical installation pipings. For certain projects, e.g. old and complex buildings, also unconventional cable-ways, such as slits and gaps, may be found and utilised for laying POF-cables.

On the following pages we want to present some selected projects in which a comprehensive gigabit-capable digital infrastructure was retrofitted in existing buildings by means of POF-cabling combined with Homfibre POF-network components.

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# HOTEL MÖRISCH - SEEBODEN - TANGERN / AUSTRIA



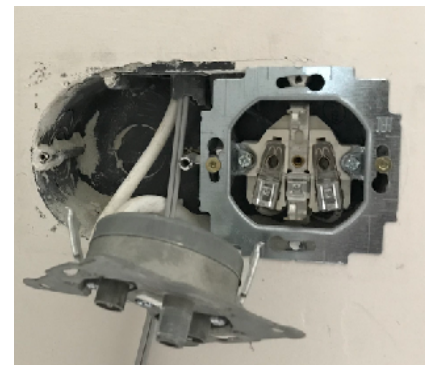
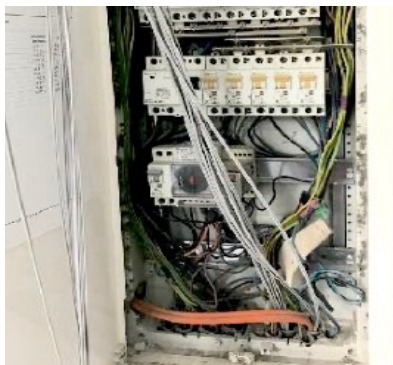
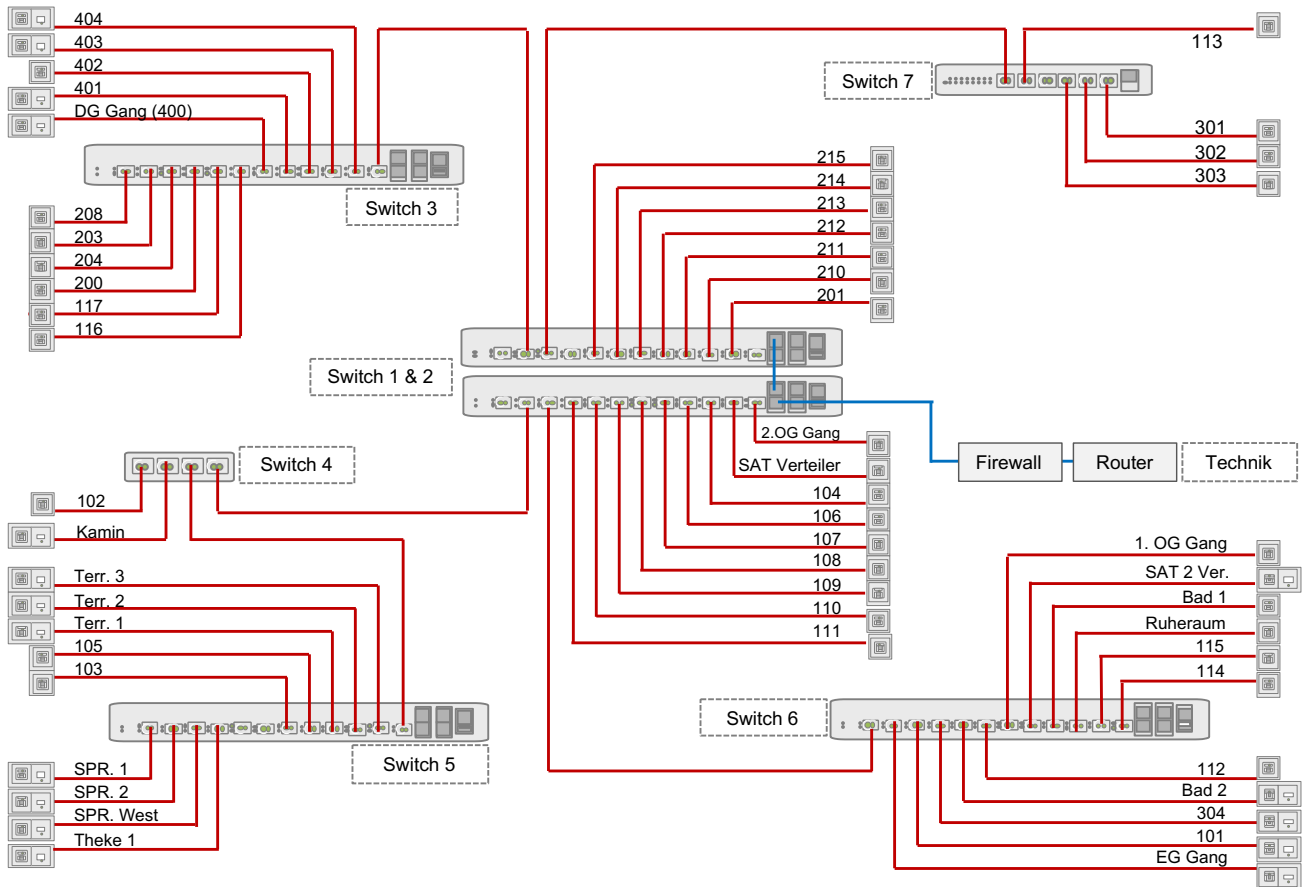
The Gourmet-Hotel Mörisch needed to improve its in-house network, focused on optimal WiFi-supply. Every hotel-room as well as the public places such as bar, fire place and wellness areas, were equipped with WiFi access-points to provide optimal WiFi coverage as well as RJ45 LAN data-sockets to offer cabled LAN connections.

The hotel is family owned since three generations and over the years underwent various renovations and constructional extensions. The network architecture and signal distribution had to be adapted to the local constructional conditions. Extensive knowledge of the construction with its existing installations was essential. A comprehensive data-cabling of the complete hotel complex without constructional interventions was only possible using POF data-cables.



The most challenging task was the laying of the additional data-cables just using existing cable-pipes for electrical power, coaxial- and telephone-cables. The POF-cable has a very low cross-section and very good slipping characteristics. Using POF data-cables, the contracted electric installation company „Elektro Christian Unterzaucher“, was able to establish a gigabit connection in every hotel room as well as in the public places where needed. For installation of the POF-cable network no constructional interventions were necessary, all POF-cables have been pulled into the existing cable piping. The single POF-strands were merged in different existing distribution cabinets. The required Homefibre network-switches were placed in the various constructional sections of the building. Homefibre network components were installed in every hotel room and in public places as needed.

# HOTEL MÖRISCH - THE POF-NETWORK LAYOUT

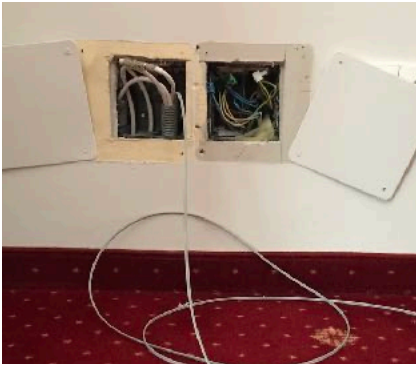


The POF cable was retrofitted and pulled into the existing cable-piping for electrical power, coaxial- and telephone-cable. No constructional intervention was needed.

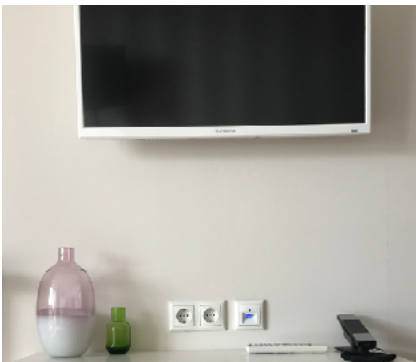
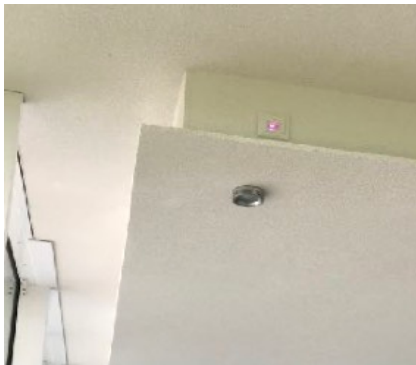


The gigabit POF-switches were placed according to constructional conditions and cabling.

# HOTEL MÖRISCH - THE IMPLEMENTATION



A POF-cable was pulled into every single hotel-room using only existing cable pipes. Each room was equipped with Homefibre gigabit network components, offering Wifi as well as a cabled LAN-connection.



The Homefibre network components were - as far as possible - installed in-wall or on-wall using mounting boxes.



**Manager of the electrical installation company,  
Christian Unterzaucher:**

„To install a comprehensive data-cable network in the hotel would have been an almost infeasible effort without POF. With profound knowledge of the local constructional conditions and our well trained electricians, we were able to establish a gigabit connection in every hotel room.“

# CASTLE „PORCIA“ - SPITTAL AN DER DRAU / AUSTRIA



The castle „Porcia“, located in the centre of Spittal an der Drau, is a well known renaissance-building and the town’s landmark. The arcaded inner courtyard is considered one of the most beautiful renaissance courtyards outside of Italy. Since 1961, during summer season, the inner courtyard is converted into a theatre and filled with life by the ensemble of the „Komödienspiele Porcia“ and its audience.



The castle houses a cafe as well as a museum of folk culture. The remaining halls and saloons are used for various events such as balls, concerts and exhibitions. Since the historic castle is under preservation order, the possibilities for constructional interventions are very limited.

In 2012 one of our partners, the company Concept-media, awarded the contract from the city government to equip the museum of folk culture with digital infrastructure by means of a POF network. Due to the good experience with the museum’s network, the event rooms and halls were also equipped with a gigabit POF infrastructure in 2020. The cabling inside the old and listed building primarily served to supply Cisco Meraki WiFi access-points in various halls and rooms of the castle.



The POF cable was installed using the existing electrical piping, existing cable trays and in ledge covered gaps at the floor edges. The active Homefibre network-components were mounted in niches or behind covers.

# DIE INSTALLATION



The POF cable was installed preferably using the existing electrical installations but also in available floor gaps if needed. The required minimum bending radius (2cm) was always followed.



Homefibre network-components such as switches and data-sockets, were mounted in niches or behind covers, not to disturb the aesthetics of the historic rooms.

**Udo Moritz, Manager of Concept Media:**

„With POF we were able to install a Gigabit-infrastructure in every room without constructional interventions.“

# PRIVATE RESIDENCE - SOLAR ENERGY PLANT

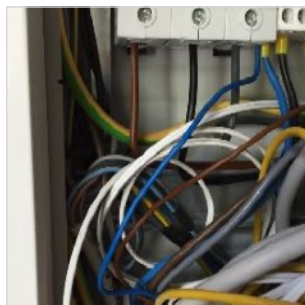


The respective private residential building was already comprehensively cabled with a POF network in 2014. The building-owner recognised the advantages of a combined installation of electrical power cables and POF cables already during planning and construction. The electrical installation company pre-installed POF cables together with the electrical power cables to the majority of the electrical power sockets. Consequently POF cables were also pulled into a side building with a garage as well as an associated workshop.

Homefibre POF network devices were then installed and relocated flexibly according to the owners needs and desires.

In 2018, within the framework of the installation of a solar power plant in the afore mentioned side building, a network connection was required.

Thanks to the pre-installed POF cable the solar plant was integrated into the existing home network with ease, to ensure a stable and secure internet connection.

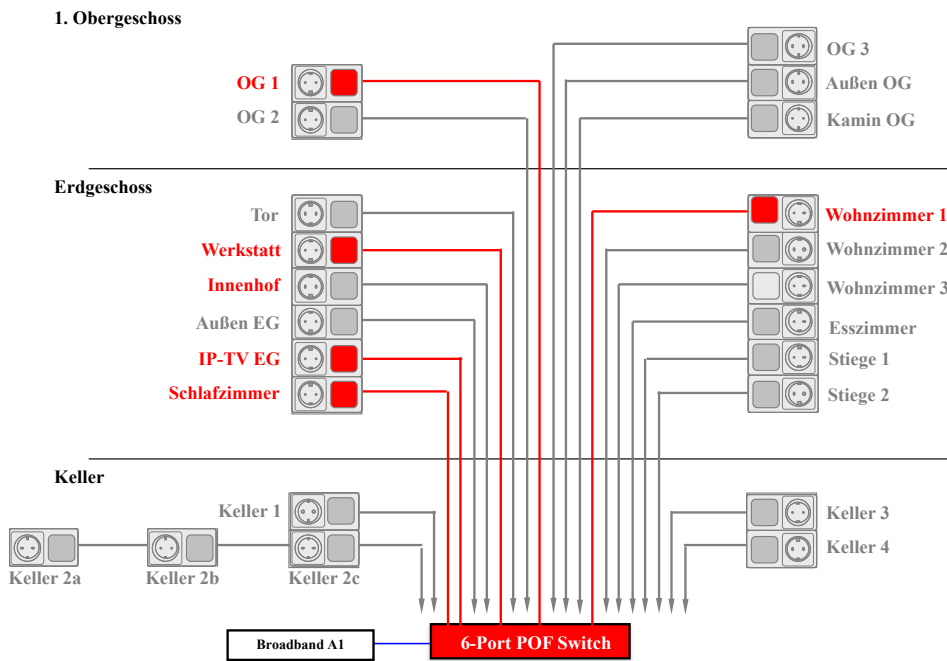




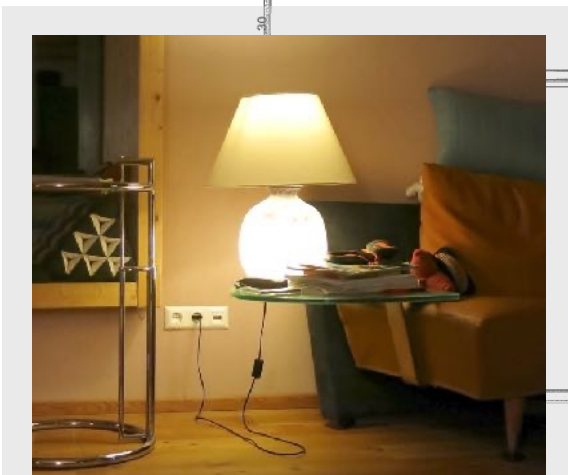
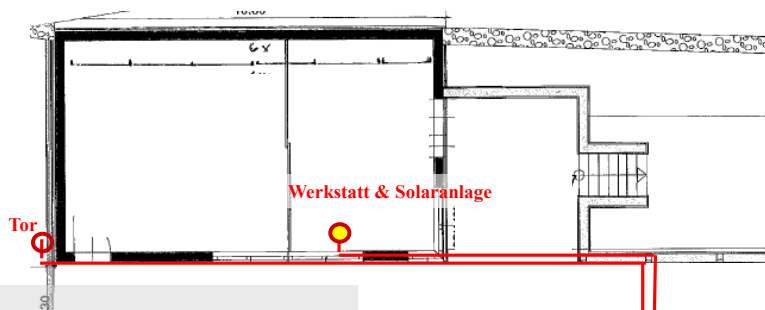
# BINGO! - COMPREHENSIVE CONNECTIVITY WITH POF

Due to the combined installation of electrical power and POF-cabling, a POF gigabit cable is available at all important electrical power sockets within the building complex. In the course of furnishing and

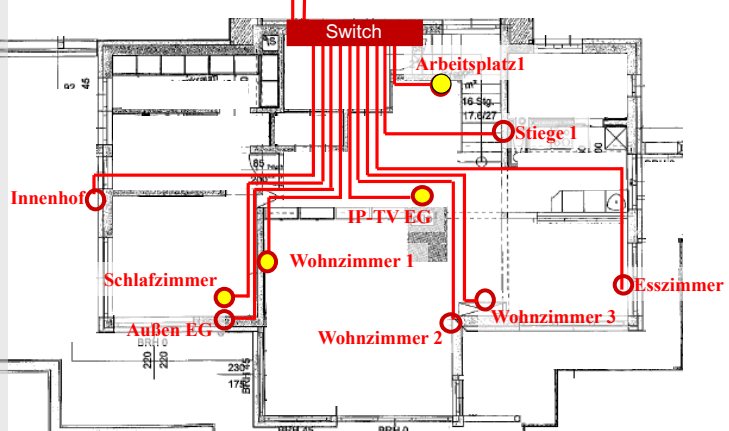
the extension of the building, Homefibre data sockets and Wifi access-points could be easily retrofitted or relocated according to the owners requirements.



Each power outlet shown in the diagram to the left also has a POF-cable pre-installed, as depicted above. The red drawn lines are equipped with active Homefibre network data outlets such as WiFi access-points and/or 2-port data outlets.



The WLAN access point for the living room was integrated into the in-wall installation.



# DENTAL SURGERY - GIGABIT UP-GRADE



In 2011 the dental surgery was equipped with a POF-cable network and active Homefibre POF-network components, at that time working with 100Mbit technology. The executing installation company was „Gasser Elektro GmbH“. The network server as well as the Homefibre POF-network switch were installed in a 19“-cabinet, at the main internet connection in the basement of the building. From there, the single work places of the surgery on the first floor were cabled in a star shaped manner.

In 2022 the old 100Mbit components of the system were replaced with new gigabit-capable Homefibre POF devices. The POF cabling was kept unchanged as installed in 2011.

Prior to installation of the new gigabit components, the optical signal-strength for each POF-strand of the existing cabling was measured and rated. All POF strands showed good signal levels, between -10,3 dBm und -12,4 dBm. Consequently the POF-cabling was kept as installed in 2011, simply cutting the cable heads before connecting the new Homefibre gigabit devices. The exchange of the Homefibre in-wall components was fast and easy due to the 60mm deep in-wall mounting boxes.

After installation of the new gigabit switches and in-wall sockets each connection was tested by means of a RFC 2544 Test.

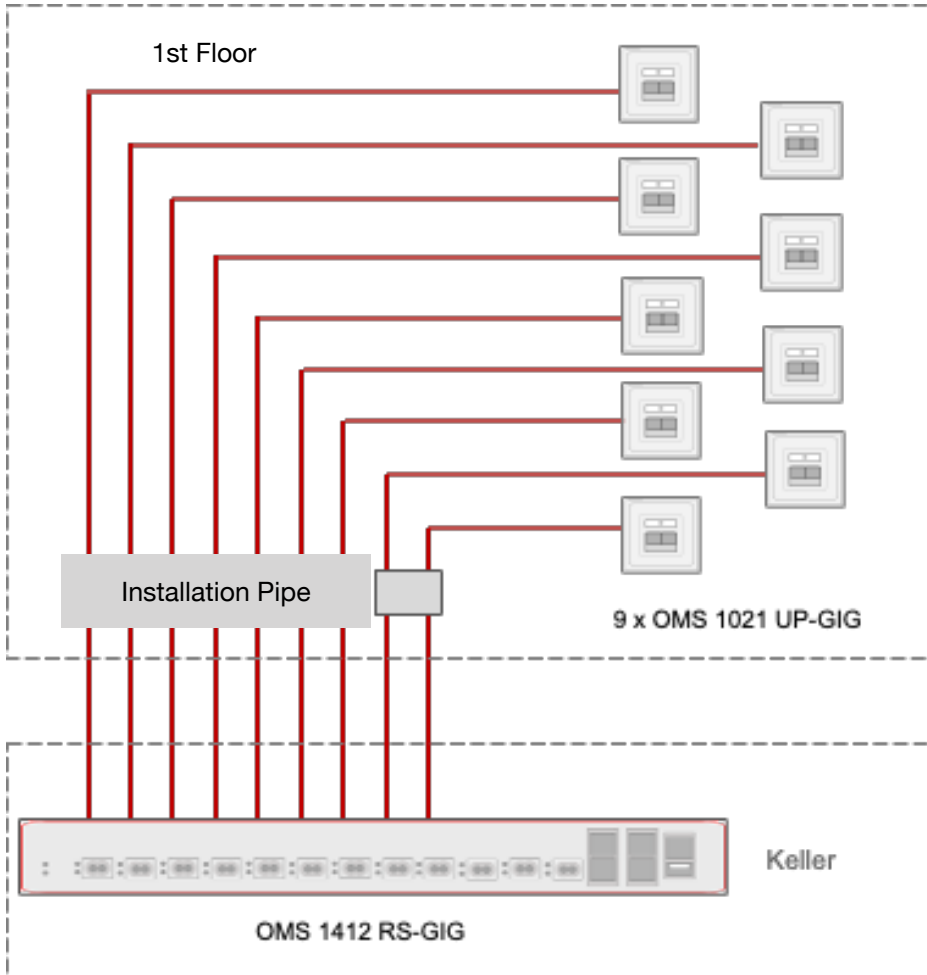
After about 10 years in operation, the POF-cables showed no significant optical-signal loss and the data-transfer performance of the new gigabit components was not affected.



Dual-Port POF Gigabit Data Socket (in-wall version)

**Ing.Mario Gasser; Gasser Elektro GmbH, Winklern:**  
„The POF cabling installed in 2011 has proven it’s worth in the framework of the up-grade to gigabit performance in 2022!“

# Sustainable Solution Provider - POF-Cabling



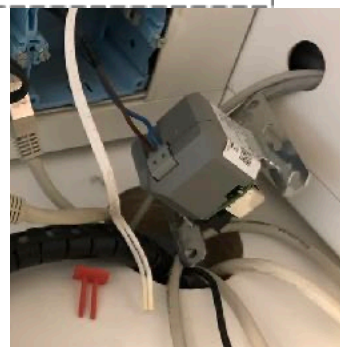
In 2011, nine POF cable-strands were pulled from the basement to the first floor using only two empty tubes of the ductwork.



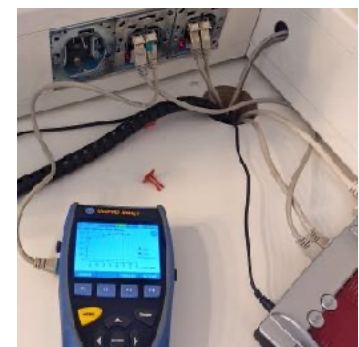
Check of signal strength with fresh cut POF-cable heads in 2022. About 10 years of operation did not affect the performance of the cable.



The existing POF-cables were simply connected to the new Homefibre gigabit smart switch, just with fresh cut cable heads.

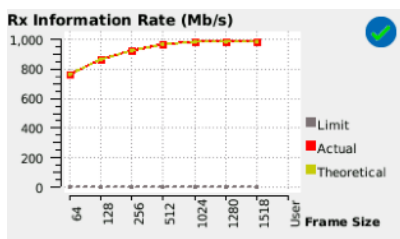


The old 100Mbit network sockets were replaced with new gigabit versions of the Homefibre OMS 1021 GIG.

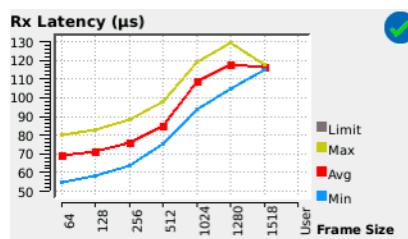


For each established link of the upgraded network a RFC 2544 data-transfer measurement was conducted.

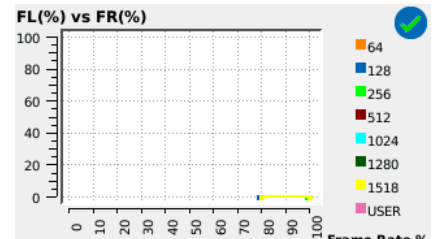
## Measurement results and acceptance certificate



The data transfer showed optimal performance (RFC 2544 Test UniPro GIG).



The latency was below 120 µsec.



The data transfer was error-free.

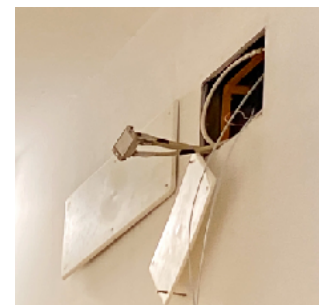
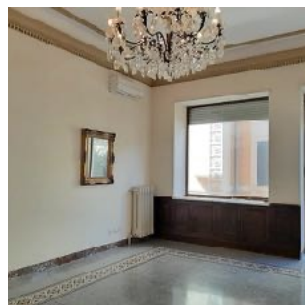
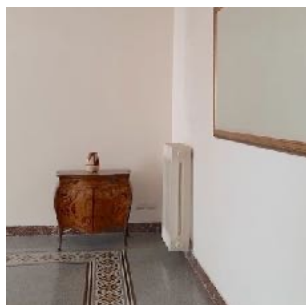
# LUXURY APARTMENT ROME / ITALY GIGABIT CABLING RETROFIT



In 2021 a luxury apartment within a heritage protected building located in the centre of Rome had to be equipped with a gigabit network. The existing installation did not provide any data cabling. The listed building did not allow the installation of wall-mount cable ducts.

The IT-company arCon-IT (Vienna) and a local electrician installed a POF-cable network utilising the existing piping for electrical- and telephone cables. The Italian wall outlets were equipped with POF-SMI Keystones mounted in small Keystone adapters, fitting the installation program (BTicino Magic). In this case the individual network connections are set-up

with POF SMI-patchchords and external active Homefibre media converters as required.



# PRIVATE VILLA / AUSTRIA

## GIGABIT CABLING RETROFIT

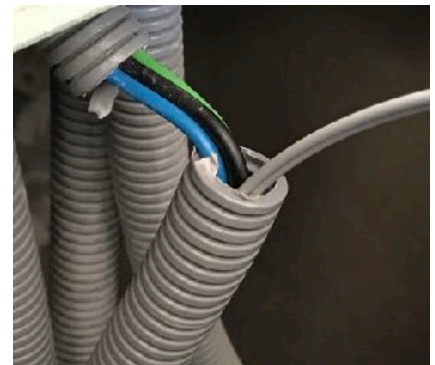
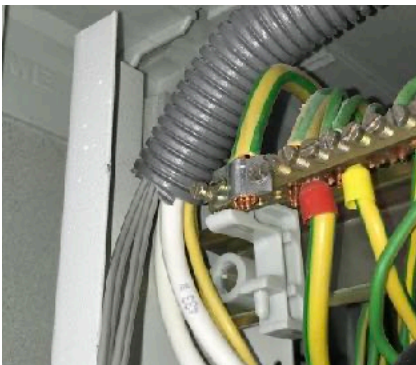


For a high class villa built in the 1990's, the internet infrastructure had to be upgraded and optimised. The existing CAT5-cabling was partly broken and had to be replaced.

The project was planned by arCon-IT. The cabling was done by electricians from company Fuchs. The POF cable was installed in a star-shaped layout from the central electrical cabinet, using the existing electrical installation piping. For optimised Wifi-coverage, the respective rooms were equipped with in-wall mounted Homefibre Wifi access-points with single RJ45 sockets (OMA111A2). In addition to WiFi room-clusters, rooms were equipped with in-wall mounted, dual outlet RJ45 gigabit data sockets (OMS1021UP) from Homefibre. The existing electrical cabinet offered plenty of room for installation of the Homefibre network switches. The main internet modem, located in the basement of the villa, was connected by POF-cable with the POF switches in the electrical cabinet.

### Ing.Schmied, Managing Director arCon-IT:


Network cabling with POF and the corresponding components offers us an extremely helpful alternative for the networking of existing buildings and opens up new perspectives for the design of future networks.







The POF cable was installed using the existing electrical installations. Thus the POF switch has been placed in the central power cabinet.



# POF NETWORK COMPONENTS

	100 Mbps	1 Gbps	
POF Cable	RHEE 4002 / GHV 4002	RHEE 4002 / GHV 4002	POF SMI Patch-Chord
POF Cable in various bundles & spools			
<b>Media Converter</b>	<b>MCE 301 FC</b>	<b>OMC 1001 GIG</b>	
Media Converter for Point to Point links			
		<b>OMC 2003 ACT</b>	<b>OMC 1003 ACT</b>
Media Converter with 3 x RJ45 Port			
<b>Media Converter</b>	<b>OMC 100 REG</b>	<b>OMC 1000 REG</b>	
Rail mount media converter			
<b>Data Outlets</b>	<b>OMS 121 UP CH</b>	<b>OMS 1021 UP CH</b>	For DIN & Swiss Standard
2-Port Data Outlets for Flush Mount			
<b>WLAN Access Point UP</b>	<b>OMA 111 A2 WLAN</b>	From Qu2 2022	
WLAN Access Point for Flash Mount			
<b>Optical Data Outlet</b>	<b>KMK-MA-up-rw ...</b>	<b>...with SMI Keystone</b>	
Easy to install optical Data Outlet			

	100 Mbps	1 Gbps	
<b>3-Port Switch</b>	<b>OMS 113 FC</b>	<b>OMS 1014 GIG</b>	<b>4-Port Switch</b>
Small 100Mbps 3-Port POF Switch			4-Port Gigabit Switch for Home and Small Office
<b>6-Port Switch</b>		<b>OMS 1026 GIG</b>	
Gigabit Switch for Office and Home Network			
<b>12-Port Switch</b>		<b>OMS 1412 GIG</b>	
Professional managed 12-Port Switch with 2RJ45 & 2 10Gbps SFP			

## NOTES



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