Newton-Evans Research Company's

MARKET TRENDS DIGEST

for the Computer, Communications, and Controls Industries

Volume 21 WEB SITE: http://www.newton-evans.com First Quarter 2004

The Staff of

NEWTON-EVANS RESEARCH COMPANY

conveys to all our colleagues, clients and friends

Best Wishes

for a Happy and Prosperous Year 2004

The close of year 2003 marks the end of Newton-Evans' 25th anniversary celebration of providing marketing research and planning services and reports on global electric power and energy markets for the control systems and test and measurement equipment industries, as well as for T&D equipment supplier energy investment community. It was a busy time and a successful year for the company.

Over this past year, Newton-Evans released two multiclient report series – 1) The World Market Study of SCADA, EMS and DMS in Electric Utilities: 2003-2005 and 2) The World Market for SCADA Systems in Gas & Oil Pipeline Operations and Gas distribution Utilities: 2003-2005.

A third multiclient report was also published as an update to our 2002 study on performance-based rates and related incentives for U.S. electric utilities.

A fourth report made available in 2003 studied the development of the Mediterranean regional interconnection efforts.

Various subjects were researched on a proprietary basis during 2003. Market and product-related topics researched included: circuit breakers, HV transmission equipment and services, power quality/voltage quality, underground switches, overhead switches, business drivers in electric utilities, substation test instrument equipment, LON works, RTU security devices, IT outsourcing in the ISO/RTO/ITC community, and transformer management services. Energy technology usage patterns in several world regions were also studied. Several of these topics will be discussed in this issue of M.T.D.

Loretta Smolenski

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700 Million Dollars Earmarked for Pipeline SCADA & Related Control Systems during the 2003-2005 Period

In fourth quarter 2003, Newton-Evans Research released the final volumes of its new three volume series of reports on the status and outlook for supervisory control and data acquisition (SCADA) systems used in the oil and gas transmission pipeline industry and in gas distribution utilities.

The study includes information gleaned from surveys and usage profiles of more than 165 transmission pipeline operations and gas utilities in 21 countries.

Volume 1, the Global Summary of Research Findings, found a continuing slow growth market for pipeline control systems spending. The report suggests that many pipeline control center operations teams are doing more with less, and simply adding required new applications and modifications to older, existing platforms. Pipeline operations centers are ahead of their counterparts in the electric utility industry when it comes to spending for cyber security safeguards.

The survey-based report includes findings on new purchase plans, RTU and PLC usage, warranty and service agreements, suppliers likely to be considered, cyber security threat reduction approaches, pipeline operational dependency on SCADA, type of compressors in use, and methods of billing for pipeline transportation services.

Volume 2, the Global Market Outlook, forecasts spending for pipeline control center-based systems and technology to increase at a five-to-ten percent average annual growth rate over the three year forecast period. Today's global market for pipeline SCADA in the oil and gas industry is approaching $220 million per year, exclusive of related spending on control center sites themselves, or related GIS systems or recurring SCADA telemetry costs.

Volume 3 profiles leading suppliers of SCADA and related control systems, software and related field equipment to the oil and gas pipeline industry. The volume contains profiles of about 20 companies active in the pipeline SCADA market, and account for the majority of industry sales worldwide.

Following are some highlights of findings discussed in the Newton-Evans' reports.

The consensus among industry participants interviewed by Newton-Evans, is that about 75% of the world's operating pipelines more than 25 kilo-meters in length are controlled by computer-based SCADA. These few thousand systems include as many as 65,000-70,000 remote terminal units and plc's installed to provide local data acquisition.

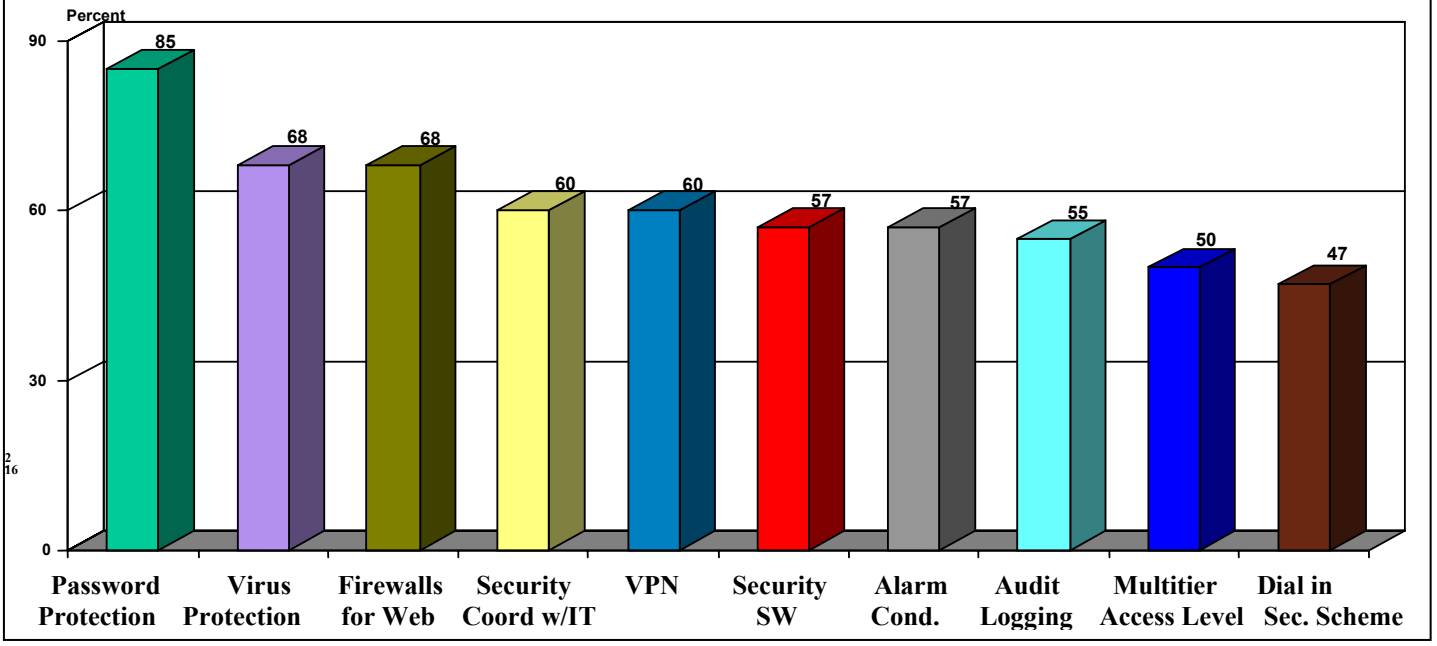
Fewer than 200 pipeline-operating companies control the operations of more than 750 major world pipelines. An additional 8,000-11,000 oil and gas pipelines are owned and operated by 3,000 to 4,000 smaller companies (separate corporate identities). The trend in late 2003 is toward further consolidation among pipeline operations.

SCADA systems penetration in the world's currently operating pipelines is significant. The market is "mature" at least to the extent of having basic controls, remote data acquisition, and centralized computer-based systems in place in the majority (e.g., 75%-95%) of important pipelines, and controlling and monitoring perhaps as much as 50-60% of smaller pipelines. This trend to already be operating with SCADA is without regard to geographic location of the pipeline. Developing nations are as likely as industrialized states to use SCADA technologies

Many pipeline operators have implemented multiple approaches for reducing vulnerability on their control networks. Figure 1 on the next page indicates that, on average, 5 of the 10 approaches have been adopted by pipeline control centers. Password protection, virus protection and firewalls have been implemented in more then two-thirds of this study's participants.

This report series is available in print format, CD-ROM, and by e-mail.

Figure 1
Use of Approaches for Reducing Vulnerability on Operational Networks in the Pipeline



Survey Participation Aids Charitable Organizations

In 2003, for participating in four Newton-Evans research projects, respondents were offered the option of Newton-Evans sending a donation to a specific charitable organization. For the U.S., more than $600 was sent to the American Red Cross. Internationally, total offerings of $1,400 were made to UNICEF and the International Red Cross.

Over the past five years, more than $7,000 has been donated to charitable organizations by Newton-Evans on behalf of survey respondents.

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MARKET TRENDS DIGEST (ISSN 0891-037). Newton-Evans Research Company, Inc. publishes *MTD* for the applied technology industries, utilities, and energy companies. Editor: Loretta Smolenski. For further information, phone or write to Newton-Evans Research Company, 10176 Baltimore National Pike, Suite 204, Ellicott City, MD 21042. Telephone (410) 465-7316. E-mail us at lsmolenski@newton-evans.com. Please visit our website at: www.newton-evans.com.

Newton-Evans' Participation at Conferences and Meetings… "*On The Road Again*"…

In 2003, Newton-Evans was represented at energy industry conferences here and abroad. In January, Chuck Newton spoke to the DNP 3.0 User Group at DistribuTECH on the topic of the pivotal role of DNP in the electric power control systems communications world. In April, Chuck traveled to Austin for the ENTELEC Conference, giving a talk on pipeline SCADA and cyber security concerns.

Newton-Evans then participated in the CIRED sessions, a major international T&D and related automation conference and exposition for the world, held in Barcelona last May. In July, Chuck traveled to Rome to participate in the Eurelectric conference on the Mediterranean Ring project.

In September, San Diego hosted the REMOTE 2003 Conference, where Chuck spoke on the topic of SCADA security issues for the electric and energy pipeline industries. In October, Newton-Evans' European regional office participated in the LONWORLD conference, held in Munich.

The year 2004 promises to be another exciting year, with one or more staff attending or actively participating by speaking or exhibiting at conferences, including DistribuTECH (Orlando) and EP 2004 (Baltimore), early in the year. In mid-April, ENTELEC will be held in San Antonio. The Utilities Telecom Council's annual UTC Expo and conference will be in Nashville this year (May).

With a Newton-Evans study of wind power SCADA requirements now underway, the company will be attending the Global WINDPOWER 2004 Conference in the windy city of Chicago in March. In June, the staff will be at the IEEE Power Engineering Society's Annual Meeting in Denver, with an eye toward participating in October in this organization's Conference/Exhibition in NYC.

In late August, the biannual CIGRE conference will be held in Paris, and Newton-Evans will attend for the fifth straight time. Shanghai will be the host city for the CEPSI Conference for the Southeast and East Asian power industry (October).

The AGA Operations Conference will take place in Chicago in late May, while the AWWA/WEF Information Management and Technology Conference will be held near us in Baltimore in April. Newton-Evans will also attend both of these.

(Note: See trade events on .www.newton-evans.com for a listing of upcoming conferences .)

All in all, a busy 2003 and promises of the same for the coming year . . . *on the road again!!*

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August 14, 2003 . . The Great Northeast *BLACKOUT!!* – The real cause!

Inadequate tree trimming? NERC methods and procedures not being followe? Contingency analysis applications on the energy management system not working as designed? Situational visualization tools not available to systems operators? Lack of coordination between neighboring utilities and at the ISO/RTO level? Failure to adopt phasor measurement techniques in the East?

Certainly, one or all of these can be pointed to as "immediate causes" of the August 2003 Northeastern U.S. blackout. However, the real problem with electric power delivery reliability in the U.S. goes much deeper than that. The root cause is the collective failure of senior public sector policy-makers/regulators and public/ private sector utility executives to recognize the need to continually invest in the energy grid's infrastructure, and the failure to think through the electric power deregulation process on a national level.

We have been in an era of *disinvestment* for transmission and distribution equipment and services for a decade now. The two key areas of utility investment, capital spending and O&M spending, have both dropped on a real and relative basis. Industry R&D investments in T&D have dropped precipitously over the same period. Just last February, Newton-Evans published an article in MTD warning on the seeming lack of utility interest in T&D automation, as well as noting the alarming drop-off in basic infrastructure spending.

How can we change this attitude prevalent among many electric power delivery business managers trained to evaluate investments based on *return on investment,* when the real return is not financial, but better customer service and more adequate and reliable power delivery?

Most engineering and operations officials in the power delivery industry realize this dilemma. They understand the need to continually reinvest in grid-related infrastructure and related automation and remote asset monitoring and control developments. This is especially the case for power delivery businesses and utilities in which the grid is being operated all day every day, sometimes below design limits, but more often operated with not much concern given to operating limits as in the past, in this brave new (***but poorly thought out and poorly executed)*** world of the modern electric power industry. The accumulative effects on our HV lines, power transformers and switchgear will assuredly cause more outages in heretofore reliable power flow through regional grid structures.

When the more than 80 topical areas related to T&D investments that have been researched by

Newton-Evans Research on both a multi-client and proprietary bases over the past few years are put on the table, it is clear that the country is falling woefully behind on its need to re-invest in grid-related equipment, technology and services. On the other hand, we cannot develop a national grid from scratch, nor must we throw billions of dollars at the "problem" to resolve the current situation.

So far, the events of August 14, 2003 have not resulted in significant increases in investments for either O&M or capital spending outlook for the T&D area, at least not when we look at the results from our own research programs. Once again, we urge technical managers and officials in the power delivery industry to take the bold step of wearing their business hats along with their engineering and operations hats. Individual utilities and power delivery businesses do not need to wait for a federal mandate to move ahead with improving the reliability of their own piece of the grid. It would be nice to have a clear statement of policy on deregulation at the generation, transmission and retail levels to move investment decisions along. Pipes and wires companies must push ahead on their own for now, but must also be assured that their distribution grid investments today will somehow be compensated in the coming years.

We cannot hope to make a smooth transition into a workable regional set of grids (let alone a nationwide grid) without the active participation of technically knowledgeable officials. We cannot much longer endure the ambiguity, uncertainty and lack of insight of upper management in many electric power delivery businesses and utilities, who seem to be more concerned with what Wall Street will think of their decisions, in the short term, rather than doing what is needed for the business for the long-term. This extends to the benefits such re-investments into the company's T&D assets and infrastructure will have on the community, region and the country.

Chuck Newton

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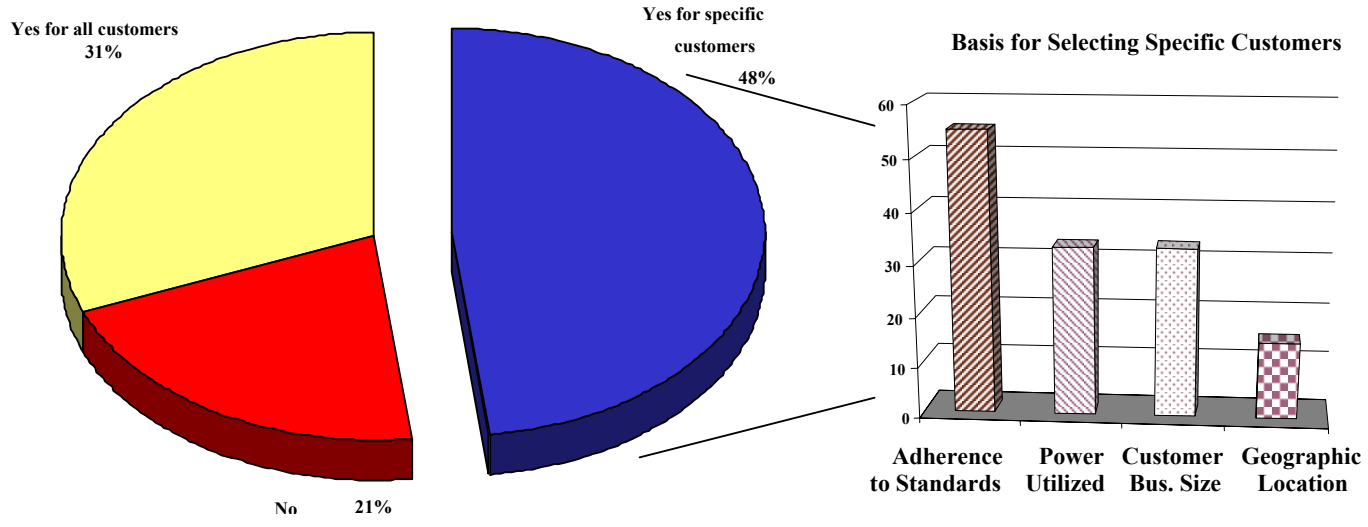
Utility Investment in Power Quality/Voltage Quality at Customer Sites

Figure 2
Investment in Solutions to Enhance
Power Quality/Voltage Quality at Customer Premises



Utility Investment in PQ/VQ at Customer Sites (continued from Figure 2 on page 5) .

In a recent Newton-Evans study regarding power quality and voltage quality issues in U.S. electric utilities, respondents were asked if their respective companies had invested in solutions to enhance PQ/VP at customer premises.

Of 83 electric utility officials replying, an 8 in 10 rate made PQ/VQ investments for at least some of their customers. Nearly one-third said that they work with all customers having PQ/VQ problems, and nearly one-half indicated that their utilities do so for at least specific customers having such problems. See Figure 2.

Variations can be found in these responses based on the type of utility responding. Thirteen percent of IOUs indicated that they would invest in VQ/PQ solutions for all customers; however, this percentage jumped dramatically for the other three segments (munis, other public power and rural cooperatives). IOUs were also more likely to limit their investments to specific customers.

The subset of utilities indicating that they make investments for specific customers was asked for their customer selection basis. Fifty-five percent indicated "adherence to applicable standards." One third stated that "the amount of power utilized" and/or "customer's business size" were factors, and 15% cited "customer's geographic location."

Market Study Depicts the Global Outlook for Control Center-Based Systems Used by Electric Power Utilities

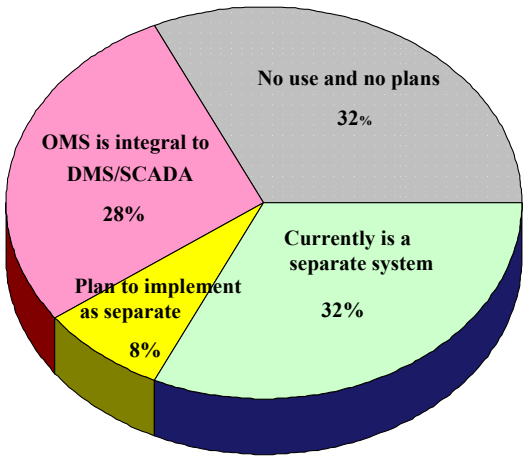
In November 2003, Newton-Evans Research released the final volume of its new five volume series of reports on the status and outlook for energy management systems, SCADA systems and distribution management systems. The study includes information gleaned from surveys of more than 350 utilities located in 37 countries, as well as from related Newton-Evans studies of information technology usage trends in electric power operations. This new study increases Newton-Evans' extensive control center installation database to include profile information on more than 1,500 electric power utilities in more than 110 countries.

Volume 1, the North American study, found a continuing stagnating market for control systems spending. In spite of the recent major outages plaguing the nation and several international locations over the past four years, capital spending among U.S. and Canadian electric utilities has fallen, and O&M spending remains flat. The report does note that many utility control center operations teams are doing more with less, and simply adding required new applications and modifications to older, existing platforms.

Volume 2, the international market study, has found that mature Western and Asian economies are also suffering from a lack of reinvestment in electricity infrastructure, while developing nations are finding sources of funding to proceed with development of large national or regional power control centers.

One topic covered in the international volume concerned current and planned use of a separate outage management system (OMS) or a separate generation management system (GMS) by 2005.

Figure 3
Current/Planned Use of
Separate Outage Management Systems (OMS)



Outage Management System - Nearly one-third of the respondents indicated that their utilities had already installed an outage management system separate from the SCADA system. Another eight percent were planning to install a separate OMS, and 28% indicated that OMS is integral to DMS/SCADA and would remain "joined." See Figure 3.

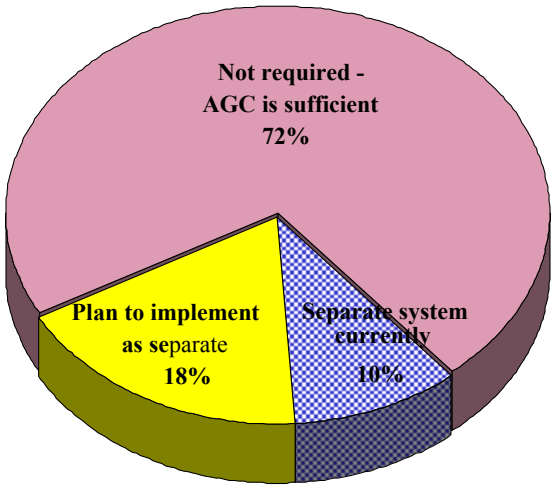
The largest international utilities were more apt to have implemented a separate OMS, while mid-size utilities were most likely to plan on doing so.

Asia Pacific utilities were more likely than their counterparts elsewhere to have implemented a separate OMS system, while the rest of world areas were more likely to indicate that OMS is integral to DMS/SCADA.

Generation Management System - Four respondents noted having a separate generation management system (GMS) by mid-2003, and seven others (18%) indicated plans to implement a separate GMS. More than 70% of the respondents suggested that automatic generation control software operating as part of an EMS or SCADA system was sufficient, and a separate GMS was not required. See Figure 4.

Some respondents, notably from India and Colombia, indicated that GMS was integral to EMS/SCADA systems.

Figure 4
Current/Planned Use of
Separate Generation Management Systems (GMS)



In the previous issue of M.T.D., one topic discussed related to the importance of North American electric utility participation in supplier user groups. This question regarding the importance of supplier user groups for upcoming EMS/SCADA/DMS procurements was also posed to the international respondents. Thirty-two percent of the North American participants considered user groups as very important, and 52% noted these groups were somewhat important. Forty-seven percent of the international participants responded that user groups would be considered as very important for their next EMS/SCADA/DMS procurement. An additional 43% noted these groups would be somewhat important.

The three regional groupings (Europe, Asia Pacific, and the rest of the word) in the international report each had similar response ranges of about 90% or so indicating moderate or very important roles for user groups.

Volume 3, the Global Market Outlook, forecasts spending for control center-based systems and technology to pick up, albeit slowly over the three year forecast period. Today's global market for EMS, SCADA and distribution management systems is approaching $ 600 million per year. The related market outlook for operational IT systems used by power exchanges and for control systems used by the developing group of regional transmission operators and independent systems operators being established around the world is also covered in Volume 3.

Volume 4 is a report profiling suppliers of control systems, software and related field equipment to the electric utility marketplace. This year's study contains profiles of about 20 companies active in this market, and which account for the majority of industry sales.

Volume 5 profiles electric power utilities around the world, providing summary descriptions of their control center systems and plans.

The entire series is available for purchase in print format, CD-ROM and email. Purchase price for all five volumes is $6,000.00. Individual volumes may be also purchased separately. To obtain further information, please call Newton-Evans Research at 1-410 465-7316.

T&D Spending Increases Associated With Development of Performance-Based Rates

As mentioned briefly in the last MTD, in 2003 Newton-Evans completed its newest study of performance-based rates in the electric power distribution utility business.

The report is based on surveys and interviews conducted with public utility commissions (PUC's) of all 50 states and the District of Columbia, and the regulatory/pricing management at 38 investor-owned utilities. These 38 utilities serve more than 25% of all US electricity consumers. Nineteen of the responding utilities have some form of performance based or penalty based rate structure predicated on customer service and/or the performance of their electric distribution system. The issue of performance-based and penalty-based rates (PBR's) can affect more than electric power d*istribution activities*. In fact, PBR's can be applied to electric power generating facilities as well as to power transmission entities such as Regional Transmission Organizations.

The mid-2003 PBR report contains an update from all of the PUC's on the status of PBR's in their states, as well as information on electric deregulation activity. Because Newton-Evans wanted to gain a better understanding of the overall impact PBR's might have on the utilities, a more detailed questionnaire was developed to capture that information in this new report. Interviews were conducted with many of the utilities having some experience with PBR's, as well as leading utilities currently not participating in PBR's, to see if they were considering PBR's in their future plans.

Findings from this study include:

- Unlike federal efforts at generation and transmission levels which very often involve interstate commerce, deregulation at the distribution and retail levels continues to be a "states' rights" issue.

- Several state commissions continue into early 2004 with deregulation decisions put on hold due to a number of factors, including the California experience, the demise of some energy traders, and lack of federal movement at the generation and transmission levels.

- In some states, it has been the utilities themselves that have requested the commissions to rule on development of performance-based rates.

- Utilities operating with performance-based rates have indicated higher rates of T&D investments than those operating without PBR's.

Figure 5
Criteria on Which PBRs Are/Will Be Based