

HUBBELL[®] TIPS & NEWS

Vol. 8 No. 2 AUGUST 2003

www.hubbellpowersystems.com



STARS

of the Dallas IEEE Show

September 7 - 12 Booth 1021

At the Hubbell booth, you'll see new products to help you construct, maintain and protect your transmission and distribution system. Be sure to visit the transmission and distribution line replicas in the booth. See how Hubbell can supply 90% of the components needed on a steel transmission tower and 75% of those used for construction and maintenance on a distribution pole.

Sunday through Tuesday evenings join us at the Hubbell Hospitality suite at the Lookout Room in the Reunion Tower at the Hyatt Regency, 300 Reunion Blvd. Suite opens at 5:30 pm Sunday evening and after the show on Monday and Tuesday evenings.

Many New Products at the IEEE Booth

ANDERSON & FARGO CONNECTORS

Anderson and Fargo offer a wide variety of electrical connectors and fittings for transmission and distribution. You won't find a wider choice anywhere.

NEW: Anderson High-Current Suspension Clamps

Use on open-wire power lines. Retains strength well above the 93° Centigrade limit for standard alloy (A356-T6) aluminum clamps. Use in continuous operation on ACSS, ACSS-TW and other high capacity conductors operating at temperatures up to 250° C.

NEW: GDW Wedge Deadend

Faster and easier to install. Parallel legs allow for easier passage of conductor. Positive locking action and movement. Repositioned pulling eye for easier access and sagging of conductor. Greater cost savings compared to bolted-type deadends.





CHANCE®

Chance tools, construction, switching and protection products cover a wide range of utility product needs with many new products for you to see at the show.

Rubber Blankets

Easy to handle and clean, Chance blankets contribute to lineworkers' on-the-job safety during energized maintenance. The special formulated elastomer material exhibits superior resistance to corona and long-term aging/checking and retains its high-visibility orange color.



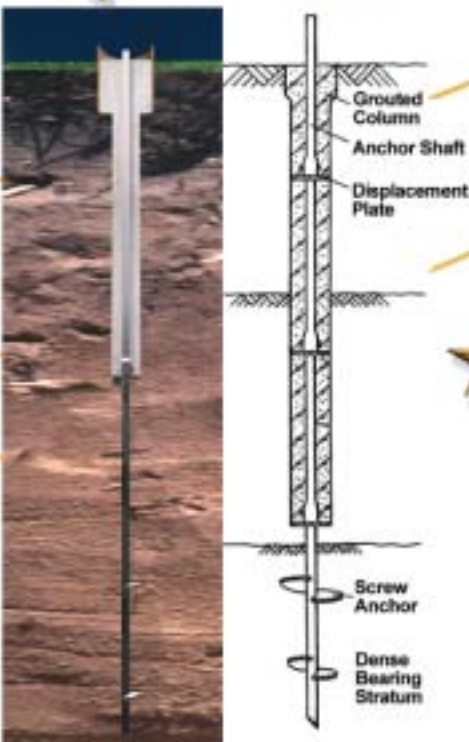
NEW: Auto-Ranging Voltage Indicator

The indicator simplifies hot line testing on both overhead and underground systems. A bright red light and audible tone indicate the phase-to-phase voltage class sensed.



NEW: Equi-Mat™ Portable Ground Grid

A grillwork of flexible copper braid on a durable mat. Worker stands on the mat while working. Same principles used to protect workers high on structures is now applied to the ground level. Mat is connected to the de-energized system components being worked on that could become accidentally re-energized.



NEW: Substation Foundation

the Chance® Helical Pulldown™ Micropile is a deep substation foundation solution when speed, ease and high capacity foundations application is required. This product resists buckling in weak surface soils. It offers a stiffer pile that deflects less at a particular load and provides additional corrosion protection in aggressive soils.



NEW: Type C Polymer Cutout

Combines more than 50 years of Chance® cutout technology with more than 30 years of Ohio Brass insulator technology. Uses ESP® silicone-alloy rubber insulators. Includes standard, linkbreak, loadbreak, cutout-arrester combinations, and sectionalizers.

NEW: BP3 3-Pull By-Pass Switch

Our new line of By-Pass Switches is a hit. Primarily used for bypassing and disconnecting reclosers without interrupting service, these switches work on distribution lines and substations.



NEW: HeliCAP® Engineering Software

This new software helps you solve tension and compression job requirements immediately. Use for heavy guy loads, tower and substation foundations.

HUBBELL® CABLE ACCESSORIES

Hubbell rubber, plastic and cable systems products serve the underground segment of the utility market. Products include connectors, splices, terminations and other products for 15, 25 and 35kV applications.

NEW: 600 Ampere Hubbell Cable Accessory Products

Four new products recently joined our 600 ampere product family. The new SafeOP™ tap plug taps a 200 amp loadbreak interface device off an existing 600 amp deadbreak interface. The Loadbreak Reducing Tap Plug (LRTP) instantly taps a 200 amp loadbreak interface device off an existing 600 amp deadbreak interface. The insulating cap isolates unused 600 amp interfaces while the new Bushing Extension is used to increase the distance between the deadbreak interface and the T-body elbow.





OHIO BRASS®

Ohio Brass is the market leader in polymer insulators and arresters. Insulator designs include suspension, station and line post insulator products as well as polymer insulator and arrester combinations for lightning protection.



NEW: PVIA Polymer Intermediate Arrester

Arrester is an equivalent substitute to the PVI-LP and PVI polymer intermediate arresters. Main features of the design includes a slim silhouette, reduced weight, full compliance with ANSI requirements for intermediate arresters.



NEW: PDV-65 Arrester

We've updated our design of normal duty distribution arresters above 10.2kV MCOV by using a longer housing. This change improves the match of the arrester size and the rating.




NEW: PVIA and PVNA Substation Arrester Products

Ohio Brass has introduced several new substation arrester products. These are the PVIA (Intermediate) and PVNA (Station). See these products at the show.




Two Hubbell papers will be presented on the exhibit floor on Wednesday, September 10, 2:00 to 3:30 pm

Titles: *"Application Dynamics of High Temperature Conductors in Suspension Clamps"*
"Application Dynamics of High Temperature Conductors in Full Tension Splices and Deadends"



Carl Tamm is a Sr. Product Specialist with Hubbell Power Systems, Design Engineering Department; principally working in New Product Development. A 14-year veteran in the electrical industry, his focus has been in connector design and analysis. He presently holds nine U.S. Patents, and has authored two previous papers on high power electrical connectors.



ICUEE Show scheduled for Louisville

Visit the Hubbell Power Systems outdoor Exhibit #L206 at the upcoming ICUEE Show in Louisville September 23 - 25.

For more information, contact your Hubbell Power Systems representative, fax 573-682-8714 or e-mail hpscontact@hps.hubbell.com.

Substation Solutions Are Found at Anderson & Fargo

12,000 substation connectors and fittings unmatched in the industry



Anderson and Fargo Connectors and Fittings

- *Terminals
- *Couplers
- *Tees
- *Bus Supports
- *Stud Connectors
- *Weldment Connectors
- *Compression Connectors
- *Shunts
- *Lugs
- *Cable Spacers
- *Transition Plates
- *Stirrups
- *Grounding Connectors
- *Cable Deadend Clamps

Other Substation Products from Chance & Ohio Brass

- *Hot Line Tools
- *Hoists
- *Grounding Equipment
- *Steel Foundations
- *Cover Up
- *Surge Arresters
- *Station Post Insulators
- *Fused By-Pass Switch
- *Deadend Insulators

For close to 78 years, we have supplied quality substation-related connectors and fittings including Extra High Voltage (EHV) products. We give you more than 12,000 product choices and options that allow you to adjust to your special construction needs. That's versatility! We recently invested in equipment for our aluminum, bronze and brass foundries, like our state-of-the-art sand system that provides high quality products with an improved surface finish that is unsurpassed. We machine in house to ensure our high quality and reduce lead times.

Our improved processes allow us to ship **95 percent of our 12,000 substation products within a five week lead time.** When required, the lead time for many products can be less than three weeks.

Earlier this year, we formed a substation team dedicated to supporting customers with uncompromised service through personal attention. Team members personally help customers with application and alternate product solutions. We look for ways to help you with your immediate needs and we go the extra mile regarding new substation construction. As you plan your new construction, we help you select connectors and fittings that minimize repair and maintenance later. We enjoy sharing our knowledge with you about products that will provide long-term, trouble-free service to save you money today and tomorrow.

When you look to us for substation solutions, you open the door to an extensive product line from one supplier — a dependable supplier that is experienced, responsive and dedicated to helping you select the right products, at the right prices, delivered on time. That's Hubbell. ■

For more information, contact your Hubbell Power Systems representative, fax 573-682-8714 or e-mail hpscontact@hps.hubbell.com.

HUBBELL WEB SITE

Source for Ready Information

When you visit our web site at www.hubbelpowersystems.com, you'll find quick access to a wealth of product and company information. From our Interactive e-Catalog and traditional catalogs to *Tips & News* magazines and Hubbell News, you are up-to-date with what's going on at Hubbell Power Systems. For information on trade shows, open the "Show" icon for a listing of our current show exhibition plans. Or, quickly locate domestic and international sales representatives. You also can zoom in on graphics that show you how products are used in distribution, transmission and telecommunications applications.

It's all there when you visit www.hubbelpowersystems.com. Visit today.

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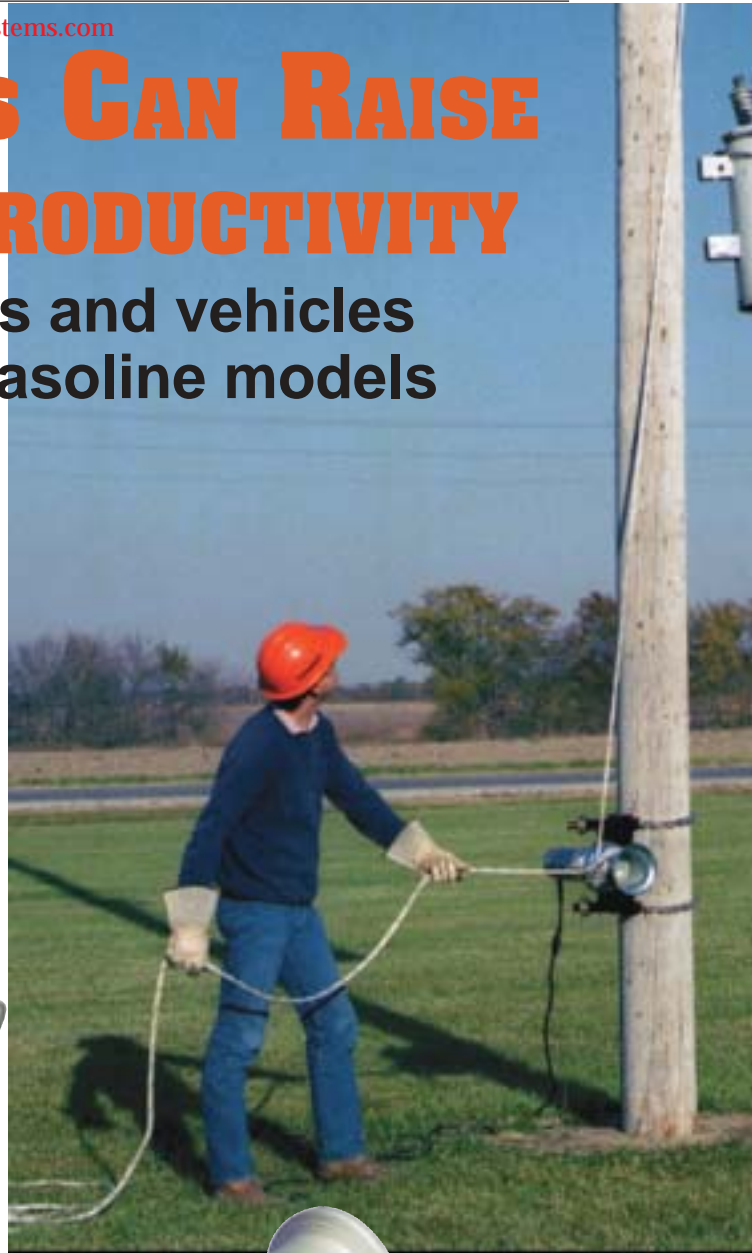
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CAPSTAN HOISTS CAN RAISE YOUR CREWS' PRODUCTIVITY

- Mounts for poles, towers and vehicles
- Hydraulic, AC/DC and gasoline models

Here's how gaining 58 pounds can help your crews get serious about their lifting work. Series 90 Capstan Hoists are available in 1,000-lb. and 3,000-lb. capacities. These extra "muscles" come in units powered by 12V, 115V, 230V, the hydraulics of your crew vehicle or gasoline. They mount on poles, towers and your vehicles to put more strength right at your fingertips with a foot-controlled switch.



Truck Swivel Mounts —



For mounting anywhere suitable on a truck body, this turntable mount can be easily pinned in alignment at every 15° interval. For transport while mounted, the hoist can be simply turned and pinned in line with the truck body.



Rope Lock option secures the fall line to hold a load on the hoist. A release lanyard puts the fall line back in the operator's hands.

HIGH EFFICIENCY, SAFETY, AND EASE OF USE

It's amazing how little effort will precisely move loads fractions of an inch with a Series 90 Hoist! A mere 20-lb. pull on the fall line can lift or lower a 1,000-lb. load!

Safety features are inherent in the rugged multiple-planetary drive/backstop-clutch design. An optional rope lock automatically supports a load when the fall line is released.

Lightweight yet powerful, these portable hoists take on such heavyweight jobs as setting poles, raising transformers – even over fences in backyards, hoisting insulators, stringing and tensioning conductors, and pulling cable (both indoors and underground). Over the past 30 years, our capstan hoists have been helping crews do their best. Put the Series 90 to work on your crews today. ■

NOT A MAN-LIFT

Do not lift or lower people with this hoist. It is designed to lift or lower equipment only.

Optional Material Handler converts a 1,000-lb. Series 90 Hoist to these features: Automatic 600-ft. to 1,500-ft. rope take up; load-holding function; one bracket for poles, towers and beams.



The swivel mount (shown with Capstan Hoist bracket above) also can be attached to a Hitch Mount that fits 2"-square towing receivers. This arrangement offers optimum versatility to not only fleets but also vehicles with both front and rear hitches.



For more information, contact your Hubbell Power Systems representative, fax 573-682-8714 or e-mail hpscontact@hps.hubbell.com.

The Switch to Polymer Insulation

- Most cost-effective
- Increased leakage distances
- Significant weight reductions
- Most user-friendly
- Superior damage resistance
- Best performance in the industry

The switch is on to polymer insulators. Hubbell switchgear with ESP® polymer insulators offer significant weight reductions, increased leakage distance, superior resistance to damage and overall improved performance . . . all at a cost equal to or lower than porcelain-insulator switchgear. If you haven't yet switched to Hubbell switchgear with ESP® polymer insulators, take a look at them today for all these advantages.

SELECTION FOR DISTRIBUTION APPLICATIONS

Hubbell overhead switches for distribution system voltages are available with ESP polymer insulators in the following types:

- ALTD (Line Tension Disconnect) Switches
- M3 Hookstick Disconnect Switches
- BP3 Recloser By-Pass Switches
- AR (Automation-Ready) Three-Phase Switches

POLYMER INSULATORS UPGRADE PERFORMANCE

ESP® silicone alloy rubber, the same material used in Ohio Brass PDV arresters and Hi*Lite® Insulators. ESP is a polymer compound made by alloying silicone and EPDM rubber. This alloy offers the desirable toughness and resistance to tracking of Ohio Brass's original EPR with the hydrophobic characteristics derived from low molecular weight silicone oils. Also much more resistant to fractures than porcelain, the polymer insulator can reduce or eliminate losses from routine shipping, storage and handling.

BENEFITS:

INCREASED LEAKAGE DISTANCE AT LOWER WEIGHT

In our Distribution Switches, this insulator offers as much as 65% more leakage distance (110 kV LIW size) than its porcelain counterpart. This is achieved by the relationship between the outer weathershed diameter and that of the central shank, the polymer insulator's "form factor," which means it will dry faster even when contaminated. This stops the flow of leakage current and supports the system voltage across the dry bands.

Other advantages over traditional porcelain insulators are the polymer insulator's high strength-to-weight ratio, forgiving overmolded weathershed skirts, and



**Hubbell M3
Hookstick
Disconnect
Switches**

- 600 or 900 Amps
Continuous



**ESP® insulators
provide leakage
distances of 17.2" to
28.2" and Lightning
Impulse Withstand
ratings of 110 to 150 kV.**



**Hubbell ALTD Line Tension Disconnect Switches
Also available with Arc-Chute Interrupter**
• 600 Amps Continuous

**ESP® insulator provides leakage distance
of 26" and Lightning Impulse Withstand rating
of 200 kV.**

Hubbell AR (Automation-Ready) Unitized 3-Phase Switches

Configurations: Horizontal (shown),
Vertical, Delta, Phase-over-Phase



• 900 Amps Continuous/Interrupt

ESP® insulators provide leakage distances of 17.2" to 28.2" and Lightning Impulse Withstand ratings of 110 to 150 kV.

fiberglass-reinforced pultruded center rod with high torsional and flexural strength as its rigid core.

STRUCTURAL DESIGN OF ESP® INSULATOR

The ESP Insulator's application benefits derive from the three components basic to its design:

- **ROD MATERIAL FOR MECHANICAL REQUIREMENTS**

ESP® insulator fiberglass rod is produced from the highest quality material. Stands are aligned for the maximum tensile strength. The rod is filled 50 per cent by volume with electrical-grade glass fibers.

- **END FITTINGS ATTACHED WITHOUT ADHESIVES**

Ductile iron castings are mechanically crimped directly to the fiberglass rod. The crimp requires no intermovement of the parts to achieve high strength, nor does it introduce potting compounds or adhesives.

- **WEATHERSHEDS PROVEN IN USE AND LAB TESTING**

ESP® insulators are the same proven material used in PDV arresters, Hi*Lite and Veri*Lite insulators and PDI dead-ends. ESP® is a polymer compound made by alloying silicone and EPDM rubber. This alloy offers the desirable toughness and resistance to tracking of Ohio Brass's original EPR, with the hydrophobic characteristics derived from low molecular weight silicone oils.

The Ohio Brass research laboratories use several tests to evaluate materials. Tracking, QUV, corona cutting, salt fog, oxidative stability and variations of differential thermal analysis tests assure the quality of the shed material. For further information on our polymers, ask your Hubbell representative for the publication: "Polymer Materials for Insulator Weathersheds" EU1264-H. ■



Hubbell BP3
By-Pass Switches
• 600 Amps Continuous

ESP® insulators provide leakage distances of 17.2" to 28.2" and Lightning Impulse Withstand ratings of 110 to 150 kV.

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New Hot Line Tool Poster Sixth in a Series

ABOVE THE REST

“Above the Rest” is the sixth in a series of 17" x 24" posters we have offered over the past 12 years. This latest poster is a great collector item, ideal for framing. Posters are free. Quantities are limited, so place your order early. Order the poster by going to www.hubbellpowersystems.com. In the Comments section of the Literature Request form, simply type the word “poster” and we will send your copy.



2004/2005 Hubbell Wall Calendar

Now available, our new calendar has 2004 on one side and 2005 on the other. Each gives you a quick glance at the entire year. Quantities are limited, so place your order by going to www.hubbellpowersystems.com.

In the Comments section of the Literature Request form, simply type the word “calendar.”

For more information, contact your Hubbell Power Systems representative, fax 573-682-8714 or e-mail hpscontact@hps.hubbell.com



By:
 Jerry Cockrell
 Substation Lead Journeyman
 Edmond Electric Department
 Edmond, OK



Riser pole application

Edmond, OK Electric Department Lineman Brett Griffin installs an Ohio Brass (OB) PVR riser pole surge arrester on one of the utility's 12.47 kV distribution lines. The installation includes a Fargo wild life protector No. GS-580. The OB products are being used for new construction and failure replacement.

Oklahoma utility switches to Ohio Brass heavy-duty distribution and riser-pole surge arresters

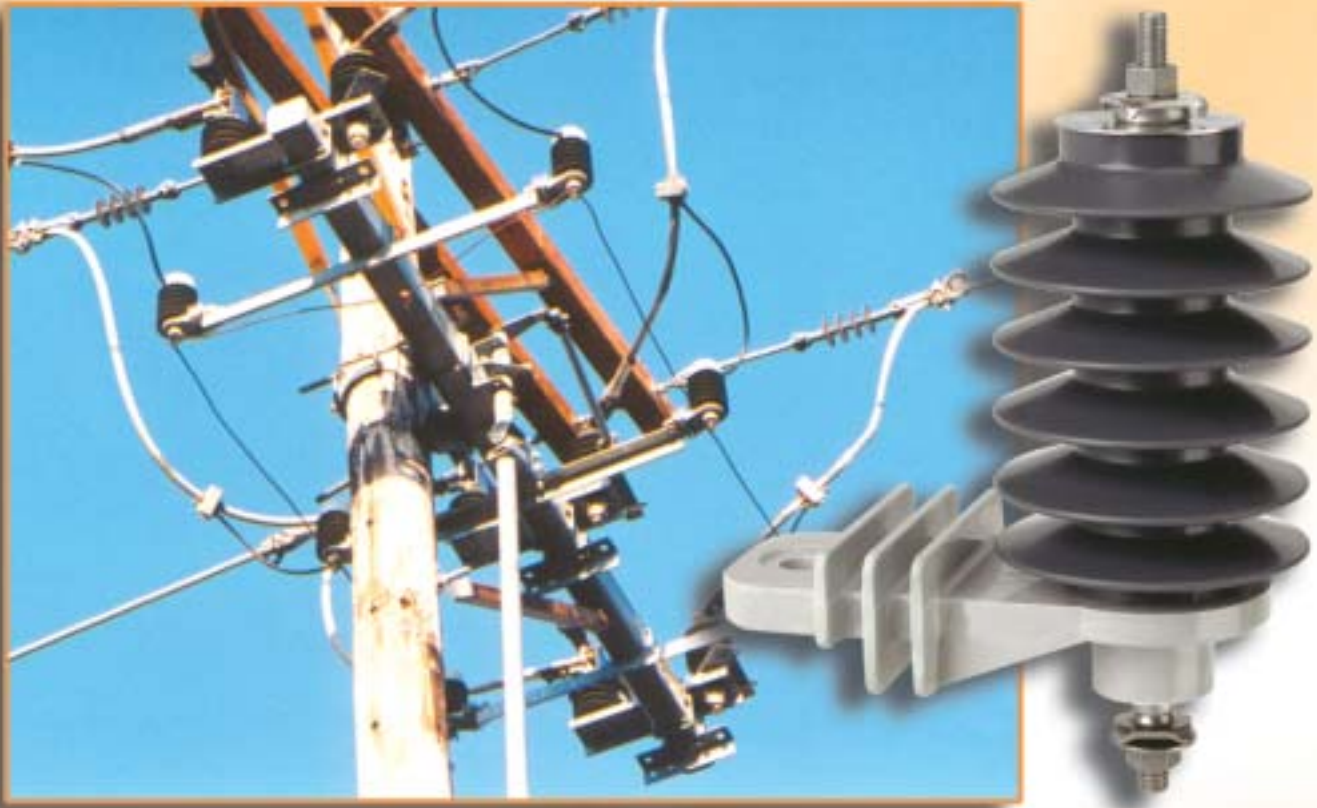
The issue: Reliability

Oklahoma may be well known for its winds that sweep across the plains, but for electric utility operators in this state, it's the damaging tornados and frequent and severe thunderstorms and lightning that cause the greatest concern. Damages from tornados and thunderstorms in Spring 2003 are a stark reminder of the need for reliable distribution surge arresters. According to ANSI/IEEE - C62.22, the southern plains area, including Oklahoma, has one of the highest isokeraunic levels (60) in the country. So, to improve reliability of the Edmond Electric system, we investigated alternatives to the surge arresters we had been installing.

Edmond distribution system

Edmond, OK, located just north of Oklahoma City, has a population of more than 70,000. Its 90-year-old municipally owned electric system (Edmond Electric Dept.) is the largest in the state, serving about 30,000 meters. Bulk power, purchased from the Oklahoma Municipal Power Authority, is 138kV. System distribution voltage is 12.47kV with customers supplied from seven substations.





Distribution Arrester Application

Distribution pole application on Edmond, OK Electric system shows the Ohio Brass PDV-100 distribution surge arrester No. 217608 on the Edmond Electric Dept. 12.47kV system. Edmond recently changed its surge protection to Ohio Brass products because of reliability concerns, primarily due to moisture ingress in existing products.

Surge arrester reliability drives change

To protect our distribution system from damaging lightning, we recently changed our surge protection to Ohio Brass (OB) products. We had been experiencing some failures, primarily due to moisture ingress in the existing products, so we had to make a change to a product that was not going to have a lot of failures.

Ohio Brass products installed

The Ohio Brass PDV-100 heavy duty distribution and riser pole (PVR) surge arrester installation started about six months ago for new construction and failure replacement only. During those six months, we had no failures of the equipment and have realized a cost savings per unit. Previously, 10kV rated gapped arresters were used with the 8.4 MCOV. Now the OB 9kV gapless units are in place with an MCOV of 7.65. Although paperwork shows that our margins of protection have been reduced, protective levels are still well above what ANSI/IEEE recommends. Considering the service reliability experienced so far with the PDV-100 and PVR design, Edmond Electric Dept. has confidence in distribution arresters manufactured by Ohio Brass.

The design

The PDV-100 and PVR arresters are gapless designs that incorporate the advantages of a polymer housing that excludes moisture. With the polymer-housed design, there is virtually no internal air space that could lead to “seal pumping.” The units also have a high temporary overvoltage capability, contamination resistance, and improved surge-duty capability. According to an Ontario Hydro study, moisture is the largest cause (86%) of arrester failure. The possibility of failure can occur with any arrester design, but overall, we are optimistic that the Ohio Brass arrester will be more reliable and give us a good margin of protection. The expectation is that we’re going to see improvement in reliability with OB surge arresters. ■

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TOWER PAC KITS

Speed Transmission Construction



Pac Kit products are packaged together to reduce loss of material and to speed installation.



With the transmission construction pace increasing across the country, utilities are looking for ways to complete construction quickly and accurately.

One approach is to specify line construction material in complete convenience-pack sets or kits. Hubbell Power Systems has been offering such a program for years. For utilities, this approach to transmission and substation construction reduces procurements costs, ensures component compatibility and simplifies scheduling for products such as anchors, connectors, hardware, fittings, guy deadends, insulators and arresters.

Hubbell Tower Pac Kits provide all the material needed in several ways including the assembly pack which includes components of one or more assemblies packed together and marked with Hubbell and customer specified assembly numbers. Another option is the Tower Pac with components of all assemblies on a given structure type packed together, palletized and marked with Hubbell and customer-specified structure type numbers.

With either approach, the polymer insulator portion of the assemblies for several structures are packed in wood crates in multiples of three, including insulator-shielding corona rings where system voltage is 230kV and above.

Look to our Tower Pac program to reduce procurement costs, ensure component compatibility and simplify scheduling. In addition to the mechanical fit checks that are part of each project, we also offer in-house testing where needed to evaluate the mechanical and electrical performance of new assembly designs not previously supplied. ■

For more information, contact your Hubbell Power Systems representative, fax 573-682-8714 or e-mail hpscontact@hps.hubbell.com.

Customer Help Site Answer LINK™

Now visitors to our web site at www.hubbellpowersystems.com can get quick assistance on line through our new Answer LINK™ Question/Answer service. Questions can be submitted and answers quickly provided on the web. Frequently asked questions and appropriate answers are already on-line and ready for an immediate response. Visitors to Answer LINK will find quick answers to commonly asked questions. ■



NOTE: Because we have a policy of continuous product improvement, we reserve the right to change design and specifications without notice.

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HUBBELL

Hubbell TIPS & NEWS magazine is published to inform personnel of electric utilities and associated companies of new ideas and techniques in transmission and distribution practices. The magazine, under different titles and formats, has been published since 1932.

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ANDERSON CHANCE® FARGO® HUBBELL® OHIO/BRASS®