INSULATOR BUSHING CONTAINMENT

In the conversation of electric utility operational integrity, the topic of upgrades, regular maintenance, testing and avoiding system failures must be considered as part of an overall continuity plan for system reliability.

Utility crews involved in upgrades, maintenance and the process of avoiding system failures are ultimately going to have to face the challenges of removing, containing and disposing of used insulator bushings. The simple truth of the matter is that insulator bushings are difficult to contain and even more troublesome to handle while transporting for recycling or disposal.

Utility crews, faced with the challenge of electrical equipment retirement and/or their associated bushings, must first identify the hardware and determine if the equipment poses any risk regarding the possibility of PCB (Poly Chlorinated Biphenyls) contamination. Although most utilities have phased out "known" PCBs and the associated equipment, according to many experts "… there are still unknown PCBs hidden in most utilities."
(Pennell 2019, 1)

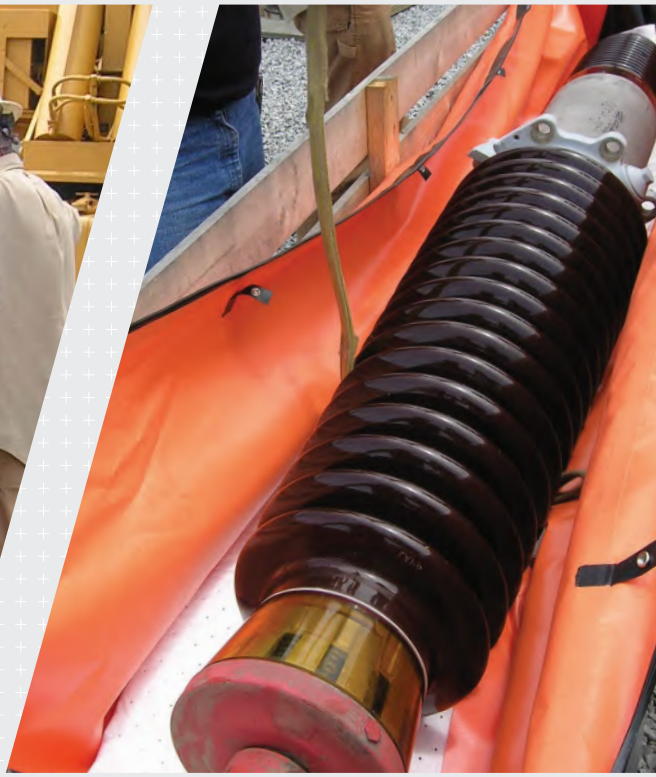
PCBs can be found in everything from a simple cooling fan motor start capacitor to insulator bushings containing contaminated oil or tar compounds. Askarel™ filled (liquid) small capacitors contain the highest level of PCBs ever used in equipment and can exceed 900,000 ppm. Utilities have found that bushings manufactured before 1980 can contain a tar compound made with Askarel™ that when tested are consistently found to be "hot" with PCBs. In one recent example, a utility found 100% of the bushings tested contained PCBs from 60,000 ppm to in excess of 230,000 ppm. Even though the electrical equipment ID plate on the side of a 500-gal capacity substation transformer can read less than 50 ppm of PCBs, the attached bushings may be a different story.

Regardless if the equipment contains contamination or where no PCBs are present, there is still a major obstacle that the utility crew must address once the bushing has been removed from the transformer or other equipment. How do utility crews contain the bushing once removed?

Back in the day, crews might have simply placed the bushing on the ground and gone home for the day. In other circumstances, they might have wrapped it in plastic and duct tape and called it good. Today, however, neither one of those options will win your utility the award for environmental stewardship. In fact, you might just end up being charged with safety violations, significant fines and clean-up costs starting in the tens of thousands of dollars for leaks and spills from bushings.

Most experienced utility crews will admit that even if a bushing is removed as a matter of preventative maintenance and is not leaking, once it is laid down, there is a pretty good chance it will start leaking. Some contributing reasons may be the age and condition of the bushing or just the change in the physical position. Either way, whether storing the bushing for reuse or preparing it for transportation for recycling or disposal, containing the bushing is a crucial and necessary step for crew safety, to prevent spills and unnecessary cleanup costs.

The simplest way to address this step is to use the Andax Bushing Sac™. The Bushing Sac™ is a field tested, proven solution for bushing containment for over 20 years.



The Bushing Sac™ is a field tested, proven solution for bushing containment for over 20 years. Purpose built, designed and manufactured in the United States, the Bushing Sac™ provides 100% leak proof containment of the bushing.

Advertorial by
Patrick McAtarian
General Manager
Andax Industries

Purpose built, designed and manufactured in the United States, the Bushing Sac™ provides 100% leak proof containment of the bushing. Constructed of heavy duty, puncture resistant reinforced PVC, the Bushing Sac™ is built using advanced high frequency welding methodologies that ensure all flexible seams are liquid tight. It has a built-in super oil absorbent core to lock in any leak, drip or spill from the bushing while in storage or in transit. Designed with an unobstructed full access opening, the Bushing Sac™ simplifies the containment process for the utility crew while loading the bushing inside the Sac™. Once loaded, the Bushing Sac™ maintains its leak proof status by incorporating a proprietary closure system that is self-locking and liquid tight.

The Bushing Sac™ has a host of features that are engineered, making it the right tool for utility crews. Each Bushing Sac™ includes a separate bushing "Flange Cushion", designed to wrap around the steel mounting flange of the bushing, adding additional protection when loading the bushing into the Bushing Sac™. Additionally, the Bushing Sac™ provides the utility crews with built in size gauges to assist the utility crew in the field while closing and sealing the Bushing Sac™.

After the bushing is in the Andax Bushing Sac™, the utility crew can safely store the bushing inside or outside for reuse. If the bushing contains PCBs, then the Bushing Sac™ can be used while the 30-day clock is ticking for onsite storage while awaiting disposal.

Use of the Bushing Sac™ answers the question of how to contain bushings once removed from the electrical equipment. Because of the fragility of older bushings and the propensity for the porcelain insulators to break, most utility crews are accustomed to building cradles to support the bushings during transport or for storage. The Bushing Sac's™ flexible reinforced materials easily facilitate and adapt to use with cradles/boxes for ease of use and provide the complete containment solution.

Considering the utility's "cradle to grave" risk and responsibility, the potential consequences and cost of leaks or spills while in transit, the Bushing Sac™ provides peace of mind. Many utilities have experienced the unfortunate circumstances of receiving that phone call from the disposal company that their bushing leaked in the truck while in transit for disposal and the subsequent bill. Use of the Bushing Sac™ is a 100% containment solution and is DOT compliant. Because the Sac™ is completely sealed and incorporates a fluid absorbent core, it prevents potential leaks, drips or sprays from escaping during transportation. Additionally, the Bushing Sac™ is 100% OSHA compliant. Utility crews can safely rig the Bushing Sac™ (load) with a sling, ensuring a balanced and secure load. This allows them to safely lift, move and store the bushing while being 100% contained and compliant in the Andax Bushing Sac™.

Andax Industries manufactures multiple sizes of stock Bushing Sacs™ from 6 feet in length to 18 feet. However, since the age, style and manufacturers of bushings have varied over the years, common sizes of bushings may not be what your crew needs every time they are scheduled to do equipment retirement or a change out. Andax Industries manufactures custom size Bushing Sacs™ for just about any size bushing that has been made. Current projects include custom sizes over 30 feet long and 8 feet in diameter for large generating station bushings. Given the custom manufacturing capability and the fast turnaround, Andax can meet your utility's work schedules and support your crews to ensure the continued operational integrity, continuity and reliability of your electric utility system.

1 Pennell, Mark, 2019 *Regulatory Compliance Services Annual Conference*

Andax Industries has been providing leak and spill solutions to the electric utility market for over 42 years. Andax manufactures cutting edge, regulatory compliant products in the United States and are Buy American Act compliant.
For more information, visit
www.andax.com
or call **1-800-999-1358**.

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613 West Palmer St.
Saint Mary's, KS 66536