**JANUARY** 2013 | A Landis+Gyr Publication

# FutureReady

*WHERE THE SMART GRID IS HEADING*

## Direct Load Control
**Why it's time to dive in**

## Smart Grid Business Cases:
Lessons learned

## DistribuTECH 2013:
**7 ways to maximize your experience**

*News from Landis+Gyr*

One Step Closer to **Interoperability**

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PREDICTIONS FOR 2013

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# A MESSAGE FROM Richard Mora

2013 promises to be an interesting year in the smart grid industry. With many North American advanced metering infrastructure (AMI) projects nearing completion, utilities are eyeing a new generation of smart grid initiatives — focused on addressing everything from improved outage management to renewables integration.

In this issue of *FutureReady*, we not only share industry predictions for the coming year, but also provide expert advice on leveraging existing AMI investments to achieve greater efficiency and customer satisfaction. In "Smart Grid Business Cases: Lessons Learned," get behind-the-scenes insights on securing organizational funding and support for "beyond-metering" initiatives. In "Direct Load Control: Why It's Time to Dive In," discover how utilities are using AMI technology to make this demand side management technique more effective than ever before.

We recognize that every utility is unique — as is their smart grid journey. For those favoring power line carrier technology, read about the launch of Gridstream® PLX, the first PLC network with the capacity to continuously deliver 15-minute interval data from every meter. Plus, take some insider advice to get the most value from the industry's biggest event in "DistribuTECH 2013: 7 Ways to Maximize Your Experience."

As always, we offer this ezine — and our smart grid insights — with a single goal in mind: To help utilities make informed choices, so they can perform today and prepare for tomorrow. All of us at Landis+Gyr look forward to what the new year brings, and we're excited about helping the world manage energy better.

Richard Mora
*Landis+Gyr President & CEO Americas*

# Direct Load Control:

## Why It's Time to Dive In

***A sweltering summer afternoon. An army of air conditioners running at once. A power grid pushed to its limits. This is a scenario utilities have wrestled with for decades: How to respond when demand spikes and kilowatt prices soar? While the efforts to reach a solution are many, one strategy consistently emerges as cost-efficient, effective and reliable — direct load control (DLC).***

Generally, DLC refers to demand-side management programs in which utilities curtail load by remotely controlling appliances and other systems at customer premises. But now, with the proliferation of advanced metering infrastructure, a DLC program can offer more benefits than ever, including:

- *Near real-time visibility of the amount of load shed at each control point*
- *Load shedding to minimize customer inconvenience*
- *Confidence in load curtailment and sustainable power quality*
- *Cost savings for both utilities and customers*
- *Relative ease of implementation*

## DLC Through the Years

For years, direct load control technology has enabled utilities to remotely turn customer systems on and off. However, first-generation DLC programs proved unreliable and delivered hard-to-quantify results.

Typically, participants were recruited with the promise of a reduced annual rate. Then, when electricity demand spiked, the utility would send a "shut-off" command via one-way radio transmitter to power-hungry equipment, such as water heating and HVAC systems.

But verifying whether these shut-offs occurred was another matter. To confirm, utilities had to wait and examine substation loads — usually long after the fact. Plus, one-way communication devices presented a difficult hurdle to overcome in the effort to monitor the "health" of utility load control devices and ensure proper operation.

## DLC and Advanced Metering: A Powerful Combination

With built-in sensors and two-way communication capabilities, advanced metering infrastructure (AMI) delivers the edge visibility long lacking in DLC programs. Together, AMI and DLC offer a wide array of benefits — from more precise load control to greater grid efficiency.

### LOWER COSTS

Benefitting both generation and distribution utilities, direct load control popularity is on the rise. Power generating utilities can put off expensive building projects by better utilizing existing grid capacity; some can even create a new revenue stream by selling excess power to others. For utilities that only transmit and distribute power, DLC programs help offset the need to purchase power at peak times, when it's most expensive.

Nashville Electric Service (NES), a municipal-owned utility serving 360,000 Tennessee customers, implemented direct load control for a key reason

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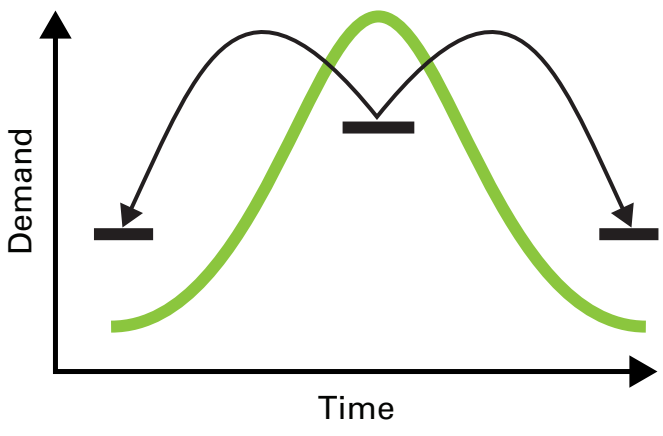
facing many utilities today. Its electricity supplier, the Tennessee Valley Authority, mandated that it shave 10.25 MW from its peak load by June 2013. NES launched a DLC pilot program, with 400 load control devices at commercial and residential premises. By May 2012, the utility not only reached its curtailment goals, but considered adding 10,000 more devices to the service area.

## LESS INCONVENIENCE FOR CONSUMERS

For consumers, participation in a DLC program used to mean suffering through temporary shut-downs of air conditioners and other systems. Today, consumer impact is often unnoticeable. That's largely due to optimized and fine-tuned control offered by AMI. Now, utilities can make smaller adjustments to appliances, such as raising a thermostat by two or three degrees for a 15-minute period. In addition, adjustments can be cycled throughout the entire group of DLC participants, further minimizing inconvenience.




Consumer education is also a key component of effective load control. Acceptance of DLC programs begins when energy users understand industry nuances:

- *Energy prices fluctuate*
- *Prices are highest when demand is highest*
- *Failing to curtail consumption at peak means a higher overall bill*

Utilities can help consumers understand these concepts by sharing real-time pricing information. In DLC programs, this is particularly effective when combined with other strategies that engage a consumer and increase their sense of control. Nashville Electric Service, for instance, gives DLC participants advance notice of load control events, plus the choice to "opt out" of five of these events each year.

Consumer education saves money in other ways, too. "When I worked at a utility, probably 20 percent of our calls were high bill complaints," says Glenn Purcell, Director of Product Management, Grid Management Solutions at Landis+Gyr. The problem was not only upsetting to customers, but expensive for utilities. "You had to go through past bills and try to explain what's driving their usage up," Purcell says. The process was time consuming, and often, resulted in the need for a home energy audit. With AMI technology, consumption patterns can be transparent for both customers and utilities.

## INCREASED GRID EFFICIENCY

"The residential side of direct load control is only going to grow over the next three to five years," says Purcell. "The more expensive electricity becomes, the more apt people are to want to start saving."

With increased participation comes finer control of the entire system — and a more efficient grid. That, says Purcell, will be even more important in the future, as renewable energy sources come online and electric vehicles proliferate. He believes that direct load control will make sense year round — not just during peak seasonal demand — to flatten the load curve.

New consumer participation options will also become available. Thanks to technology advances, increased savings will be realized by adding load control devices to a growing list of appliances.

## Related Content

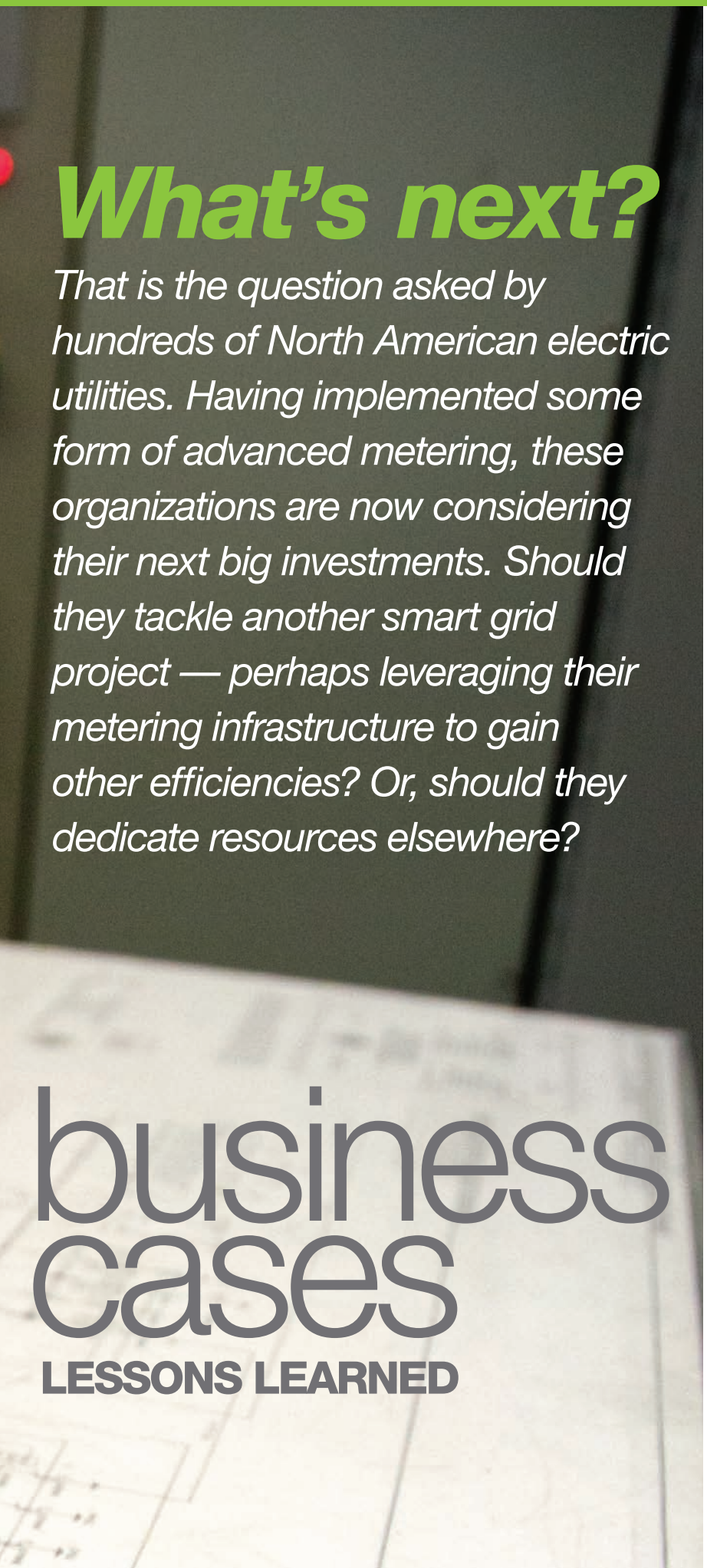
**Landis+Gyr offers solutions to help improve energy efficiency, including direct load control systems.**

# bigger & bigger benefits

When combined with advanced metering systems, direct load control represents a huge opportunity for utilities. Organizations that have already deployed AMI but not launched a DLC program are missing out on cost savings and greater grid efficiency.

When considering a DLC pilot, consulting with an experienced smart grid partner — like Landis+Gyr — is the best place to start. A global leader in energy management, Landis+Gyr helps utilities make the case for direct load control and integrate a successful DLC program — delivering unsurpassed efficiencies and savings for utilities as well as their customers. ■

# smart grid



# What's next?

*That is the question asked by hundreds of North American electric utilities. Having implemented some form of advanced metering, these organizations are now considering their next big investments. Should they tackle another smart grid project — perhaps leveraging their metering infrastructure to gain other efficiencies? Or, should they dedicate resources elsewhere?*

# business cases

## LESSONS LEARNED

Utilities choosing smart grid functionality are poised to reap significant benefits, but also face pressing challenges. That's because securing organizational support and funding for these projects requires a new breed of business case — one that will be more difficult for utilities to develop without assistance.

## Winning Internal Support

At first glance, extracting additional value from an existing advanced metering system seems a natural — even obvious — choice. After all, it is an incremental investment: The technical and mechanical foundation is already set. Yet, project proponents will face competition for budget among other departments and groups — many of whose initiatives have long been awaiting their turn. For example, utility executives will likely weigh the value of a transmission line upgrade or work at a generating facility against the benefits of a voltage management program obtained by leveraging AMI.

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Operational efficiency

Distribution line management improvement

Distributed generation facilitation

# "Beyond Metering" Benefits

Using advanced metering infrastructures (AMI), many utilities have achieved:

## RELIABILITY IMPROVEMENTS

Outage management

## REVENUE ASSURANCE

Theft detection
Remote service connections
Energy loss reduction

## DEMAND MANAGEMENT

Direct load control
Voltage optimization
Dynamic pricing programs

## OPERATIONAL EFFICIENCIES

Reduced truck rolls
Consumer engagement programs

Another potential obstacle is the cost-benefit analysis. The benefits of a beyond-metering smart grid project are often intangible and, therefore, hard to monetize. "This business case is more complicated because it's about more than just replacing meters and truck rolls," says Gary High, Vice President, Sales at Landis+Gyr. "As you move further down the value chain of smart grid, you're looking at benefits like gaining operational efficiency, distribution line management improvements, distributed generation facilitation and many other programs not traditionally included in an AMI business case."

The far-reaching nature of smart grid projects can also create challenges for utilities. Advanced meters impact many internal functions, from billing to customer service to operations. This requires traditionally siloed groups to work together, assigning value to benefits that cut across these boundaries and, in many cases, sharing in the cost of the program.

Keith Hall, a partner in IBM's energy and utilities strategy and transformation practice, explains: "Because these new projects inherently reach many levels of the operation, multiple groups must take responsibility for their individual portion of business case dollars."

Finally, every utility operates in a unique geography and regulatory environment, which affects what projects a utility can pursue.

## Working With Outside Experts

Ideally, utilities establish a smart grid roadmap as part of building a new business case. That roadmap should consider the portfolio of applications, scalability and internal business function touch points to aid project prioritization and decision-making.

But developing this roadmap from scratch can be labor intensive. Fortunately, expert knowledge can be gleaned from those who've successfully completed the process. The insights and expertise of an outside consultant saves valuable time. In fact, only outside experts can efficiently address the multitude of inherent challenges of a beyond-metering business case. Look to a seasoned consultant, systems integrator or trusted smart grid vendor. These specialists deliver based on vast and fine-tuned experience in developing business cases for other utilities.

Hall, a veteran systems integrator, says:

*"We have seen some utilities try to do this on their own. It often takes years, and many mistakes are made. A systems integrator helps a utility avoid mistakes and, in the end, actually save money."*

In addition, an outside expert helps utilities get over the "analysis paralysis" that often stalls a project and, ultimately, delays benefit realization. "Because we have access to a lot of data about what works — and doesn't work — we can help them make decisions quickly," Hall says.

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An outside perspective also bridges departmental gaps. "The challenge of so many business cases is that they must cut across multiple functional groups," says High.

*"Yet, some groups are not willing to contribute the effort needed to build a business case that outlines expected benefits and drives project funding. A consultant helps develop a business case across utility silos."*

In addition to leveraging lessons learned from previous projects to support a favorable cross-silo business case, a dedicated expert will assemble a project team for a timely project launch. Advice of an expert is also invaluable when it comes to defining cost-benefit ratios. "After all, when we're talking about functionality never used before, how do you monetize it?" says Trent Bowers, Vice President of Alliances and Solutions at Landis+Gyr. "We can help utilities crunch the numbers and provide options for calculating these new benefits." In addition, most utilities do this type of analysis only once. By accessing expert advice, utilities benefit from lessons learned by other utilities.

In addition to consultants and systems integrators, leveraging the capabilities of a smart grid vendor is a viable option — one that offers additional value of a broad industry view and lessons learned from successful deployments. With successful smart grid deployments globally, Landis+Gyr brings a unique industry perspective and unmatched expertise to address today's utility challenges. By engaging a trusted smart grid vendor like Landis+Gyr early in the process, utilities can leverage insights to develop a qualified and validated business case.

However utilities choose to address their business cases, significant work lies ahead before the full value of their advanced metering infrastructure can be realized. Utility managers must become adept at working across department silos, developing strong cost-benefit analyses and embracing a focused approach to ensure a timely and successful implementation plan. ■

# ONE STEP CLOSER TO Interoperability

Interoperability among vendors has long been a priority for the smart grid industry. However, the diversity of devices and applicable standards — and variety of options within each standard — have created substantial challenges.

The industry is taking steps to meet the challenges. "Standards for all layers of the Neighborhood Area Network (NAN) communication stack became available earlier this year with the IEEE and IETF release of missing components," says Ruben Salazar, Director of Research and Technology at Landis+Gyr. "However, interoperability is virtually impossible without industry-wide, agreed-upon standards and relevant options," he adds.

At the 85th Internet Engineering Task Force (IETF) meeting in Atlanta last November, more than 1,000 Internet engineers gathered with common interest in testing diverse products that communicate via IPv6-based protocols. During this meeting, Landis+Gyr announced successful completion of IEEE 802.15.4g interoperability tests of its Gridstream® advanced metering platform. The IEEE 802.15.4g standard aims to provide a uniform communications platform that addresses smart grid network challenges. The test focused on the physical layer communicaton between Gridstream and a NAN device. Future testing will be conducted at higher levels.

"This demonstrates the power of Internet standards as a common thread to successful interoperability among heterogeneous deployments," Salazar continues. "Our work is just beginning. The recent interoperability event sponsored by IPSO represents a first step in the path toward validation of multi-vendor interoperability." ■

# DistribuTECH 2013:

## 7 WAYS TO MAXIMIZE YOUR EXPERIENCE

**DistribuTECH 2013 offers a comprehensive agenda of events and educational sessions for engineers and managers from across the power industry.**

## HERE ARE A FEW TIPS TO HELP YOU MAXIMIZE YOUR DISTRIBUTECH EXPERIENCE THIS YEAR:

1 **Plan ahead.** Review the conference schedule ahead of time to make sure you'll be able to attend those events that are important to you. Choose from sessions on everything from advanced metering to SCADA and network infrastructure. You might want to divide up the sessions with co-workers to make sure all your bases are covered.

2 **Maximize your Exhibition time.** Make a list of the vendors you want to visit. Contact them ahead of time to arrange appointments for personal consultations or in-person demonstrations. With more than 400 exhibitors representing the leading smart grid organizations, the Exhibition is a major attraction. So, allow yourself plenty of time to browse.

**3** **Learn from experience.** Pay special attention to presentations by utility representatives who will be sharing lessons learned from their own smart grid deployments. Sessions on outage and distribution line management, demand side management, voltage regulation, and other grid automation technologies will offer insights for optimizing operational efficiencies.

**4** **Get new ideas about taking care of key accounts.** This year, a new Commercial/Industrial track will include sessions providing practical guidance for taking care of your most important customers. You'll hear about the issues of importance to them, what services utilities can offer and the operational value you can glean from programs targeted to these accounts.

**5** **Don't miss top-notch sessions such as:**

**A**. *Practical Utility Experience in Realizing Smart Meter Benefits* – **Tuesday, January 29 at 3:00 pm**

**B**. *Innovative Technology and Communications for Achieving Demand Response Goals* – **Wednesday, January 30 at 9:30 am**

**C**. *Lessons from the Field: Consumer Engagement is a Journey, Not a Destination* – **Wednesday, January 30 at 2:30 pm**

**6** **Network.** You'll have plenty of opportunities to network with colleagues from around the country. Mark your calendar now and plan to attend the Opening Reception, Women in Utilities and the Beach Party on Wednesday night.

**7** **Don't miss special events at the Landis+Gyr booth.** Instructive demonstrations of the Gridstream® platform covering advanced metering and grid automation, smart lighting, data analytics and much more are planned. You'll also have a chance to learn more about the Ecologic Analytics meter data management and new application extensions.

So, start planning now. If you're interested in connecting with Landis+Gyr before the event and getting answers to your pressing questions, contact us today at ***futureready@landisgyrna.com***. ■

# *Executive* ROUNDTABLE PREDICTIONS FOR 2013

**Landis+Gyr executives recently convened to share their viewpoints on major smart grid trends in 2013. Find out what they've forecast for the year ahead.**

**JERRY FIGURILLI**
*COO*

"The industry now realizes the need for grid modernization. With our many goals — growing the footprint for EVs, DA — a lot of these things are interdependent. The existing transmission distribution system may not be able to support it if we all plug in at the same time. I believe there will be a renewed focus at the federal level on developing a sustainable energy policy. We need to figure out how to strike a balance, to find a place in the energy portfolio for everything from nuclear to renewables. We'll also start to see some traction with *smart buildings and smart community* — looking beyond your furnace and into the community — and how it all interacts."

**HEATH THOMPSON**
*CTO & Vice President, North America*

"Utilities will be seeking ways to leverage the AMI and smart investments they've already made. They'll be looking to analytics to help leverage all the customer data they are collecting. Security will continue to be top of mind. But as technologies mature, the shift will move to provable compliance — verifying compliance with NIST and other standards. Compliance will quickly become the second order of security."

**PRASANNA VENKATESAN**
*Senior Vice President, Systems Deployment*

"More utilities will be consolidating to develop a bigger and stronger presence and fill gaps in their supplier and customer portfolios. Prepayment will be a big trend in the U.S. Customers will want to have the flexibility to take control of their spending and energy efficiency. With recent disasters in India and Superstorm Sandy in the U.S., outage management is already front of mind with utility executives as an area to investigate and focus investment."

**STEVE SCHAMBER**
*Vice President & General Manager, Metering*

"For utilities that have already made investments in smart grid, future areas of focus will not be as clear cut. They will be taking a more targeted approach to investing R&D funds. Concern will shift to proactive equipment monitoring, better predictive maintenance, understanding load patterns, and preparing for EVs and other future initiatives. Prepayment will be a major trend as more utilities find success with these programs."

# Landis+Gyr COMPANY OF THE YEAR AWARD

## Frost & Sullivan Names Landis+Gyr Asia Pacific AMI Company of the Year


From left: Ravi Krishnaswamy, Vice President of Frost & Sullivan and Philip Stone, General Manager, SEA at Landis+Gyr

For the second consecutive year, Landis+Gyr was the recipient of the 2012 Frost & Sullivan Asia Pacific Metering Infrastructure Company of the Year award. The prestigious honor is given to the company who exhibits excellence in growth strategy, leadership in market penetration and leadership in customer value.

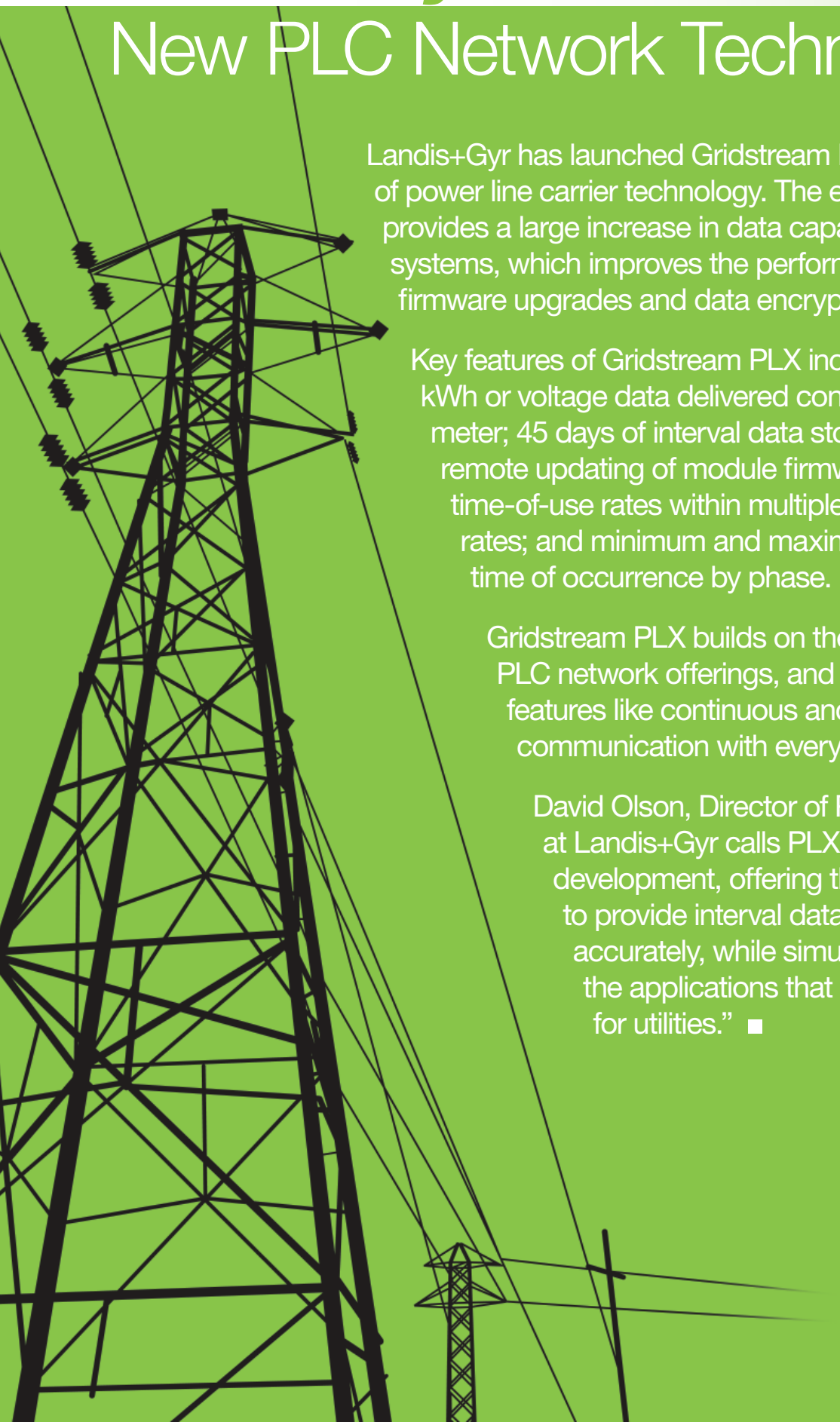
Landis+Gyr earned the award due in large part to its strong performance in capturing and solidifying its market presence within the Asia Pacific region.

"The company has taken strategic decisions to seize opportunities in a market that holds significant promise for the future," said Frost & Sullivan Program Manager Suchitra Sriram. "This includes identifying and partnering with best-in-class companies across the industry value chain and investing in R&D capabilities to provide customized products for local customers in the region."

In financial year 2011, Landis+Gyr recorded significant growth of 26% within the Asia-Pacific region — despite a still-struggling global economy.

"We are honored to be recognized by Frost & Sullivan once again for our strength and commitment to advanced metering infrastructure within the Asia Pacific region," said Oliver Iltisberger, Executive VP Asia Pacific. "We have worked with all of our customers to provide them with the innovative solutions that fit their own unique AMI requirements." ■

# Landis+Gyr: Introduces New PLC Network Technology



Landis+Gyr has launched Gridstream PLX, the next generation of power line carrier technology. The enhanced solution provides a large increase in data capacity over legacy PLC systems, which improves the performance of over-the-wire firmware upgrades and data encryption.

Key features of Gridstream PLX include 15-minute interval kWh or voltage data delivered continuously from every meter; 45 days of interval data storage at the meter; remote updating of module firmware; four adjustable time-of-use rates within multiple schedules and holiday rates; and minimum and maximum voltage reads with time of occurrence by phase.

Gridstream PLX builds on the company's previous PLC network offerings, and maintains trademark features like continuous and simultaneous communication with every endpoint.

David Olson, Director of Product Management at Landis+Gyr calls PLX "a groundbreaking development, offering the capacity needed to provide interval data quickly and accurately, while simultaneously managing the applications that return the most value for utilities." ■

Future. Ready.SM

Cost-benefit analysis

Migration path

Outside consultants

MDM integration

Utility commission presentation

Common pitfalls

Customer reaction

# How do I build a business case beyond the smart meter?

Landis+Gyr
manage energy better

befutureready.com/bizcase