

Thursday, February 3, 2011

EXCLUSIVE INTERVIEW

Amperion CEO Sadan makes case for high-speed PLC

Amperion, a broadband PLC firm based in Lawrence, Mass, is about to get the break it has waited for, CEO Nachum Sadan told us yesterday at the DistribuTech conference in San Diego. Amperion -- a 10-person, VC-funded firm -- accumulated over 100 patents over its 10-year life and has done a number of pilots, including some in the Caribbean (SGT, [Nov-22](#)). But now, Sadan said, its technology is likely to be installed in substations and on live transmission wires where it can protect the lines by linking all-digital relays that control breakers.

Amperion last month used its technology in pilots with a four-mile, 138 KV test line in Columbus, Ohio, and a five-mile, 69-KV test line in Newark, Ohio, both operated by AEP, Sadan said. The technology was just being tested and was not expected to actually protect the lines. Now "we're in active discussions with AEP to close deals" on commercial projects, the first of which could start later this year.

"That would be very, very important for our business," said Sadan. Amperion would like to "spread the word, tell everyone what we've done at AEP and use AEP as a reference case to leverage the AEP success to sign up other utilities."

PLC is an old technology, long used by utilities for protection and control of D&T lines, said Sadan who is an electrical engineer. But conventional PLC has a low data rate, measured in bits/second compared with Amperion's 10-15 MBPS -- many thousands of times faster. Latency of conventional PLC is about the same as Amperion's broadband technology: milliseconds versus the 1,000-times-shorter microseconds offered by fiber, the principal competitor of both conventional and broadband PLC. Fiber offers far faster speeds than either conventional or broadband PLC, measured in GBPS.

But fiber is expensive. Installing it alongside transmission lines throughout

the US would cost \$36 billion and take 20 years, Sadan figured. It is most cost-effective for extra-high-voltage lines running long distances. In any case, the extremely high bandwidth it offers is overkill in many applications thus Amperion is content to focus on shorter, lower-capacity power lines, Sadan said.

"Sub-transmission -- between 2.5 and 5 miles long, with capacity of 36-138 KV -- is our sweet spot," he said. "With 70% of the transmission lines at 138 KV and below, why should I fight for 5% or 10%? I'm going after the 70%, the lower voltages where there's not fiber and most likely there never will be fiber." Placing repeaters every five miles, as Amperion's technology requires, is far less of an obstacle when lines are shorter, he added.

Modern power line protection requires higher bandwidth than conventional PLC provides, Sadan said. "Forty years ago,

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NEMA develops smart grid standards testing scheme

NEMA has developed a Smart Grid Interoperable & Conformant (SGIC) testing scheme to promote testing for products and devices based on smart grid standards, the association told the press yesterday. The scheme covers standards identified by NIST and the Smart Grid Interoperability Panel (SGIP), said NEMA, an ANSI-accredited SDO (standards development organization). The program provides benefits for utilities, government, manufacturers and consumers, it added.

"By a number of definitions, smart grid is an investment program," NEMA CEO Evan Gaddis said in prepared remarks. "The federal government has invested billions of dollars through the Stimulus Act, which has prompted corresponding investments by utility companies and manufacturers alike. Ultimately, in order for this to be a success, it will also require consumer

investment both in terms of in-home devices and electric rates that support utility company deployments," he added.

NEMA was named as a collaborator with NIST on the interoperability framework in EISA and is creating the SGIC program to provide a forum where smart grid stakeholders can validate the interoperability of individual grid elements on a consistent, broadly agreed-on, industry-wide basis.

The first standards to be addressed under the scheme are for power metering. Since meters are being deployed, their testing under SGIC is meant to promote the major points that define the smart grid adoption process -- testing and certification, governance, harmonization, and backward compatibility -- all while protecting participants' intellectual property rights, NEMA said.

[\[Comments\]](#)

KORE Telematics to help Trilliant deliver on expansion promise

Trilliant is partnering with KORE Telematics, a communications service provider specializing in M2M communication, to start carrying out Trilliant's "definite move" into global markets, Brian Jenkins, director of corporate marketing, told us yesterday. The Redwood City, Calif.-based firm seven months ago "closed \$106 million in financing and one of the outcomes of that financing was for the company to broaden its scope and look at international markets," he added.

In the non-exclusive agreement, KORE Telematics will step in to do provisioning, billing and management under wholesale service contracts with cellular carriers such as AT&T, Verizon and Rogers, Jenkins added. KORE will get device approvals for Trilliant's CellReader, which installs under the glass of solid-state C&I electric meters and provides two-way, IP-based

communications over digital cellular networks.

Previously, Trilliant was not only selling its cellular communications module but also selling services from the cellular firms. The partnership with KORE lets Trilliant focus on what it does best, Jenkins said. KORE will cut to a few days the deployment of AMI or any wireless M2M application, he added.

Trilliant and KORE have not yet announced a customer for its joint metering automation offering. Trilliant three months ago publicized a pact with Centrica's British Gas to "to do a solution based on public digital cellular networks," Jenkins said, calling the UK the "first beachhead" in Trilliant's global expansion.

Trilliant's work with British Gas focuses on residential metering with an initial rollout to over one million of the utility's nearly 16 million customer accounts. The equipment will help connect smart electric meters, gas meters, existing in-home devices and future home energy devices such as EV chargers. The utility previously deployed Trilliant's UnitySuite head-end software as the enterprise system to manage all smart energy devices.

British Gas is the first of the UK's "big six" utilities to undertake a major smart meter deployment after the UK Dept of Energy & Climate Change's publication about a year ago of plans for a national smart meter roll-out by 2020 (SGT, [Mar-30](#)).

"The Centrica and KORE agreements both focus on Trilliant's digital cellular solution as a complement to our private RF mesh-based solution," Jenkins said. "There happens to be a wide variation in communications solutions required around the world. In North America, the driving force is RF mesh. In the UK, for instance, there is a much stronger requirement for leveraging digital

4 stories in 2 minutes

FreeWave radios

head further abroad: FreeWave Technologies is selling new LRS data radios for industrial wireless data connectivity using licensed spectrum outside the US, the maker of spread spectrum and licensed spectrum radios for data transmission told the press this week. The firm is targeting Europe, Canada, Latin America and New Zealand. The LRS series radios provide optimum use of the available bandwidth in narrow-band UHF channels without the protocol overhead of native-IP radios, the firm said.

GridSense offers new

T&D line monitoring: Acorn Energy unit GridSense is selling a new T&D line monitoring system called LineIQ, the Sacramento, Calif.-based firm told the press this week. The product is capable of accurate voltage measurement and addresses essential smart grid and DA applications such as outage management, line balancing and capacity optimization, the firm said.

Greentech Media

shares report details: The implications of the scaling HAN market "are profound, as utilities seek a means to implement demand-side management programs and smart grid players vie

for early-stage positioning in what will become a \$750 million market by 2015," Greentech Media asserted in material promoting its \$3,000 "Smart grid HAN strategy report," publicized last week. Greentech believes vendors selling displays, gateways, plug strips and the like will be "locked in a competitive struggle over the coming years, with a massive industry shakeout inevitable," the firm said. The market's biggest opportunities, it said, will be in providing value-added services to utilities, including conservation, demand-side management, enterprise software and integrating homes to become distributed energy resources for the utility grid.

Ohio PUC seeks

smart grid opinions: The Ohio PUC yesterday invited stakeholders, including the public, to provide input about consumer privacy and cyber security issues surrounding smart grid and advanced metering technologies. "The purpose of this proceeding is to educate and engage parties so that all interests can express their views as new technology initiatives are deployed by utilities across Ohio," PUC Chairman Steven Lesser said in prepared remarks. Written comments should be sent by March 4 to Ohio PUC Docketing Division, 180 East Broad St., Columbus, Ohio 43215.

[\[Comments\]](#)

cellular networks" -- in part due to different market and regulatory dynamics plus physical challenges.

While Trilliant has been in digital cellular market for years, it is less well known for that compared with RF mesh.

Trilliant has roots going back to the mid-'80s, in the high-tech city of Granby,

Quebec, Canada, where it started as Nertec, making in-meter dial-up modems that phoned utilities to report readings.

Now, in addition to the UK move, Trilliant is opening a corporate office for the Asia-Pacific market with help from UMC Capital (SGT, [Dec-22](#)).

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DOE website looks to match innovations with entrepreneurs

DOE's "[energy innovation portal](#)" has over 300 business-friendly marketing summaries available to help investors and firms identify and license leading-edge energy efficiency and renewable energy technologies, the agency told the press yesterday.

The idea is to link available DOE innovations to the entrepreneurs who can successfully license and commercialize them.

"Our national laboratories are a major driver of innovation in this

country. By connecting American entrepreneurs with cutting-edge, ready-to-commercialize technologies from the National Labs, the DOE is helping to grow our economy and create the next generation of American jobs," Energy Secretary Steven Chu said in prepared remarks.

Technologies created at Oak Ridge National Laboratory in Tennessee and the National Renewable Energy Laboratory in Colorado are enabling Ampulse to develop more efficient

and lower cost thin-film photovoltaic devices, DOE reminded.

The site has about 15,000 DOE-funded US patents and patent applications.

It also provides direct contacts to licensing professionals who can answer questions and assist users in the licensing process.

Innovations listed and available for licensing include a “grid-friendly”

appliance controller, from DOE’s Pacific Northwest National Laboratory. The controller senses grid conditions by monitoring system frequency and provides automatic DR in times of disruption. This computer chip can be installed in home appliances and can turn them off for a few minutes or even a few seconds to allow the grid to steady and help prevent blackouts.

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the relays and protection just opened and closed lines based on communications among adjacent substations,” he said. “PLC was good enough. Now, all-digital relays are more accurate and exchange information more frequently.” The newer relays require higher bandwidth to function optimally, presenting a business opportunity for Amperion. Expanding

SCADA to report problems in more detail is another reason higher-bandwidth PLC is needed, Sadan said.

GE, just across the aisle from Amperion on the show floor at DistribuTech, was showing relays that use current differential that Sadan called “the most advanced protection scheme.” Current-differential relays in substations digitally compare current entering and exiting the substation. If they are not

in phase, the line has a fault, he added. Though more accurate than other forms of protection, current differential “can’t be done with conventional PLC,” Sadan said. “You need 64 KBPS, which is not broadband but requires either us or fiber -- and we’re cheaper.”

Amperion’s IP-based broadband PLC can carry VOIP or data, even serving as a backhaul, though thus far it has carried only line-protection data. The firm does not worry much about competition, Sadan said, both because “we have the technology locked up by patents” and because any competitor would need the kind of thoroughgoing and hard-to-find help AEP has given Amperion, including access to lines, stations and crews.

“It took four years to take the risk out of this technology and to bring it from R&D to production,” Sadan said.

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Abbreviations: To see a glossary of *Smart Grid Today*’s abbreviations, go to www.smartgridtoday.com/glossary.

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