



Newton-Evans Research Company's

# Market Trends Digest

October 2014



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# 2014 Autumn Electric Power Conference Season Well Underway

*Chuck Newton*

For the electric power industry, late summer through mid-autumn brings a number of conferences to the forefront each year or at least every two years. This year is no exception. From the international CIGRE Conference held in Paris every two years, to the annual EMMOS conference and Southeast Distribution Apparatus Conference, there are lessons to be learned and topics of interest to those following industry trends. The CIGRE conference provides information on key electric power developments in transmission and distribution, while EMMOS focuses on large control systems used by utilities and independent systems operators (ISOs). The SDAC offers briefings and training on a variety of power distribution topics, ranging from meter management to control systems to cyber security.



In late August I attended and participated in my 10th CIGRE conference. This year set a new record for attendance (more than 3,000 delegates and another 5,000 visitors) and the number of exhibitors and working group sessions also reached new heights. One of the more interesting observations for me has been to witness the growth in CIGRE participation by utilities and T&D equipment and systems companies from North America. Delegates are either actively volunteering on working groups or doing booth duty for an increasing presence of large-to-small North American companies whose equipment, systems and services are on display in the three floors of exhibitions.

CIGRE is an acronym for the Council on Large Electric Systems, and while the historical role of the council had been focused on transmission level activities, the scope of the council is now expanding to include developments on a variety of power distribution topics.

CIGRE's mission is to produce and disseminate technical information, achieved via two means: (1) conferences held around the world each year, at which technical papers are presented and discussed. (2) Study Committees and their working groups that produce technical brochures, articles and related documents.

CIGRE has four components of its strategies for technical activities looking to the future. These components include:

- The Electrical Power System of the Future: super grids, smart grids...
- Making best use of the existing power system
- Focus on the environment and sustainability
- Communication on power system issues to the audience

CIGRE is organized into 16 Study Committees, which each tackle a specific component of the electric power industry including cables, substations, lines, transformers, HV equipment, HVDC, protection equipment, operations and control, markets, system development, IT, technical performance, the environment, distribution, new materials and testing, and distribution systems. Within each study committees, there are multiple working groups tackling an ever expanding array of topics of interest and concern to the global power community.

Most of the CIGRE-related involvement of Newton-Evans Research over the past decade has been with the design and conduct of pro-bono surveys of cyber-security topics with information gathered from utilities around the world. In the three major surveys conducted by our firm to date (and another now in preparation) utilities in more than 60 countries have participated in at least one of these survey projects. The observations from these studies have assisted in the preparation of WG technical documents.

Importantly, CIGRE working group output does not result in the creation of industry standards, as does the work of the IEEE's Power and Energy Society and the IEC (International Electrotechnical Commission), especially the U.S. involvement of ANSI. However, the technical documents produced by CIGRE study committees offer "best practices" and guidance in line with current standards for power engineering or for those under development.





The annual Energy Management and Market Operations Systems conference was held this year in Albany, New York. While attendance was a bit under 100 delegates, the sessions were extremely informative and vital. The pre-opening tour of the New York ISO control center was perhaps a centerpiece of this year's conference along with the 90 minute roundtable discussion of control systems topics and issues. This year, the DOE's Mike Smith discussed cyber security policy perspectives, following the keynote address given by Wesley Yeomans, VP of Operations at NYISO. Enernex's Doug Housemen provided the audience with a "human look at the 21st century DMS" while PECO Energy's Len Sanelli and Frank Gabrelli gave a behind-the-scenes review of their deployment of an advanced DMS.

Also featured: Discussions on dynamic line rating from NYPA and NEXANS, perspectives on video wall visualization (Activu and NYISO), operational benefits of meter data management systems beyond billing (STRUCTURE and Austin Energy), the outlook for smart grid development (Newton-Evans), Improvements in Grid Operations Using Sub-second State Estimation and Fast Contingency Analysis (PNNL) and a presentation on technology advances in utility scale energy storage (GE). Next year's EMMOS conference will be held in September 2015 in Indianapolis, IN.



Southeastern Distribution Apparatus School and Conference: This is quite a long name for an excellent 300 person technical conference held each autumn at The Hotel at Auburn University, in Auburn, Alabama. This conference gets right down to the information needs of field technicians and linemen as well as the operations and engineering side of the utility. The conference is comprised of four modules including (1) Fundamentals of Distribution System Apparatus; (2) Principles & Applications of Distribution Systems Apparatus; (3) SCADA, Communications and Emerging Technology; and (4) Engineering Topics. This approach provides ample opportunity for learning the basics for new distribution engineers and field technicians as well as updating the knowledge base of senior operations and engineering personnel. Cross-module discussions of spill prevention control and countermeasures, power quality solutions, trends and outlook for generation and transmission were among the presentations of interest to all attendees. The

keynote address on Hurricanes, Power Systems and Climate Adaptations was delivered by Seth Guikema of Johns Hopkins University.

The panel session on cyber security kept everyone on the edge of their seats, with interesting perspectives from Jeff Gaynor, director of the Atlanta chapter of InfraGard (and CEO of American-Resilience), and Scott Mossbrooks, Sales Director with N-Dimension Solutions. As moderator, I brought in the role of the international community's efforts in the fight to keep the lights on throughout the free world.

Here is a listing of some additional CIGRE conferences that may be of interest to our readers:

**CIGRE Regional South-East European Conference**

*8-10 October 2014*

Timisoara, ROMANIA

<http://www.cigre.org/Events/Other-CIGRE-Events/CIGRE-Regional-South-East-European-Conference2>

**3rd International CIGRE Conference on Transformer Research and Asset Management**

*15-17 October, 2014*

Grand Hotel Lav Le Meridian

Split, CROATIA

<http://www.hro-cigre.hr/hrv/3colloquium.aspx>

**U.S. National Committee CIGRE “Grid of the Future” Conference**

*October 18-21, 2014*

Royal Sonesta Hotel

Houston, Texas USA

<http://cigre-usnc.tamu.edu/meetings/grid/>

**CIGRE – GCC Power Conference**

*10-12 November 2014*

Manama, BAHRAIN

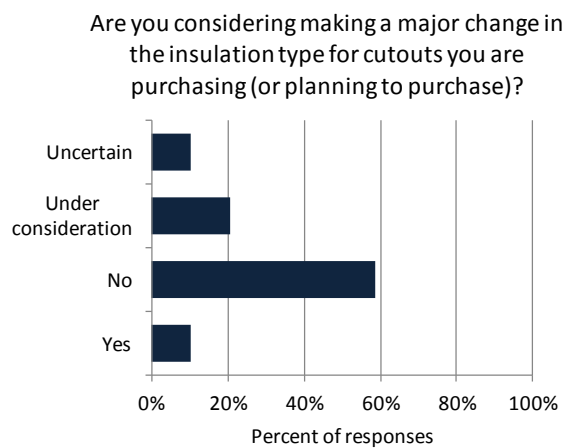
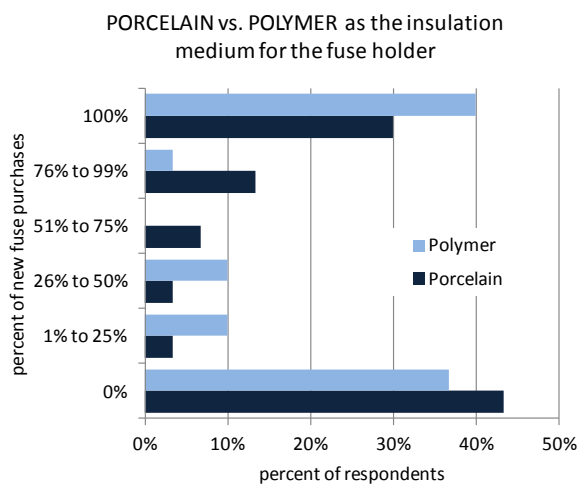
<http://www.cigre-gcc.org/english/next-conferences/>

*To see a comprehensive list of upcoming conferences and trade shows visit our website: [www.newton-evans.com/trade-events](http://www.newton-evans.com/trade-events)*



# U.S. Market for Medium Voltage Fuse Cutouts

A recent survey by Newton-Evans reveals that when it comes to the insulation medium for fuse holders, the trend is to purchase fuses with either all polymer insulation or all porcelain insulation. The results obtained from utilities replying to this question were almost equally divided between those using exclusively or mainly porcelain and those using mostly polymer.



A few respondents to this study said that they are considering changing the type of cutouts they buy, but for the most part, almost 60% of respondents said “No,” no major changes are being made to their purchase plans regarding the type of insulation medium.

Some reasons given for switching to a different type of fuse cutout include:

- 1) porcelain being damaged during transit or installation (a common complaint even according to manufacturers)
- 2) cost is similar and weight of polymer is less than porcelain
- 3) polymer is preferred in wetter coastal environments

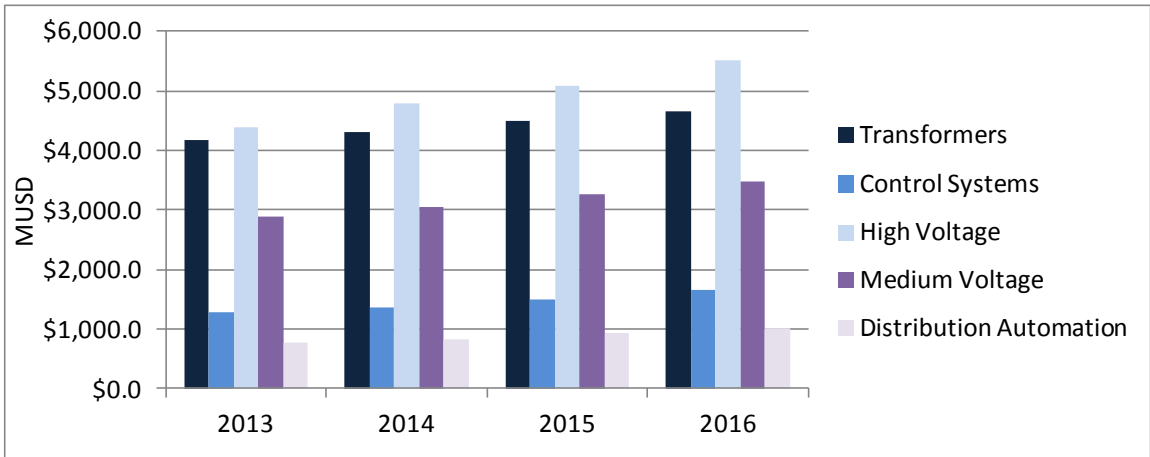


# New Studies From Newton-Evans

Newton-Evans has published updated versions of several U.S. Market Overview series reports including High Voltage and Medium Voltage Equipment and Services, Distribution Automation, Control Systems and Services, and Power and Distribution Transformers.

According to Newton-Evans, the U.S. Market for Distribution Automation field equipment communications components and engineering services will grow to \$922 million by year end 2015, and pass the billion dollar mark in 2016 with a 10% increase over 2014 expectations. Leading components of DA growth include line mounted monitoring devices and DMS system components. Slower growth is anticipated for Medium-Voltage equipment – approximately a 7% increase in 2015 to \$3.2 billion from just over \$3 billion in 2014. Large variances in growth rates among the MV equipment types can be expected.

In the High Voltage equipment marketplace, HV circuit switchers are expected to grow by nearly 9% from 2014 to year end 2015: from \$58 million to \$63 million in the U.S. The market for HV air insulated and gas insulated substations is expected to see similar increases.



To see samples from any of these market overviews or to place an order, visit our reports page: [www.newton-evans.com/our-reports](http://www.newton-evans.com/our-reports)



# North American Distribution Automation Market Study Available January 2015

In the fourth quarter of 2014, Newton-Evans Research plans to revisit the topic of Distribution Automation (DA) by researching the market for DA field devices and the DA applications software used in the control center, the substation, and on lines and poles. The scope of this research project will also include estimates of growth in the communications infrastructure needed to support this increased deployment of DA hardware and software.

## Research Methodology

The study will include several weeks of survey-based research with major and mid-size utilities, requesting their insights regarding DA plans through 2020. This study will also include secondary research to learn about documented plans for DA among North American utilities.

## Scope of Work

Distribution Automation is a wide-ranging system of multiple communications-centric applications that bring the information infrastructure more directly in contact or overlay on the utility's operational distribution network infrastructure. Market estimates and forecasts will be presented for the following main categories:

- Control Center Based DA Software and Platforms
- Substation Based DA Software and Platforms
- DA Controllers (switch controllers, cap bank controllers, voltage regulator controllers)
- Telecommunication Infrastructure for DA
- Field-Based DA Equipment (poletop RTUs, line monitors, switches, cap banks, line reclosers, voltage regulators)

A detailed market analysis will be provided in this report, and it will address such questions as:

- What are the factors driving utilities to automate at the distribution network level?
- What product ranges constitute the DA marketplace?
- Who are the major participants in the DA marketplace?
- What are the market sizes and trends for DA field equipment shipments?
- What are the market sizes and trends for the distribution management systems (both DMS and D-SCADA) that support the DA field equipment?



Our previous edition of this study, *Distribution Automation: Trends, Developments and Retrospectives: A Mid-2010 View*, estimated total DA market growth at \$700 million between 2011 and 2018. Smart Field-based equipment constitutes the bulk of the market, followed by a growing demand for DA controllers. Smart Field-based equipment is a category that includes RTUs, Pole-Top Switches, Line Reclosers, Sectionalizers, Fault Interrupters, Capacitors, Overhead Switchgear, and Distribution Transformers. The updated report (available in December 2014) will take a fresh look at the North American market for DA products and services out to 2020.

### Definition of DA

In the view of Newton-Evans Research Company, DA is not an application per se, but a system of multiple communications-centric applications that bring the information infrastructure more directly in contact or overlay on the utility's operational distribution infrastructure providing monitoring and control over the distribution network. Newton-Evans views DA as being the sum of all field-based intelligent electronic components of a comprehensive Distribution Management Systems, or DMS.

Each side (DA and DMS) needs the other component to be successful and to pave the way to a truly smart distribution grid. The new generation of DA activities and applications is broad-based, incorporating sensor-based technology, multiple types of intelligent electronic devices deployed along feeders and perhaps into customer premises, wave-form analysis, strong communications security measures, and significant increases in information processing capability. In the Newton-Evans report, the reader will see the "explosion" of a new generation of IED's beyond the substation fence down to the customer premises. These new applications are based on information handling, processing and storage of large quantities of bulk data – in many ways, analogous to the development and implications of advanced metering infrastructure.

### Invitation to participate

Those who subscribe to this study prior to October 17<sup>th</sup> will get an opportunity to preview the survey and submit topics for consideration in the field survey. Pre-publication subscriptions are available for \$2,750.00. If you are interested in subscribing early, call us at 1 800 222 2856 or send an email to [info@newton-evans.com](mailto:info@newton-evans.com).

*See our reports page for topic listings and pricing details, and be sure to send us an email at [info@newton-evans.com](mailto:info@newton-evans.com) or call 1 800 222 2856 to place your order.*



# **Coming Soon in the Fourth Quarter Edition of Market Trends Digest**

## **Schneider Electric: Moving Up the Electric Power “Food Chain”**

Schneider Electric has been a mainstay for decades in the manufacturing of medium and low voltage equipment, products, devices and the provision of equipment-related services. Already in 2014, the company has made two major software/systems acquisitions of leading firms active in the electric power industry as well as in manufacturing sectors. These leading firms include Invensys and, in late September, InStep Software. These acquisitions will help the company provide additional grid modernization solutions to its growing base of utility and industrial customers around the world. Our analysis of what the spate of recent acquisitions will mean for Schneider Electric, for its customers and for competitors alike.

## **Initial Observations from the 2015-2020 Study of Distribution Automation**

This major study will include the efforts underway at all types and sizes of electric power utilities throughout North America. One of the key issues included will be a synopsis of the various approaches taken for placing monitoring and control of field automation devices.

## **Initial Observations on the CIGRE Cyber Security Study**

Newton-Evans is preparing to conduct an international survey on behalf of CIGRE WG D2.38. The survey will be used to assist in the working group’s development of a technical brochure to be entitled: A framework for EPU (electric power utility) operators to manage the response to a cyber-initiated threat to their critical infrastructure. We will share some top-level observations with our readers.