NEWTON-EVANS RESEARCH COMPANY

Market Trends Digest

July 2008

Executive Summary of Findings From EMS, SCADA, DMS Study

A total of 145 North American electric utilities are represented in this new 2008 study. This number included the following: 30 U.S. investor-owned utilities, 46 public power utilities, 51 U.S. rural electric cooperatives, and 18 Canadian utilities.

Among the 145 participating utilities, 95% of the respondents indicated their utility has at least one control system installed for use in operating the transmission and/or distribution network. More than 40 sites reported having a second control system and nine had three (or more) control systems installed. Each of the investor-owned utilities (IOUs) reported having an energy management system installed as of the first quarter of 2008. Almost all utilities with 25,000 or more customers also reported having a SCADA (or EMS) system in operation. A lower number of mentions was received for installations of "stand-alone" distribution management systems, as most distribution utilities incorporate at least some distribution grid management functions within their SCADA system. Only 17% of respondents reported having a distinct DMS in operation. Several other suppliers were mentioned once or twice for a total of 18 "other" mentions.

Current/Planned Use of a Separate Outage Management System (OMS) by Year-End 2010: North American Survey Findings

In this year's study 55% of the North American respondents stated that their outage management system (OMS) is currently a separate system from EMS or SCADA or DMS. Sixteen percent stated that OMS is or will be integral to DMS/SCADA. Nine percent indicated plans to implement DMS as a separate system by 2010. One in five (20%) stated that the utility is not using and has no plans to use an OMS. IOUs were very likely to have separate OMS installations, as indicated by 87% of that subgroup. This compares with 61% of the cooperatives, 41% of the public power operations and only 22% of the Canadian utilities. However, Canadian respondents reported the most significant plans to offload the OMS functions from currently installed systems. Nearly one-third of the public power utilities indicated no use and no plans for use of OMS. Internally developed OMS was cited by seven respondents, while six indicated Oracle (nee SPL, nee CES) as their source, five named CGI, five cited Intergraph. Four sites indicated MilSoft and four others cited Telvent Miner & Miner. GE and DataVoice each were mentioned by three utilities. Two mentioned ABB and NISC. One indicated use of Telemetric.

Number of Mentions for Vendor Installations of Control Systems in North America

Vendor	*# Mentions*
ACS	34
Survalent	21
Areva	20
Siemens	18
GE Network Solutions (including Harris)	17
Telvent	17
QEI	14
OSI	12
ABB	8

Current/Planned Use of a Separate Outage Management System (OMS) by Year-End 2010: International Survey Findings

The sample selected for the international survey was originally developed using Newton-Evans own sizable database of utilities and officials, with supplemental information gleaned from third party international directories. The Newton-Evans research sample included the major utilities in more than 50 countries from throughout the world. As usual, series subscribers were given the opportunity to submit questions for possible inclusion in the final survey.

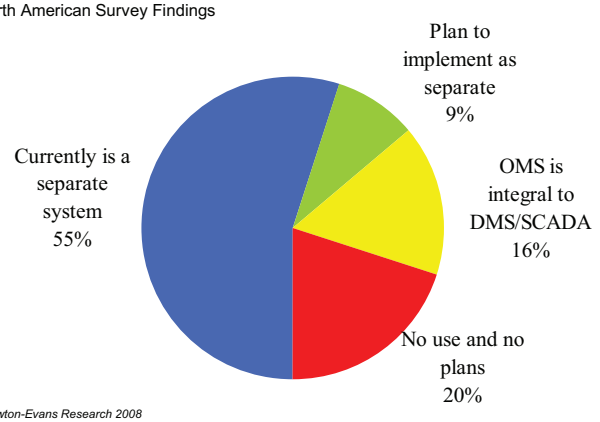
The 2008 International survey has found that 40% of the 70 respondents indicated that outage management (OMS) is currently a separate system from EMS/SCADA, while 31%

(executive summary cont'd.)

stated that OMS is or will be integral to SCADA. Seven percent were planning to implement as a separate system by 2010 while 21% cited no use and no plans for any OMS. European and Asia Pacific respondents were more likely to indicate that OMS is or would be a separate system than were their peers in Latin America, the Middle East/Africa or in Eastern Europe.

Current/Planned use of Separate Outage Management System

North American Survey Findings



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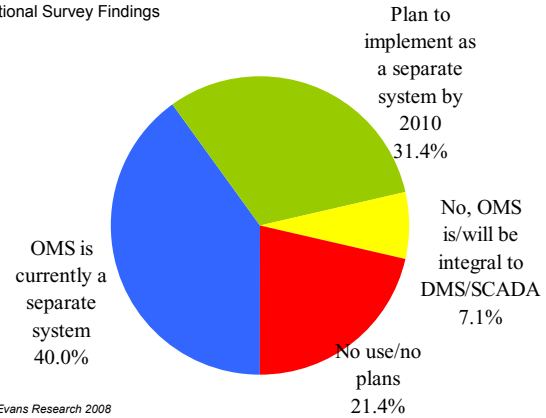
Current/Planned use of Separate Outage Management System

International Survey Findings



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Current/Planned Use of a Separate Generation Management System (GMS) by Year-End 2010: North American Survey Findings

Only 17% of the respondents indicated that they operated a separate generation management system or GMS as of April 2008. This included 32% of the IOU replies, but much lower percentages among other subgroups (including 14% of public power respondents, 10% among cooperatives, and nine percent for the Canadian utilities). Twelve citations of GMS vendors were made, centering on a few each for ABB and Areva with scattered mentions for seven other suppliers. None of the utility participants in this new study indicated any plans to invest in any additional separation of the GMS functions, and most felt that automatic generation control (AGC) applications available on SCADA were sufficient, if needed at all. Power plants of any size do have their own set of control systems (or DCS) technology.

Current/Planned Use of a Separate Generation Management System (GMS) by Year-End 2010: International Survey Findings

Thirteen of 55 respondents (24%) indicated that generation management (GMS) is a separate system. Three quarters of the group reported that GMS is not required since they have AGC capability and that is sufficient for their needs. Europe reported the highest rate of use of a separate GMS (38%) a far greater rate than was reported from other regions. ABB was reported as the installed GMS vendor by three utilities.

(executive summary cont'd.)

Current Linkages and Plans for Additional Links between EMS, SCADA and DMS Systems to Other Systems: North American Survey Findings

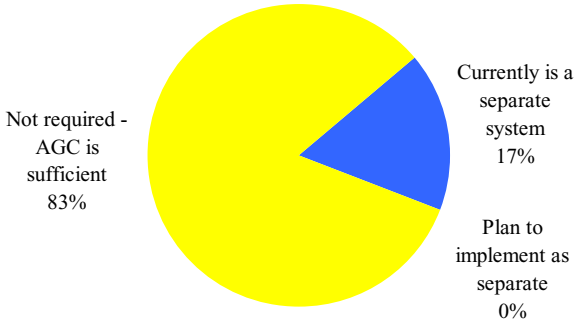
Taking into account all sizes and types of utilities, ICCP links were the most important for North American utilities by spring of 2008. Links to historian files were close in importance to these utilities. Outage management and load management linkages were cited by more than 40% of the overall group. IOUs were more likely than other groups to have linkages already established to most of the 20 links listed in the survey. Nearly 90% of IOUs had established ICCP links to one or more neighbors or ISO/RTO organizations. One half or more had links to power plants, distributed generation via RTUs, simulators, historian files, regional control centers and outage management systems.

Link rates were lower for public power utilities and cooperatives, except that electric power cooperatives were more likely to have a link to load management systems than were other industry groups. Canadian utilities had high rates of linkages to GIS and CIS functions, and to ICCP and operations planning systems.

Future linkages were more likely to be planned for use with OMS and GIS on average. IOUs and public power utilities were planning for more links to NERC compliance reporting systems. Canadian utilities were focused on GIS and OMS links and were more likely than their US counterparts to be looking to link with distributed generation facilities via either dedicated RTUs or via a direct data link.

Current/Planned use of Separate Generation Management System

North American Survey Findings



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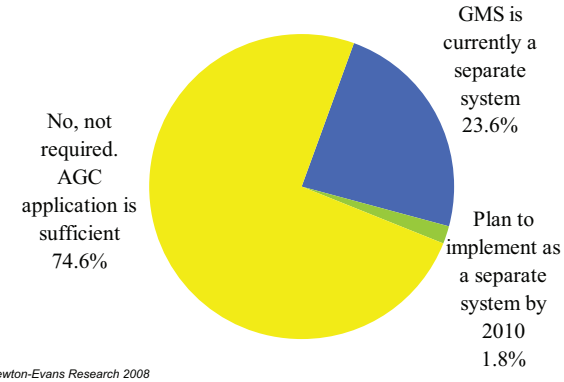
Current/Planned use of Separate Generation Management System

International Survey Findings



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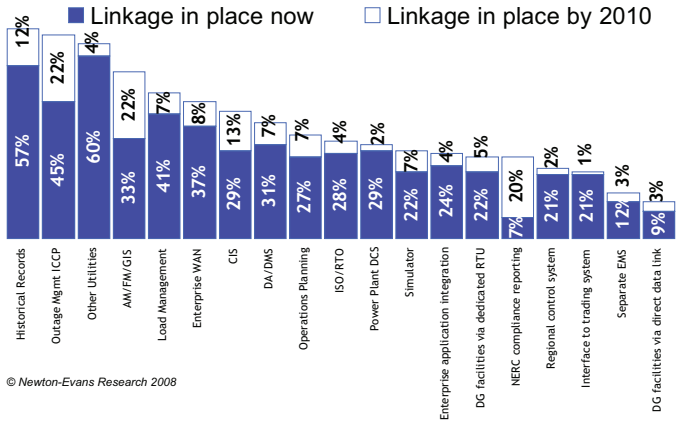
(executive summary cont'd.)

Current Linkages and Plans for Additional Links between EMS, SCADA and DMS Systems to Other Systems: International Survey Findings

Ties or links to historical files (historians such as Pi) were the most common link reported on the international survey (84%). Another 56% reported having links already in place with enterprise WANs and 47% cited linkages to plant control systems (DCS). Plans were in place by April of 2008 to add or expand links to enterprise applications integration efforts and/or to geographic information systems – GIS (both were cited by 30%). Twenty-six percent indicated plans to link the control center systems with OMS and 24% were still planning to add ICCP and/or operations planning links. The key observation to report again this year is that links from/to control center-based systems are substantial, and indeed appear to be continuing to increase from what was once a completely closed control center-based system. These links are increasing in scope, in breadth, both within the utility and beyond the utility. Open protocols are likely to be used, and higher speed data transfers occur today than had been the case in the past. This development has transpired despite the cyber security concerns for electric power infrastructure systems, as the need has increased to share, on a secure basis, more and more information about the utility's operations with customers, suppliers, regulators, ISOs/RTOs, and neighboring utilities.

Current/Future Plans for Connecting EMS/SCADA/DMS to the Following Systems

North American Survey Findings



Current/Future Plans for Connecting EMS/SCADA/DMS to the Following Systems

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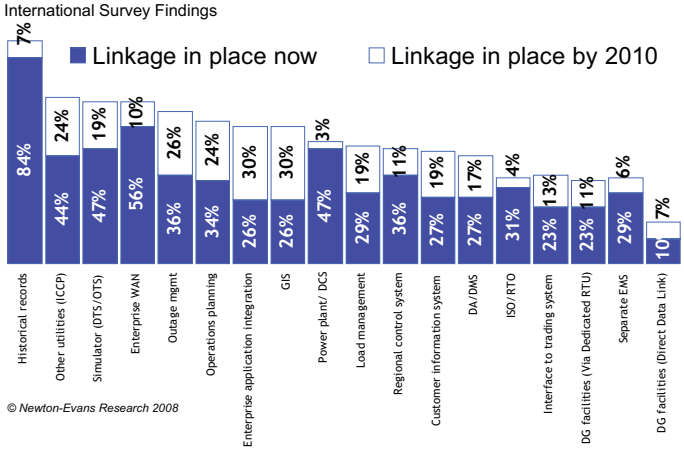


PowerGrid Europe: A Growing Part of POWERGEN Europe

By Chuck Newton

Here we are again, back from the road, this time across the Atlantic to Milan, to spend some time with our European colleagues discussing smart grid options and learning about the European approach to renewables and energy efficiency.

The Northern Italian "capital" of Milan is today a welcoming city for visitors from around the world, and is home to one of Europe's earliest and largest convention centers – the FIERA MILANO. To walk around this series of contiguous buildings is to get one's daily exercise, with probably a good mile of walking needed to get from one end to the other end of the complex, just one time.

To an American, any visit to Europe today is on the expensive side, given the value of the dollar vis-à-vis the Euro. Nonetheless, by early booking, selective dining, using public transport instead of taxis, such steps can help to make such trips affordable, if not luxurious. Don't put off your own travel plans for too long!

This set of three concurrent conferences centering on Power-Gen Europe, and now including PowerGrid Europe and Renewable Energy Europe, turned out to be the largest and best attended of any similar European electric power conference and exhibition ever, according to the conference organizers. I met people from just about every Western, Central and Eastern European country as well as from the Middle East and Asia while at the conference. Exhibitors included firms based in Russia, China, India and Iran as well as from across Europe and from the USA and Canada. The 12,500 attendees represented citizens from more than 100 countries from around the world.

(PowerGrid... cont'd.)

The exhibition took up the better part of three huge halls, with cafes and grills available all around the center as well as complimentary visitor bistros contained within several of the larger exhibits. The conference sessions focused on new developments and ongoing issues in power generation, power transmission and distribution and renewables.

The POWERGRID Europe conference sessions focused on two themes – the evolution, vision and development required for tomorrow's smart grid, and the technology improvements available for the efficient operation of today's grid.

European power market regulatory change and the detailed operation of the high-voltage Euro-grid were key topics of discussion on day one. I moderated one track on the morning of day two with a great panel comprised of officials from Siemens, Areva, JCMB Technology, ESRI and AZG Consulting. The morning session began with a well-received discussion of distribution network model data requirements for the intelligent grid provided by Bruce Seidel, CEO of JCMB Technology.

George Pereira, a technology consultant with Areva T&D's Technology Centre followed with a presentation of islanding issues in distribution networks and a comparison of today's and tomorrow's alternative grid strategies with the very roots of the early twentieth century electrification process.

Fellow American Bill Meehan, Director of Utility Solutions for ESRI, was the third speaker. Bill energized the international audience with his discussion and presentation of "gorillas in the midst" an analogy of how, when we are all focused on solving one problem we often do not see other major difficulties on the horizon – a terrific twist on what I have been referring to in our own series of intelligent grid presentations conducted last year for GE as the "whack-a-mole" approach to solving utility management challenges. Bill stressed the importance of visualization tools and geographic-based solutions as a key component in the move to a smart grid environment.

Siemens PTD's Matthias Claus provided a well-received and visually pleasing presentation and discussion of the security and sustainability of electric power supply, based on the roles being played now by HVDC and FACTS for system interconnection and power transmission.

Marina Darozhka of AZG Consulting GmbH provided the final presentation of the morning panel with an excellent discussion of how today's power generation equipment can gain a greater amount of efficiency in operation through good operations analysis and planning.

As soon as our panel session was finished, I thought my work day was complete. I could play hooky from the conference for a few hours and see some highlights of Milan. However, that turned out to be a foolish daydream. I was approached by Pennwell's Kathleen Davis and asked to substitute on an afternoon panel for a panel member who could not make the trip to Milan at the last minute. The topic for the panel was to be a wide-ranging discussion of the growing role of renewable energy in the power generation mix.

The only difference with this particular session from many others that the writer has participated in over his career was that there were more than 700 people in the audience, it was being moderated by the BBC's environmental reporter, Roger Harrabin, and it was being broadcast to the

(PowerGrid... cont'd.)

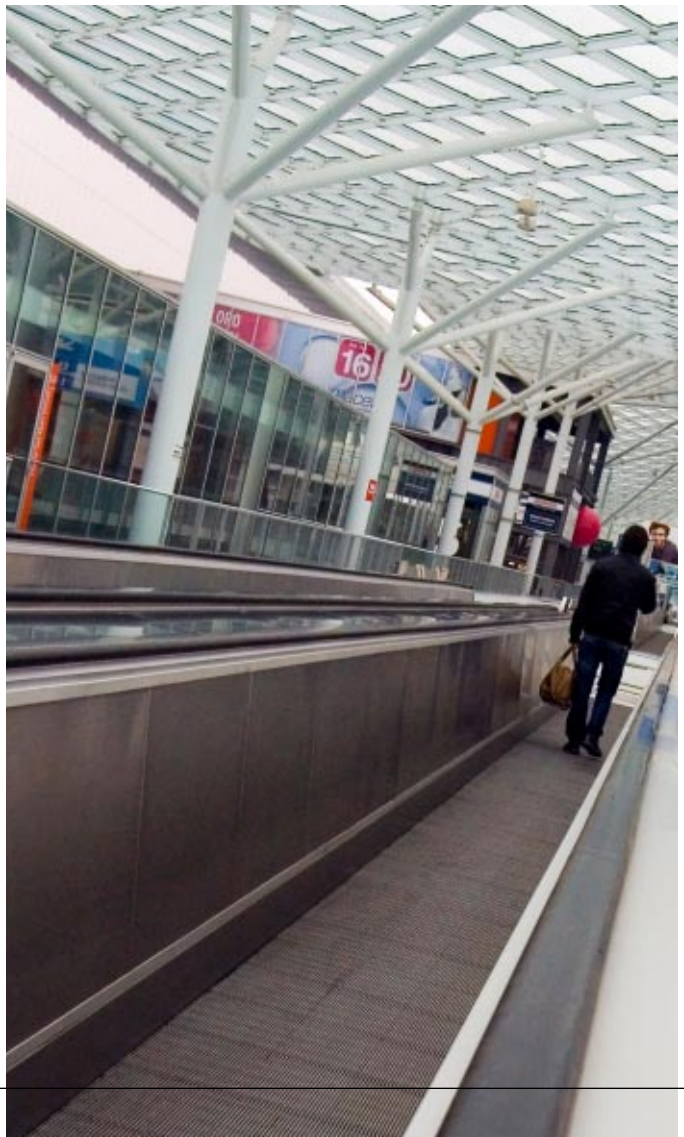
live audience and filmed for later viewing as well. Not only that, I had to comment on the upcoming presidential election and its impact on energy legislative initiatives, discuss what the USA was doing with regards to renewable energy and how we might make efficient use of electric energy. Fortunately, I had all of 20 minutes to prepare for this event (not enough time to escape from the Fiera Milano) and as I had my laptop (and Euro-adapter plug) reviewed highlights of our own study on renewable portfolio standards and another on demand response programs.

When we arrived in the mammoth conference hall, conference preparation coordinators were all over the stage, adjusting mikes for all of us, straightening our ties, adjusting the bright and hot lights, just like TV, and then we "went live". After an introduction of the moderator by Pennwell's international conference manager, the six panel members came on stage and we were seated in individual chairs spread across the stage.

Roger led the session off with a description of today's energy environment, and had questions prepared beforehand, which were addressed to each of the panelists. This discussion and exchange went on for 90 minutes, covering a lot of ground, and was well-received by the audience. Hopefully the session will be available later in August as a video that will be linked in from the Newton-Evans' web site.

All in all, it was a great experience for the three days I was able to be in Milan. The city itself is well worth exploring, and is the home of what is now an American favorite– risotto – available in 50 different preparations. The Pennwell staff did an outstanding job in hosting, managing and operating this very large conference. The mix of traditional power generation, renewable power and T&D exhibits, as well as the mingling of visitors benefitted everyone in attendance.

The session "The Power Industry's Response to the Challenge of Climate Change" was moderated by Roger Harrabin, the BBC's Energy and Environment Analyst. Panelists included (in the photo above, from left to right) Philippe Joubert, President, Alstom Power Systems, France and Executive VP of Alstom Group; Dr. Sankar Bhattacharya, Senior Energy Analyst, International Energy Agency in France; Ms. Jackie Jones, Chief Editor, Renewable Energy World Magazine; Frederic Hauge, President, Bellona Foundation, Norway; Dr. Michael Suess, CEO, Siemens Energy Division Fossil Power Generation, Germany; and Chuck Newton, CEO of Newton-Evans Research Company.

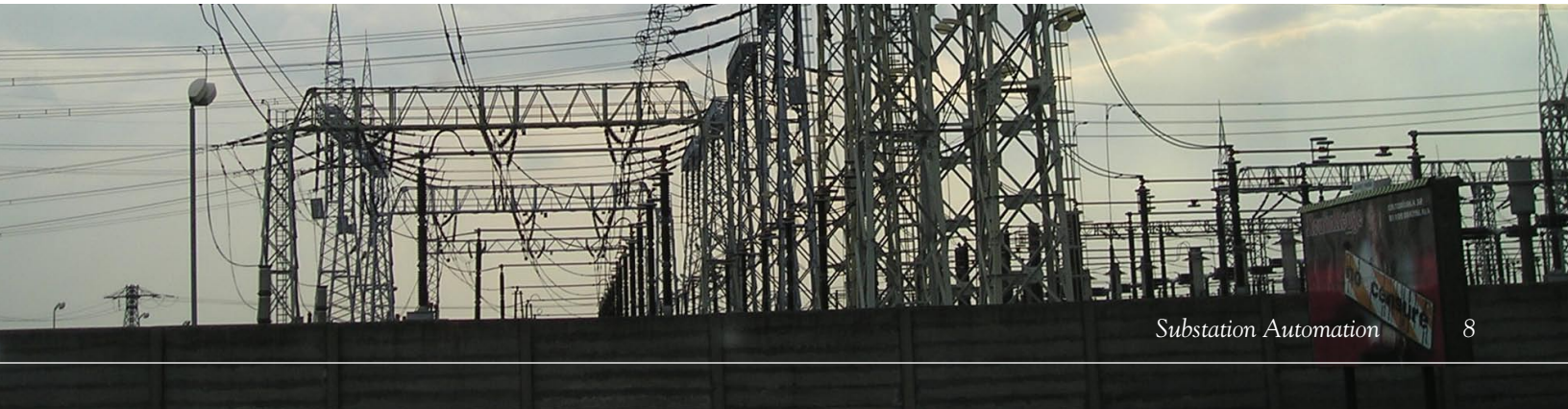


Substation Automation & Integration Study Now Underway

In June, Newton-Evans Research Company began surveying North American electric utilities for the 5th biennial study, *"The Worldwide Market for Substation Automation and Integration Programs in Electric Utilities: 2008-2010."* Highlights of the preliminary findings (based on first 60 North American Utility responses to be tabulated) include:

- Nearly 90% of reporting sites indicated that they now have a substation automation and integration strategy in place.
- Communications technology options inside the fence continue to pose an obstacle to automation of new substations, followed by limited internal resource availability. Lack of funding is the biggest obstacle reported at this point in the study for existing or retrofit substation programs.
- North American utilities continue to purchase "best in class" substation equipment and intelligent electronic devices (IEDs) and utility engineering staffs continue to perform their own integration tasks, by and large.
- DNP 3 remains the protocol of choice as it has stood for more than 15 years now. The use of DNP 3 extends to local applications inside the substation as well as for wide area communications "up the line" to the control center" and "down the line" to feeder IEDs.
- IEC 6150 was indicated as being used by five percent of these early responders, with seven percent planning to begin using IEC 61850 by 2010.
- While only a minority of US utilities is currently encrypting protocols in Ethernet-enabled environments, most have deployed port security mechanisms. Password management programs are also in effect. Note that serial communications links remain as North American utilities' most widely deployed communications architecture.
- RTUs also continue to be the primary substation IP task handler, with PLCs next. Distributed device task handling over multiple platforms is gaining some strength as of mid-2008.
- Training services and engineering drawing support services are frequently cited as "the most needed" services among those available from external or third-party commercial sources outside the utility.

These are just a few of the findings from this year's extensive and in-depth study of electric utility substation automation and integration programs. More than 400 data points per completed survey/interview/visit are being submitted, processed and analyzed in preparation for client report production. The study is being conducted with utility officials from around the world. Reports will begin being published in late August.



Available Soon

In 1997, Newton-Evans Research Company conducted its first extensive multi-client research program providing a clear view of the worldwide substation automation marketplace among electric utilities. Since that time, Newton-Evans has revisited the topic of substation automation, gathering data from electric utility officials worldwide. ***The Worldwide Market for Substation Automation and Integration Programs in Electric Utilities: 2008-2010*** **will be the fifth time this topic has been investigated by Newton-Evans.**

The study has traditionally surveyed: spending forecasts for new and retrofit substations; protocols used within the substation and from substation to external host/network; obstacles to implementing substation integration (for both new and retrofit substations); levels of automation on current, retrofitted, and new substations; types of equipment that are part of substation-wide automation/integration programs, and more. The number of T&D substations in operation and planned to go on line is also a key issue addressed.

In addition, several new areas of interest have been defined. The 2008-2010 study will report on secondary substations, communication between automated substation systems and other utility systems, information processing "inside the fence," methods of gathering I/O, and utility approaches to purchasing substation automation and integration systems and equipment. **Preliminary findings from the 2008 questionnaire indicate that as many as 88% of utilities in North America already have a substation automation and integration strategy in place; this is up 10% from the 2005 study.**

To order this report, priced at $7,500, please see the order form on the following page. You may place your order by phone (1-800-222-2856), or fax the order form to (1-410-750-7429). Online ordering of this report is available from our website www.newton-evans.com

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This multi-volume study, scheduled to begin in 4th quarter 2008, will look at trends for both North American and international electric utility markets for protective relays and instrumentation for the 2008-2010 time frames.

1 In order to qualify for the benefits stated above, prepayment must be included with pre-order form
2 Questions submitted will need to be reviewed by Newton-Evans Research Company, Inc. for relevance before being committed for use in the survey

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