



THE Breaker Buzz

Providing Electrical Solutions Worldwide VOL IV

MAY 2013

New CBA App Simplifies Vibration Analysis, Preventive Maintenance

iPod/iPhone application captures vibration signatures from working circuit breakers to provide quantifiable data for computerized maintenance management systems.

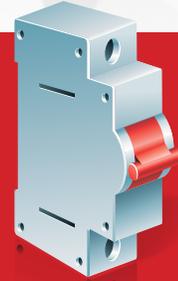
By Finley Ledbetter, Group CBS

CIRCUIT BREAKER ANALYZER Inc. is proud to introduce the world's first application for iPhone or iPod capable of capturing vibration signatures from working circuit breakers to provide quantifiable data for computerized maintenance management systems (CMMS) and other preventive maintenance programs.

"Most circuit breaker failures are due to mechanical failures," explains Finley Ledbetter, president of GroupCBS and Circuit Breaker Analyzer Inc. "Today, industrial circuit breakers are tested using time-travel analysis [TTA] and visual-mechanical inspections [VMI]. However, these tests



take considerable downtime and expense, increase breaker wear, and put the technician at risk of arc flash. Now, with an iPhone or iPod running the Circuit Breaker Analyzer application, maintenance personnel of any



INSIDE THIS ISSUE

CBS Acquires Federal Pacific Equipment

Acquisition includes equipment and technical documents similar to ITE acquisition in 2007, making Circuit Breaker Sales one of the United States' largest repositories of drawings, manuals, and engineering documentation for legacy industrial electrical equipment. By Bill Schofield, Circuit Breaker Sales



CIRCUIT BREAKER SALES Co. Inc. (CBS, www.circuitbreaker.com), a leading provider of new and used circuit breakers, switchgear, and related components, is pleased to announce its acquisition of Federal Pacific Equipment Inc. (FPE, www.fpeparts.com) of Brick, N.J.

In addition to numerous parts, components, and inventory, Circuit Breaker Sales also acquired the company's technical and historical libraries. "By adding Federal Pacific Equipment's technical library to

THE VIEW FROM FLIGHT LEVEL 410

By *Finley Ledbetter*, CEO, Group CBS

Group CBS: The Strength of Many. The Power of One.



Group CBS (GCBS) companies help each customer independently while offering the electrical industry a level of service that can only be achieved by bringing together 16 different electrical companies with dozens of facilities across the U.S.

AS I WRITE this entry into the beloved Breaker Buzz, there are many important happenings taking place around GCBS companies. We've launched several groundbreaking new products, including the first portable vacuum bottle test system and the electrical industry's first mobile app for testing electrical and industrial equipment. We've added some new talent and continue to expand our facilities to meet growing demand. So let's dig in.

Join the Party

Circuit Breaker Sales & Repair (CBS&R) recently held its annual open house. Hundreds of vendors and customers came together for a day of food, friendship, and learning as we re-introduced CBS&R to our local area, showed off the plans for CBS&R's new 10,000-square-foot addition and facelift, and shared several important products available through GCBS companies. These products include new remote racking systems from CBS ArcSafe, CBS MagVac magnetic-latching breakers for high-duty cycle applications, the world's first Circuit Breaker Analyzer (CBA) app for smart phones, and the electrical industry's first test system for field or shop use that can predict the remaining lifetime of vacuum interrupters (magnetron atmospheric condition, or MAC, testing).

Yours truly and GCBS engineers have spent years of sweat developing these

recent product launches. It's been one of the most exhausting and exciting periods of my professional career. And while I'm looking forward to a little downtime (at some point, I keep promising myself...), the positive feedback we're getting from customers makes it all worth it. There's a deep satisfaction that comes from bringing new products to an industry that has changed all of our lives for the better in so many ways.

One other important mention about CBS&R: Bill Stephens has assumed the role of president and will help lead and expand the outstanding growth CBS&R

“There's a deep satisfaction that comes from bringing new products to an industry that has changed all of our lives for the better in so many ways.”

has experienced the last several years in the Houston area. I hope you all can tell Bill “congrats” next time you see him. I have no doubt that in the very near future CBS&R will assume its spot as one of the POWERHOUSES that drive GCBS.

CBA, Apple Store, and Natalie Berg

As I write this column, the Circuit Breaker Analyzer app just went live on the Apple App Store. Amazing. You wouldn't believe the effort it took to develop, position, and sell the electrical industry's first testing application and

get it up on the world's largest mobile app store. Of course, one achievement is a doorway to another project, so we're already working on the next version of CBA, which will be a PC Windows-based program so everyone can benefit from this important development regardless of what phone or computer they use.

Finally, I hope you all will join me in welcoming Natalie Berg as the new operations manager for CBA. Natalie will work out of the Dallas office. Some of her first projects will be to continue building the marketing and customer support network for CBA. If you're

reading this as a CBS company, you can expect to meet Natalie very soon as she visits each GCBS company and becomes familiar with our group.

Make the Most of Summer

There aren't too many certainties in life. But as I grow older, I can think of two: At some point, we'll all wish we had better health and had saved more money. So as summer approaches, why don't we all take a few minutes each day to work on both? Our kids will thank us, that's for sure.

As I bring this column to a close,

I'd like to share a few more thoughts about my opening title and how, like the United States of America, GCBS is made up of strong individuals who come together to be something even more powerful. As most of you know, Group CBS employs several hundred individuals. During the 30 years that we have acquired and grown GCBS, my partner, Ray, and I have tried to let each company keep its individual personality without pushing anyone to conform to a certain look or operational style. We have tried to not push any ideas that we were not asked for. When GCBS companies needed financing to expand, new equipment, or a business service to grow, GCBS has been there every time.

Apparently, this management method has worked. Around the group, GCBS companies are firing on all cylinders with average sales ahead of last year. Activity is up, and prospects going forward seem favorable in all markets.

At the same time, the depth of our group, including all GCBS companies, is opening up new markets and customers to us. Our challenge going forward will be to continue allowing our companies to build on their individual successes while using the power of the group to better serve ALL of our customers' needs — whether they're a billion-dollar processing plant or small manufacturer.

But let's remember, our lives are about more than the customers we serve and the solutions we develop. Take a moment each day — and encourage your fellow workers to do the same — to work on your health and personal future.

And, of course, take a moment to thank the stars (in advance) for giving us yet another Super Bowl victory. Go Cowboys! 

CBA App Named 'Most Innovative' Product at PowerTest 2013

Circuit Breaker Analyzer, the world's first iPod/iPhone-based application for testing circuit breaker performance based on vibration analysis, won the "Most Innovative" new product award at the PowerTest 2013 electrical maintenance conference and exhibition held in New Orleans, February 18-21. **By Ashley Ledbetter McWhorter, CBS ArcSafe**



Finley Ledbetter receives the new product award on behalf of Group CBS.

A MAJORITY OF the 400 attendees at this year's PowerTest 2013 event, which is organized by the InterNational Electrical Testing Association (NETA), voted to give the Circuit Breaker Analyzer the award based on the technical presentation given by co-developer and president of Group CBS, Finley Ledbetter.

"We're honored to be chosen by the PowerTest 2013 attendees for this prestigious award," Ledbetter says. "It's a privilege to be recognized by your peers for hard work. But while I was able to give the presentation, this award is really a reflection of the incredible commitment and expertise of our engineering team and everyone at Group CBS and Circuit Breaker Analyzer."

Using the accelerometer inside every iPhone, new-model iPod, and select industrial handheld tablets, the award-winning Circuit Breaker Analyzer captures vibration data in all three axes as well as across time. By comparing the newly acquired vibration signature to a database of more than 200 known good profiles (KGPs) and/or the vibration signature of the breaker's "first trip" operation, pattern-recognition algorithms can determine when changes in the "envelope" or shape of the vibration signature indicate a hidden mechanical problem that eventually will lead to breaker failure if left unchecked.

The Circuit Breaker Analyzer is designed for use by technicians with any level of experience and costs a fraction of standard electrical test equipment. For more information, please visit www.cbanalyzer.com, e-mail info@CBAnalyzer.com, or call (972) 250-2500. 

Avoid Vacuum Interrupter Failure Due to Salt Water Exposure

Electrical equipment exposed to water can be extremely dangerous if re-energized without proper reconditioning or replacement. Reductions in integrity of electrical insulation due to moisture, debris lodged in the equipment components, and other factors can damage electrical equipment by affecting its ability to perform its intended function. Ocean water and salt spray can be particularly damaging due to the corrosive and conductive nature of the salt water residue. ^[1] By Julia Neves, Vacuum Interrupters, Inc.

VACUUM INTERRUPTERS ARE designed with metal bellows to allow movement of one of the two contacts. Typically, these bellows are made of an austenitic stainless steel and have a thickness of only a few thousandths of an inch. Under ideal conditions, the mechanical life of the bellows can range from 10,000 operations for vacuum circuit breakers and reclosers to 10⁶ operations in vacuum contactors. However, there are numerous factors that can severely reduce the mechanical life of the bellows, including corrosion caused by exposure to salt water.

Stainless steels are alloys that contain no less than 10.5 percent chromium. The chromium reacts with oxygen to form a passive film that is about 130 by 10⁻¹⁰ meters in thickness. This thickness is thousands of times thinner than a human hair.

The passive film is self-healing. That is, chemical reactions that cause corrosion in other materials do not damage the stainless steel because the chromium chemically protects it. As long as there is a sufficient oxygen supply, the passive film protects the steel from corrosion.

The chlorides and salt in seawater attack the passive film. If the stainless steel object is submerged or wet from salt water, there is little oxygen between the moisture and the passive film. Consequently, the passive film cannot reform quickly enough, and the steel

will corrode.

All of the stainless steels except the best of the specialty alloys will suffer from pitting or crevice corrosion when immersed in seawater.

One of the best 300-series stainless steels is type 316. Even this alloy will, if unprotected, start corroding under soft washers, in o-ring grooves, or in any other tight crevice area in as little as one day, and it is not unusual to have penetration of a tenth of an inch in a crevice area after only 30 days in seawater. If water flows fast past a stainless steel, more oxygen is delivered to the stainless steel and it corrodes less. For



Figure 1: Cutaway drawing of vacuum interrupter bellows

this reason, stainless steels have been successfully used for impeller blades and propellers. These need to be protected from corrosion when there is no flow. Corrosion in stainless steel bellows comes in two main forms: galvanic and chloride corrosion. Galvanic corrosion occurs as a result of two dissimilar metals being in contact with each other in a conducting, corrosive environment ^[2]. For example, the stainless steel bellows and copper-based brazing material in a vacuum

interrupter will experience galvanic corrosion after being exposed to salt water. Galvanic corrosion is observed as pitting in the materials. The driving force of galvanic corrosion is the differential voltage between the two materials.

When exposed to environments with chloride ions, such as coastal air, salt water, chemicals used for cleaning, and lubricants, stress corrosion cracking can occur in stainless steels as a result of chloride corrosion. Regardless of the

Figure 2: Galvanic corrosion in stainless steel bellows



type of corrosion, the mechanical life of the bellows in a vacuum interrupter is severely reduced when corrosion occurs.

Failure of the bellows in a vacuum interrupter will result in loss of vacuum. Without a proper vacuum, a vacuum interrupter will not be able to properly insulate the applied voltage, possibly resulting in catastrophic failure. If vacuum circuit breakers have been exposed to salt water, whether partially or fully, the mechanism should be properly reconditioned or preferably replaced. 

^[1] National Electrical Manufacturers Association, "Guidelines for Handling Water-Damaged Electrical Equipment," 2005.

^[2] American Society of Testing and Materials, "Galvanic Corrosion," H.P.Hack, Ed., Ann Arbor: ASTM International, 1988.

Magnetic-Latching Circuit Breakers Reduce Petroleum Pipeline Maintenance

Drivers in Manhattan may not ever realize it, but they owe a little horsepower appreciation to Colonial Pipeline's lead technician, Kevin Holland, and a new type of medium-voltage circuit breaker. **By Lee Heine, Circuit Breaker Sales & Repair**



COLONIAL PIPELINE (Alpharetta, Ga.) operates a petroleum pipeline from Texas's gulf shores to New York Harbor with a control and distribution center in Pasadena, Texas. Westinghouse DH air breakers made in the 1960s and '70s were used to help control critical systems. In the 1990s, the breakers were retrofitted with then state-of-the-art compact vacuum interrupter technology but retained their spring-charged mechanisms. Today, the heavy-duty operational cycles for these vacuum breakers have led to a maintenance nightmare.

"We were having a lot of nuisance alarms and maintenance calls on the retrofitted breakers," Holland says. "Even with the retrofits, the breakers still had a lot of moving parts: springs, clamps, shafts, switches ... hundreds of moving parts. It was a major effort to keep all these parts working happily together."

At the end of 2011, Holland started looking for replacement breakers and turned to his longtime supplier, Lee Heine of Circuit Breaker Sales & Repair Inc. (Deer Park, Texas), for suggestions. Heine mentioned his company's



"In the 1980s and '90s, tens of thousands of air breakers were retrofitted to vacuum, but no one addressed the electro-mechanical operating mechanisms with all of their parts and problems."

new line of magnetic-latching medium-voltage breakers called MagVac. The MagVac design replaces more than 100 moving parts with a magnetic-latching linear actuator that greatly simplifies the vacuum breaker's operation. Holland reasoned that fewer moving parts meant fewer chances for failure, so he installed three of the MagVac breakers.

Thanks to an innovative, simple, and robust design, MagVac medium-voltage breakers are guaranteed for 30,000 operations or five years, which is unprecedented in medium-voltage circuit breaker product lines. "In the 1980s and '90s, tens of thousands of air breakers were retrofitted to vacuum, but no one addressed the electro-mechanical operating mechanisms with all of their parts and problems," Heine says. "The problem is particularly bad for installations that have high operational cycles."

Adds Holland, "The proof is in their performance. We're submitting a requisition for more of the MagVac breakers this week."

For more information, contact Lee Heine at lheine@GroupCBS.com or (281) 479-4555. 

New 3D Printer Helps CBS ArcSafe Test and Perfect New Designs

Rapid prototyping using a new desktop 3D printer is helping CBS ArcSafe engineers test and perfect complicated designs for their circuit breaker remote racking and switching systems much faster and more cost-effectively. **By David Walterscheid, BSME, CBS ArcSafe**

IN JANUARY 2013, CBS ArcSafe began using the MakerBot® Replicator™ 2 Desktop 3D Printer, a fabrication tool that takes 3D design files and easily transforms them into high-quality prototypes from strands of melted, eco-friendly bioplastic filament.

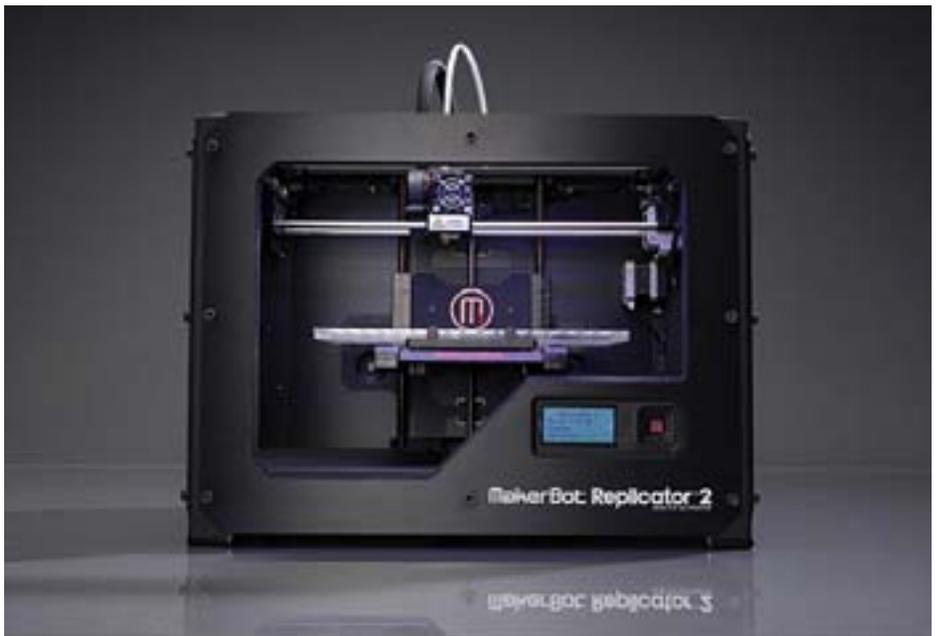
“The 3D printer allows us to cut prototyping costs from as much as several hundred dollars for an individual machined part to less than \$10 for a 3D-printed part in some cases, while also giving us the flexibility to meet our complex and frequently changing manufacturing needs,” says CBS ArcSafe Vice President David Walterscheid. “It also provides us with the capability to design and build complex welded assemblies, print them out as a single 3D-printed part, and then use that part to aid in building jigs for the final welded assemblies.”

Before the arrival of the new desktop 3D printer, CBS ArcSafe performed the CAD work in-house and often sent the digital drawings to a vendor who would then make the prototype part. According to Walterscheid, this prototyping method was more time-consuming because it often required multiple rounds of testing to get the part exactly right. “Sometimes that made it difficult to get products out the door on time,” he says.

Along with CBS ArcSafe, Circuit Breaker Sales in Gainesville, Texas, has purchased and is currently utilizing the capabilities of a desktop 3D printer. Walterscheid believes that other Group



A new rapid prototyping device will allow CBS ArcSafe to help speed development of new products.



CBS affiliates could benefit from the capabilities and cost savings that desktop 3D printing provides.

“It boils down to cost and time,” he explains. “Desktop 3D printing is a relatively new technology, and we’re still getting used to having the added capabilities it enables. But it’s been great to have access to an innovative, easy-to-use, and affordable rapid-prototyping machine.”

Based in Denton, Texas, CBS ArcSafe develops circuit breaker remote racking and switching systems for a majority

of OEM electrical equipment, allowing technicians to be stationed up to 300 feet away during operation — virtually eliminating the possibility of injury or death during an arc flash explosion. The company currently offers more than 200 different products that vary from having as few as three or four manufactured parts to as many as 25 to 30 manufactured parts. Many of these are unique, complicated designs.

Visit www.cbsarcsafe.com to learn more or call (877) 4-SAFETY. 

Group CBS Affiliates Receive ISO Quality and Environmental Management Certifications

Following an in-depth audit and review process, Circuit Breaker Sales recently was granted another year of ISO 9001:2008 and ISO 14001:2004 certifications. In addition, Circuit Breaker Store and Vacuum Interrupters both received ISO 9001:2008 certifications.

By Mike Briley, Circuit Breaker Sales

THE ISO 9001:2008 standard focuses on establishing minimum business practices for the production and delivery of products and services through the implementation of a formal quality management system and business practices that ensure customer requirements are consistently met. ISO 14001:2004, meanwhile, is an environmental management standard focused on the implementation of a continuously improving environmental management system. More specifically, this standard is designed to ensure that companies effectively minimize any potentially harmful effects on the environment caused by their business practices and continually improve their environmental performance.

ISO manager Mike Briley and a team led by Julia Neves, operations manager for Vacuum Interrupters, collaborated closely to ensure the ISO process was well understood and went as smoothly as possible.

“Our ISO 9001:2008 certifications confirm that we are achieving our quality management goals, which, in turn, lead to our high level of customer satisfaction,” Briley says. “We’re also very happy that Circuit Breaker Sales received ISO 14001:2004 certification because it underscores the commitment Group CBS and our affiliates are making to reduce any potentially damaging environmental impact. Being a good corporate citizen in the communities where we live and work is extremely

important to us.”

Group CBS and its affiliates strive to implement continuously improving business processes and procedures that ensure high-quality products for customers worldwide, a safe work environment for



“Our ISO 9001:2008 certifications confirm that we are achieving our quality management goals, which, in turn, lead to our high level of customer satisfaction. ...Being a good corporate citizen in the communities where we live and work is extremely important to us.”

employees and visitors, and environmentally friendly shop facilities and offices that help protect the environment. To help show its commitment to quality and environmental management, Group CBS and its affiliates actively pursue ISO registration to achieve the following:

- Ensure quality management systems are in place and being used consistently

throughout the organization

- Create a competitive edge
- Provide access to new markets because increasing numbers of buyers are looking for suppliers that are registered
- Increase customer confidence by implementing quality management systems
- Protect existing markets
- Develop the benefit of an objective, third-party evaluation of Group CBS quality and environmental management processes
- Improve business performance and reduce operating costs
- Be a good corporate citizen in the communities in which Group CBS and its affiliates operate by reducing pollution, saving energy, and protecting the environment

The bottom line is that ISO quality and environmental management standards are more than a comprehensive set of business rules. They are, in fact, a way of conducting day-to-day business that — when properly designed, implemented, and maintained — can have immediate and lasting benefits for both companies and the customers they serve. For Group CBS and its affiliates, ISO quality and environmental management standards also improve management’s ability to oversee, monitor, and measure key quality performance indicators. This gives management teams objective data upon which to make important business decisions based on facts and solid evidence. 

Circuit Breaker Testing: 'The Electrical Industrial Revolution'

TO MINIMIZE DOWNTIME, maintain productivity, and improve personnel safety, electricians are constantly looking for faster, easier ways to verify that circuit breakers will perform to OEM specifications. Today, electrical testing technicians have a multitude of available testing methods and sets available to them. This article looks at those testing methods with a focus on the trend toward testing methodologies capable of providing frequent operational data on the breaker without the need to remove it from service.

ELECTRICAL VS. MECHANICAL TESTING

Circuit breaking testing is designed to determine the present condition of current-carrying components (contacts, insulators, etc.) and electronic controls, as well as mechanical components (springs, arc chutes, open/close operations, etc.).

Testing the electrical properties of a circuit breaker requires the unit to be removed from service (risking handling damage). It is then attached to a separate power supply for testing purposes and various testing equipment for measuring changes to the control signals and currents. Modern Internet-enabled equipment allows access to testing routines and report formats that make electrical and mechanical testing much faster than just a few years ago. However, the tradeoff is that setting up this new equipment necessitates a greater degree of technical sophistica-

tion, requiring the operator to have a higher acquired test experience quotient (ATEQ). These tests include:

- Mechanical test to determine the operating condition of the mechanism
- Contact resistance tests to measure the resistance between two or more conductive components
- Dynamic contact resistance tests that measure changes in resistance during a mechanical open/close operation
- AC or DC insulation tests to determine the insulation between poles and between line and ground
- Electronic trip device or relaying control element tests
- And a number of tests for specific medium- and high-voltage breaker insulator materials such as SF6, dielectric oil, vacuum interrupters, etc.

Infrared imaging corona inspection and online partial discharge (PD) testing are the only electrical tests that can be done non-invasively, meaning the breaker does not have to be removed from service as long as the breaker enclosure can be opened, or if the enclosure has a special glass window (germanium) that is transparent to infrared light. While not an objective measurement, infrared imaging identifies hot spots within the breaker, and corona and PD testing will pick up future insulation failures well before conventional AC or DC testing can.

Mechanical tests focus on the spring

or magnetic actuators that open and close the circuit breaker, as well as their timing. A few of these tests can be conducted efficiently with or without removing the breaker from service. Mechanical tests include:

- Contact timing test, which measures the time from the physical switching to the separation or closure of the contacts
- Travel and velocity tests that describe the distance between open contacts and speed of movement
- Functional tests revealing whether the breaker will open/close and effectively isolate the downstream equipment
- First trip tests that measure timing, velocity, and vibration when the breaker is new as a baseline for future testing or comparisons
- Vibration tests that collect vibrations in reference to frequency and time caused by the open, charge, and close of contacts, springs, actuators, and supporting mechanisms

A HEAVY LOAD

Electrical test equipment manufacturers offer a nearly endless variety of test sets for analyzing some, and even all, of these tests. From the ubiquitous micro-ohmmeter — portable, low-amperage versions that can be found on every electrician's belt — to multi-phase breaker analyzers with dual ground fault and primary current injection systems, the electrician's test sets are only limited by budget and the ability to access (i.e., remove) the breaker from operation. Another consideration, of course, is the strength of the technician's legs because as you combine more functionality, the handheld unit turns into a suitcase, which then turns into a hand cart.



The CBA testing app will soon be available on Windows-based programs.

However, for frequent condition assessment as part of a preventive maintenance (PM) or condition-based maintenance (CBM) program, test methods such as infrared imaging, corona, online PD detectors, and new online real-time remote thermal testing probes can yield trend data that is extremely helpful in predicting impending failure.

Vibration analysis is another non-invasive technique that provides quality data on the overall condition of any mechanical system, from electric motors to circuit breakers. By comparing a new vibration signature to a first trip or stored good signature value, electricians can access the mechanical health of aging equipment, including circuit breakers. Older vibration systems used analog electronics and outdated accelerometers that were bulky, expensive, and difficult to maintain and calibrate.

Today, companies are leveraging microelectronics and accelerometers found in everyday devices to collect highly accurate vibration signatures for comparison against first trip signatures and stored databases of known vibration signatures. Every smart phone on the

market has an internal accelerometer, computer-processing chip for analysis, and communication channel for sending data back to maintenance databases.

These new mechanical test systems put real-time information at the fingertips of maintenance engineers and technicians, helping to verify everything from equipment operation to arc flash calculations and compliance, for example. They eliminate the need to remove the breaker or switchgear from service while providing hard data for preventive maintenance programs that help organizations target their maintenance dollars and time toward equipment in need of repair — and not waste it on equipment that is in good condition. There are several new vibration test sets on the market today, each offering different levels of portability, accuracy, and set-up speed that can determine the equipment's mechanical health without the need for physically isolating the equipment.

What an exciting time! We live in an era in which things are progressing all around us at speeds not seen since the days of Edison and Tesla. This is truly “The Electrical Industrial Revolution.”



Watch Bill Schofield Dominate CBS Mobile Circuit Breaker Master/Slave Operation



www.youtube.com/watch?v=FmfbEuxeqIM

The Circuit Breaker Sales mobile circuit breaker is a custom low-voltage 5,000-amp circuit breaker enclosed in a portable Nema 3R-rated outdoor cabinet. This video demonstrates the remote close/open operation by pendant and chained master/slave operation of multiple units.



Watch Astro Controls Raise the Bar for Remanufactured Breakers, Motor Controls



www.youtube.com/watch?v=DVntDTD18A4

Astro Controls, Inc. specializes in the sale and service of new and professionally reconditioned molded case circuit breakers, insulated case circuit breakers, and motor controls.

How the West Was Won

Western Electrical Services expands with new hires, job openings, and two big data center projects. *By Craig Archer, Western Electrical Services*



Your Electrical Solutions Provider

WESTERN ELECTRICAL SERVICES is pleased to announce four new additions to our Sumner, Wash., office team. They are Josh Carlson, field services; Mike Shomaker, field services; Ryan Pittman, warehouse/delivery; and Chris Parrish, breaker technician.

These additions will help with the increases in field and shop work that continue to come in. With the additional work, the facility was in need of organization, requiring a much-needed warehouseman to get us back in line again.

We also would like to add another senior field technician/engineer in the Vancouver office, so if you know anyone who's looking, drop me a line at

carcher@westernelectricalservices.com.

In other news, Sean Conley made his long-anticipated move from Sumner to Salt Lake City, Utah, to help Rob Coomes continue to grow our field service capabilities. I'm not sure how Tim Conley is taking it, having his boy fly the coop.

WES improved its current field service capabilities in Phoenix with the addition of Ricardo Cruz, who brings with him some good utility experience. I would like to take this opportunity to congratulate Ricardo and his wife on the addition of a baby girl to their family. This is just what we need—guys who need jobs to support their growing families. Ricardo, they are worth the work!

We also added Gregory (Ty) Romero in the Phoenix shop to push out the additional breaker work. He is currently a contract employee but has promise.

The NW and SLC offices recently landed two large data center acceptance testing projects, as well as a substation that feeds one of them. These orders will continue to help us grow and achieve those stretch goals we've set for ourselves.

In addition to the above, we recently signed an agreement to represent and promote Basler protective relay and control products in Arizona and New Mexico. If you have any opportunities we can help with throughout the group, we would like to hear about them. 

Gainesville Honors America's Heroes



FOR THIS YEAR'S event — held April 10-12 — 17 Medal of Honor recipients were flown to Dallas, where they boarded a chartered bus to Gainesville. Motorcyclists from the Patriot Guard Riders and Christian Motorcyclists Association, along with

other riders, escorted the bus on its 65-mile trip. Between 300 and 400 riders formed the caravan as it made its way up the interstate, with the northbound lane blocked off by law enforcement. "I rode last year and videoed the whole ride with my helmet cam," says Kevin Brewer, a military veteran and Circuit Breaker Sales employee. "It is an awesome sight."

Another highlight of the program: the hour-long military parade, with planes and helicopters flying up and down the route. Other fun activities included a Texas fish fry, school programs, a special banquet, and much more.

The city of Gainesville established the Medal of Honor Host City Program in 2001 to provide residents with a more interactive connection with America's history, military, and veterans' community. City leaders decided the best approach was to reach out to the men who served the nation with heroic distinction, while at the same time engaging the community, especially its children, in the patriotic process.

The Medal of Honor is the highest award for valor in action against an enemy force that can be bestowed upon an individual serving in the United States Armed Services. Generally, the Medal of Honor is presented to its recipient by the president. 

New CBA App Simplifies Vibration Analysis, Preventive Maintenance

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The Circuit Breaker Analyzer application for the iPod and iPhone measures vibration data and compares it to known vibration signatures.



experience level can capture vibration data and compare it to known vibration signatures to determine whether there is a hidden mechanical failure. And do it with greater safety and frequency than TTA and VMI tests alone.”

Using the accelerometer inside every iPhone or new-model iPod, the Circuit Breaker Analyzer captures vibration data in all three axes as well as across time at sample rates of 100 to 400 Hz, depending on the version. Both sample rates provide ample data for a detailed vibration signature for later analysis of potential mechanical faults inside the circuit breaker. By comparing the newly acquired vibration signature to a database of known good profiles (KGPs) and/or the vibration signature of the breaker’s “first trip” operation, pattern recognition algorithms can determine when changes in the “envelope” or shape of the vibration signature indicate a hidden mechanical problem that will eventually lead to breaker failure if left unchecked.

The Circuit Breaker Analyzer is designed for use by technicians with any level of experience, and costs a

fraction of standard electrical test equipment. After starting the application, the operator keys in the type of circuit breaker under test. This brings up a picture of the breaker that shows the technician where to attach the iPhone or iPod, using adhesive magnets that ship with the Circuit Breaker Analyzer app. This helps to guarantee an “apples to apples” comparison with stored KGPs and eliminate false tests. The app also comes with built-in level indicators to make sure the iPhone or iPod is positioned correctly for testing. The app also can be used in conjunction with remote switching devices, such as the CBS ArcSafe product line remote racking system, for added protection against arc flash injuries.

After the test is finished, the tester presses the stop button and the vibration data is saved on the device and wirelessly sent to a central database of the user’s choosing. Internal condition-based maintenance algorithms (CBMA) compare the vibration envelope to KGPs for that make of breaker, and identify variances that indicate an internal mechanical problem or wear. 

“Now, with an iPhone or iPod running the [CBA] application, maintenance personnel of any experience level can capture vibration data...to determine whether there is a hidden mechanical failure.”

PRODUCT BENEFITS INCLUDE:

- Simple, easy to use
- Requires minimal training
- Portability
- No modification of the circuit breaker is needed
- No electrical connections needed
- Removal of the circuit breaker from its mounting or cubicle is not necessary
- Testing can be performed during routine switching
- Data is easily transmitted to a central location

CBS Acquires Federal Pacific Equipment

Continued from page 1

the ITE specification documents we acquired in 2007, Circuit Breaker Sales is now one of the largest providers of new, replacement, and remanufactured parts for the industrial circuit breaker industry," says Bill Schofield, president of Circuit Breaker Sales Co. Inc.

"At one point in history, Federal Pacific was one of the largest providers of residential and industrial circuit breakers in the United States. CBS's growing library of historical records, card files, and drawings will give our engineering staff the tools they need to help customers determine whether they need replacement parts, repairs, remanufactured components, or retrofit upgrades to get their FPE and ITE electrical equipment safely up and running."

While details of the acquisition were not disclosed, privately owned Circuit Breaker Sales plans to move the collateral from Federal Pacific Equipment's New Jersey facility to Group CBS' Matthews, N.C., facility, and then close Federal Pacific's Brick, N.J., offices. Former owner and longtime employee of Federal Pacific Equipment John Cifrodella will continue to serve as a consultant to CBS. 

TRADE SHOW CALENDAR

Visit with **Group CBS** companies at the following trade shows and exhibits:

Electric Power

Rosemont, Ill. | May 14-16

PEARL

New Orleans | May 18-20

EPRI Circuit Breaker User Group Meeting

Providence, R.I. | June 17-21

IEEE Mexico

Cancun, Mexico | June 20-23

Finepoint

Atlanta, Ga. | October 7-11

Power Gen

Orlando, Fla. | November 12-14

GROUP CBS AFFILIATES:

Astro Controls, Inc.

www.astrocontrols.com

Irving, Texas — Ph: 800-289-2757

Sales and service for all types of industrial molded-case circuit breakers, insulated case circuit breakers, and motor controls.

CBS ArcSafe, Inc.

www.CBSArcSafe.com

Denton, Texas — Ph: 877-4-SAFETY

Remote racking systems, remote switch actuators, and handheld motorized racking tools for low- and medium-voltage switchgear.

CBS Nuclear Services, Inc.

www.CBSNuclear.com

Matthews, N.C. — Ph: 704-882-1875

Specializes in shop and on-site field servicing of Class 1E safety-related low- and medium-voltage switchgear and circuit breakers. Also services industrial and non-nuclear-related circuit breakers and related switchgear and substations.

CBS Power Products, Inc.

www.CBSPowerProducts.com

Dallas, Texas — Ph: 940-665-4444

New alternative utility and industrial power products: transformers, switchgear, and other power apparatus.

Circuit Breaker Sales Co., Inc.

www.circuitbreaker.com

Gainesville, Texas — Ph: 800-232-5809

World's largest inventory of low- and medium-voltage circuit breakers. Millions of parts in stock. Complete service, remanufacture, upgrade, and life extension services. Match existing switchgear lineup.

Circuit Breaker Sales & Repair, Inc.

www.CBSalesAndRepair.com

Houston, Texas — Ph: 281-479-4555

Servicing the Gulf Coast with shop or field service, repair, upgrade, or replacement of power system apparatus.

Circuit Breaker Sales & Service, Inc.

www.cbs-florida.com

Lakeland, Fla. — Ph: 863-646-5099

One-stop service for circuit breakers, switchgear, transformers, protective relays, loadbreak switches, motor controls, unit substations, renewal parts, and repair, upgrade, life extension, and maintenance services.

Circuit Breaker Store, Inc.

www.CircuitBreakerStore.com

Denton, Texas — Ph: 855-227-8673

Your online source for all Group CBS products, a powerful solutions provider with a specialty vendor network that can supply factory new, surplus new, and reconditioned circuit breakers, electrical distribution, control equipment, parts, and remote racking equipment.

Reliable Electrical Testing Services, LLC

www.ReliableElectricalTestingServices.com

La Porte, Texas — Ph: 713-254-0006

On-site commissioning and acceptance testing of new installations and apparatus; or maintenance, troubleshooting, repair, and electrical testing of existing systems. Also professional electrical power engineering services to ensure the reliable, safe operation of electrical systems.

Sentinel Power Services, Inc.

www.SentinelPowerServices.com

Tulsa, Okla. — Ph: 800-831-9550

Sentinel Power Services is an electrical power service company servicing the Central U.S. with electrical engineering studies; on-site electrical testing, preventive maintenance and repair services; and repairing, building, and installing electrical power systems.

Solid State Exchange & Repair, Inc.

www.SolidStateRepair.com

Denton, Texas — Ph: 877-874-7349

Quality, reliable, on-time service and support for all brands and types of solid state power electronics including circuit breaker trip devices, protective relays, motor overload relays, and rating plugs.

Transformer Sales Co.

www.TransformerSales.com

Gainesville, Texas — Ph: 940-665-4484

Offers a complete line of new, surplus, and reconditioned dry type, cast coil, and liquid-filled power transformers from 1000 to 5000 kVA with primary voltages from 2400 volts to 34.5kV.

Vacuum Interrupters, Inc.

www.VacuumInterruptersInc.com

Carrollton, Texas — Ph: 214-442-5877

Provides replacement vacuum interrupters (vacuum bottle interrupters) for virtually any manufacturer's medium-voltage circuit breaker or contactor.

Western Electrical Services, Inc.

www.WesternElectricalServices.com

Phoenix, Ariz. — Ph: 888-395-2021

Serving the Southwest with superior quality on-site electrical testing, maintenance, and repair services as well as rebuild, upgrade, and life extension services for switchgear, circuit breakers, and motor control.

Western Electrical Services, Inc.

www.WesternElectricalServices.com

Salt Lake City, Utah — Ph: 888-395-2021

The only full-service electrical testing and maintenance company in the Intermountain region.

Western Electrical Services, Inc.

www.WesternElectricalServices.com

Sumner, Wash. — Ph: 888-395-2021

The Northwest leader in electrical testing, maintenance, and power switchgear services providing on-site electrical testing and maintenance, electrical engineering studies, and sales, repair, upgrade, and life extension services of circuit breakers, switchgear, motor control, and transformers. Also custom manufacturing: engineered and reverse-engineered parts.

Western Electrical Services, Inc.

www.WesternElectricalServices.com

Vancouver, Wash. — Ph: 888-395-2021

Utility class service provider to the Northwest T&D market.

