

A Sneak Peek at the PLC Market

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Demand for high-speed data communications is driving R&D in power line carrier (PLC) technologies. “More than three dozen companies [in the United States and overseas] offer various electronic components or products that permit some form of communication over power lines, and further work is proceeding aggressively,” says Laurence Carmichael, an EPRI project manager. Telecommunications experts interviewed by *CRN’s Tech Surveillance* named five companies as “most promising” in the U.S. market:

- [Ambient Corp.](#), Brookline, Mass.
- [Amperion](#), Chelmsford, Mass.
- [Current Technologies](#), Germantown, Md.
- [Main.net](#), Israel
- [PowerComm Systems](#), Huntsville, Ala.

Electrifying Broadband

Source: Engineering News Record

Broadband over PLC could be a boon to co-ops, but many hurdles exist.

Steve Collier, vice president, National Rural Telecommunications Cooperative, Herndon, Va., considers Current Technologies and Main.net to be the leading U.S. developers today, followed closely by Amperion.

Dave Shpigler, president of The Shpigler Group, Nyack, N.Y., lists Main.net and Amperion among the most attractive, though he points out that both still face challenges. “Main.net has yet to prove that they can effectively compete in the market,” he says. Amperion’s technology is not as far along as some developers, Shpigler asserts, and the cost effectiveness of its products is as yet unproven.

Main.net’s fortunes, says Shpigler, will hinge on the speed, or bandwidth, of its products. If Main.net can provide service in the 500–700 Kbps range, the company will be in good standing in the marketplace, he

predicts. “If they come in at 200–300 Kbps, they will not be as competitive.”

Successful products not only must be fast but also affordable. “Basic physics and good science, overlaid with the economic realities of implementation, [will] set the boundaries for success of current PLC developments,” says the June 2002 EPRI report, *Communication on Power Lines: Changing Business and Technology Ramifications*. The report acknowledges that many high-speed PLC technologies are evolving, but it stresses that there is no silver bullet.

Current Technologies, Germantown, Md., is conducting technical trials in the Maryland suburbs of Washington, D.C., a Pepco service territory, and in an area served by Cinergy Corp., Cincinnati. The company offers end-to-end PLC that is [HomePlug](#) compatible, meaning that the consumer can conveniently use commercially available HomePlug products to connect computers and Internet appliances to any power outlet in the home. The pilots of 100 homes each are expected to last at least six months. Jay Birnbaum, vice president for Current Technologies, says that tests have shown “we do not cause interference to other systems,” such as wireless or cable signals, which had been a concern with some earlier systems.

Current Technologies or Pepco would not comment on specifics of their field tests, citing confidentiality agreements. However, Birnbaum said that Current Technologies’ product is designed to deliver broadband in the “multiple Mbps” range, and that “this was bearing out in the trials so far.” Current Technologies has not yet determined what their commercial offerings will be.

Chelmsford, Mass.-based Amperion offers a medium voltage PLC grid option. The company has been conducting beta deployments since July 2002, one with American Electric Power (AEP), Columbus, Ohio, and a second with PPL, Allentown, Pa. According to Jeff Tolnar, vice president of business development and marketing, Amperion expects to add a third beta deployment soon.

Driven by Bandwidth

Bandwidth – the measure of total information flow over a given time on a telecommunications medium – is a critical feature of this technology. Depending on the medium and the transmission method, bandwidth is measured in the Kbps (thousands of bits per second or kilobits per second) range or the Mbps (millions of bits per second or megabits per second) range. Examples of bandwidths include:

- Digital Subscriber Line (DSL): typically 300–400 Kbps, optimally 800–900 Kbps (or more)
- Cable modem: typically 700–800 Kbps, optimally 1.2 Mbps (or more)
- Telephone line modem: typically 56 Kbps

Overall, experts say that the cautious outlook for PLC is in the range of 56 Kbps to 500 Kbps, and the optimistic outlook is 500 Kbps and higher.

Amperion's business plan focuses on the medium voltage grid, which passes within 100 meters of nearly every business and home in the country, creating a tremendous market opportunity, according to the company. Amperion says its products will be built economically to deploy in underserved as well as existing broadband markets.

When will commercial-grade products hit? Developers often assert they will have products on the shelf sometime in 2003, but industry consultants contend that it will be a few years, at the least, before the technology is truly ready for wide commercial installation. But given the potential significance of broadband PLC to co-ops, it's certainly a technology worth watching.

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