Bird Electrocution Mitigation Web Site and Product Encyclopedia

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Need

Despite a wealth of information on animal interactions with power lines, problems throughout the world persist. A 1993 Institute of Electrical and Electronics Engineers, Inc. (IEEE) survey stated the majority of their respondents still experience outages caused by squirrels, birds, raccoons and snakes (IEEE Power Engineering Society 1993). Nationwide, animals are the third leading identifiable cause of all power outages, and birds cause more outages than any other animal (Southern Engineering Company 1996). The United States Department of the Interior investigated 4,300 eagle deaths from the early 1960s to 1995 and they reported electrocution as the second greatest cause of all detected golden eagle (Aguila chrysaetos) mortality and the third greatest cause of bald eagle deaths (Haliaeetus leucocephalus) (LaRoe et al. 1995).

Three electrocuted great horned owls and one Swainson's hawk at a riser pole. (Right Photo)

Electrocuted eagle with severe amount of burns (Left photo)

The solution to this problem requires succinct information that can be transferred to utility engineers and linemen. There are numerous products available to retrofit lines but there is not a common location to view and obtain information on these products along with information on the advantages and disadvantages of each. Therefore a web site has been developed to provide this information in a user-friendly format

Product Compilation

There are approximately 178 products designed to mitigate animal-caused outages. The web site compiles all the various products and includes vendor hot links to products designed to prevent bird contacts.

A. Deadend Cover
B. Bushing Cover
C. Elevated Perch/Perch Guard
D. Insulated Bracket
E. Cutout Cover
F. Conductor Insulation
G. Misc. Covers
H. Pothead Cover
I. Conductor Cover
J. Fake Owl
K. Arrester Cap
L. Bushing Cover

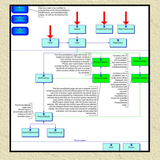
Product Search Engine

An interactive database search engine was created for the 178 products. This engine allows a user to easily sort by product type (e.g. perch deterrent, bushing cover, cutout cover, etc.) or equipment contacted (e.g. transformer, cutout, arrester, etc.). The search engine leverages off previous work on animal-caused outages developed by EPRI (2001).

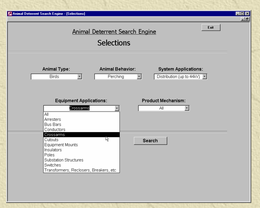
The database provides basic product information including a photo, product description, email address, and equipment application. Information includes:

- Product specifications
- Vendor claims
- Installation techniques
- Product Images
- Vendor contact information

Flow Chart

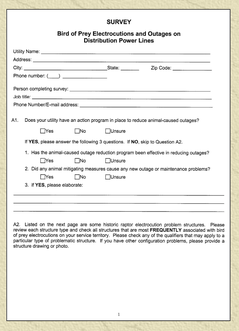


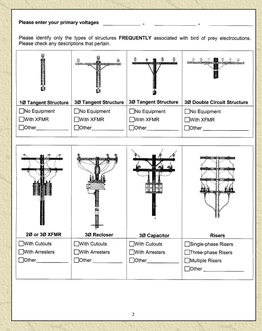
The menu driven database also allows hot linking directly to the vendor.



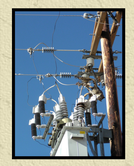
Electric Utility Survey

All California electric utility companies were sent surveys in order to compile and summarize typical California avian interaction problems. The survey requested information on problem structure types and utility satisfaction or dissatisfaction with existing retrofitting products.





The survey results were used to create images showing historic problem structures with and without state-of-the-art retrofitting. The retrofitting images include various options such as using insulation versus isolation and reframing.

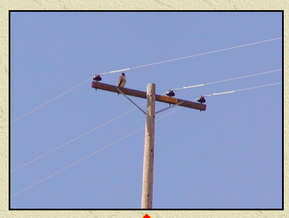


Problem Configurations

Problem Structures and Solutions

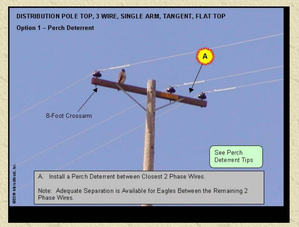
Based on the survey results, images of the most problematic structures were placed on the website.

Retrofitting options were developed for each structure type. Each retrofitting option provides a variety of material options. For example, a retrofit may employ perch management (isolation) to deter birds from landing on a structure or may utilize insulation to allow birds to continue using the structure.



Problem Configuration

Solution-Option 1



Solution-Perch Deterrents

Coyote Enterprises

Mission Environmental

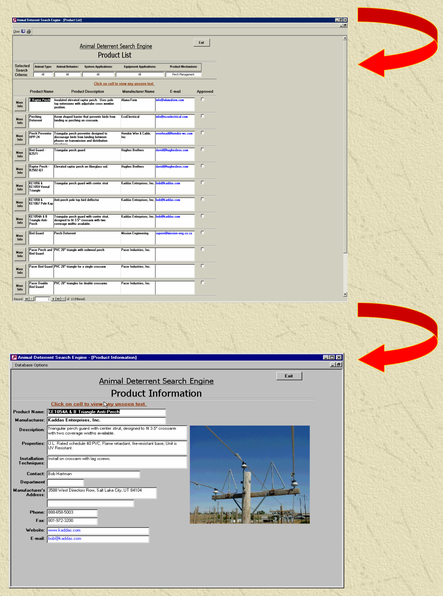
Solution-Option 2

Solution-Conductor Covers

DMX

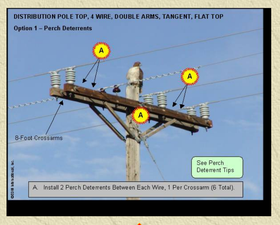
Kaddas

A Each retrofit solution includes callout buttons for specific material items (e.g., bushing cover, wire insulation, etc.). Clicking on the callout button takes the user directly to the material search engine.

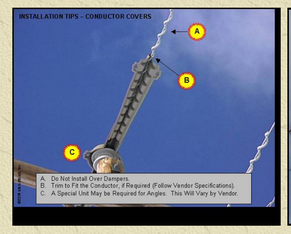


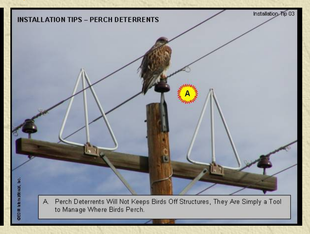
Installation Tips

Utilities often face problems due to the incorrect installation of products. When products are installed incorrectly, it can lead to unintended operational problems. The web site solutions include links to installation tips in order to prevent some of the more common misapplications.



Installation Tips





Testimonials

Although there are numerous products available to the utility industry there is very little information available on how successful these tools are and if utilities are satisfied with them. The web site includes a user's forum on the web site for electric utility product comments. This will provide future feedback.

Conclusion

The *Bird Electrocution Mitigation Web Site and Product Encyclopedia* allows a user to easily review various problem structures and retrofitting measures while simultaneously reviewing various material options. This site provides detailed information on particular products including a photo and detailed engineering information on the product's properties and installation techniques. The site provides succinct information that can easily be transferred to utility engineers and linemen.

References

Institute of Electrical and Electronics Engineers (IEEE) Power Engineering Society. 1993. IEEE guide for animal deterrents for electric power supply substations. Institute of Electrical and Electronics Engineers, Inc., New York. 16 pp.

LaRoe, E.T., G.S. Farris, C.E. Puckett, P.D. Doran and M.J. Mac (Eds.). 1995. Our living resources: a report to the nation on the distribution, abundance and health of U.S. plants, animals and ecosystems. U.S. Department of the Interior, National Biological Service, Washington, D.C. 530 pp.

Southern Engineering Company. 1996. Animal-caused outages. Electric Power Research Institute, National Rural Electric Cooperative Association. Arlington, Virginia. 171 pp.

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