Pioneer between fiber optics and DOCSIS

EMC Electronic Media Communication SA setting new standards with its Obi safe solution

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Based in S. Antonino in Southern Switzerland, EMC Electronic Media Communication SA was founded in 1997 following a management buy-out from the Swiss cable company Coelco.

Main business focus is to provide system solutions to enhance a DOCSIS based "step by step" evolution of a HFC Network in combination with Fiber.

With 20 Years FTTx experience, specific know-how and proprietary solutions, EMC offers a wide range of standard and innovative systems, such as DOCSIS over Fiber with OBI safe® and OBI free® technology, successfully established because of its reliability.

According to Raffaello Marcionetti, the managing director of EMC, the challenges currently facing cable network companies include the expansion of their own network to form a "gigabit highway" as final customers are requiring and using more and more bandwidth. Fiber optics permits a step-by-step evolution to all-IP networks.

Bringing fiber optic networks closer to the final customer makes it easier to migrate to the 1.2 GHz bandwidths DOCSIS 3.1.

In this connection, Marcionetti explains the advantages of fiber optic networks to Cable!Vision Europe:

Fiber optics have an almost unlimited bandwidth and permit a straightforward deployment; the fiber optic network is more reliable and requires less maintenance. At the same time, using fiber optics, it is possible to link large distances from the HUB to the final customer.

With the roll-out of DOCSIS 3.1, you have the opportunity to rethink the network topology, although sometimes you are forced to do it.

There are constantly new ways of connecting new buildings with fiber optics to the existing HFC network, including with DOCSIS.

EMC designs and produces the components and devices with its own research and development department as well as in partnership with universities, photonics companies in Switzerland and international partners.

Whereas we initially developed active devices such as amplifiers and head-end products "as a full-range supplier for HFC networks" (Marcionetti), the focus has shifted to developing and supplying products for optical signal distribution since the spin-off.

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EMC-Managing-Director Raffaello Marcionetti (le.) and Sandro Pedrini, Sales & Marketing Manager at EMC

EMC managing director Raffaello Marcionetti (left) and Sandro Pedrini, sales & marketing manager at EMC

EMC produces and distributes active components for migrating HFC components to FTTx and DOCSIS 3.1 fiber optic networks. EMC offers various services for analyzing networks, requirements and planning.
These include

- fiber optics design
- general network planning
- network set-up and measurements
- errors diagnostics and troubleshooting
- training

Explains Marcionetti: "With its SUBONET solution, which is based on Obi safe® technology, EMC is the Swiss market leader in DOCSIS fiber networks." The network and DOCSIS 3.1 migration planning are simplified, problems and energy consumption reduced and the network flexibility improved for the future. There are various network architectures.

The best solution is the one which requires the least resources to match the specific network philosophy and architecture.

As the network quality of cabled households is growing in importance, Sandro Pedrini (sales & marketing manager at EMC) considers it to be appropriate to centralize the network operators' building interface in a single multimedia cabinet to implement a mixed and flexible in-house network, depending on requirements.

There is a trend in favor of fiber to the building (FTTB) combined with a hybrid network inside the building.

There are still differences in network structures between urban and rural districts. In towns, the hubs are larger but the fiber distances are shorter, whereas they are smaller in rural regions but the distances are longer.

EMC's portfolio:

- fiber optic transmitters and receivers,
- indoor/outdoor hub converters,
- multi-return path receivers,
- fiber optic mini nodes and
- FTTH optical sockets

EMC offers the following models for DOCSIS 3.1 migration

Pure PON-H active optical splitters with a 1610 nm return-path transmitter, OBI free® multi-return path receiver, DOCSIS 3.1 and GPON compatible.

Boosted PON-H active optical splitters with EDFA optical amplifier, OBI free® multi return path receiver, DOCSIS 3.1 and GPON compatible.

Modular PON-H with various interfaces (CWDM return-path transmitter, single/multi fiber and coax).

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Modular PON-H

EMC offers various mini-node models:

Residential FTTB/FTTH application, configurable US frequency range: 65/85/204 MHz, optical wave length: DFB 1310/1610 nm, output level with 88 dBuV RF output @ 1.2GHz

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Building FTTB mini-node for residential buildings (MDU), configurable US frequency range: 65/85/204 MHz, US 1310nm/1610nm and output level of 106 dBuV RF output @ 1.2GHz

Apartment FTTH-active socket box with optical wave length: DFB 1310 /1610 nm and RF-output level: 84 dBuV @ 1.2GHz and output for 2..3 TV sockets

Says Marcionetti in conclusion: "With the roll-out of DOCSIS 3.1 it is possible to rethink the network topology and

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to find more and more ways of using fiber optics to connect buildings to the existing network and to make use of the existing DOCSIS structure.

Different network architectures are available. The best solution is the one which requires the least resources to match the specific network philosophy and architecture.

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EMC milestones

- 1990 First optical CATV - link
- 1999 First European FTTH patent
- 2000 First FTTH installations in Switzerland
- 2003 Development of a multi-fiber photo-diode (OBI safe®)
- 2006 Design of a "Return-Path Noise Reducer"
- 2009 FTTH network based on EMC FTTH active socket
- 2010 FTTB network with OBI free® PON technology
- 2015 FTTB solution DOCSIS 3.1 and GPON compatible