

# IEEE Industry APPLICATIONS MAGAZINE

## Editor-in-Chief

H. Landis "Lanny" Floyd • 35 Gina Court  
Elkton, MD 21921 USA  
eic-iam@ieee.org

## Column Editors

### Chapter News

Peter Magyar - peter.magyar@ieee.org

### Education Department News

Joe Sottile - jsottile@ieee.org

### Electrical Safety

Mary Capelli-Schellpfeffer - capschell@earthlink.net

### History

Erling Hesla - e.hesla@ieee.org

### President's Message

Bruno Lequesne - bruno.lequesne@ieee.org

### Standards

I. Bruce McClung - i.b.mcclung@ieee.org

## IEEE Periodicals Magazines Dept

Sr. Managing Editor	Geri Krolin-Taylor
Sr. Art Director	Janet Dudar
Assistant Art Director	Gail A. Schnitzer
Ad Production Manager	Felicia Spagnoli
Business Development Manager	Susan Schneiderman +1 732 562 3946 ss.ieeemedia@ieee.org
Editorial Director	Dawn M. Melley
Production Director	Peter M. Tuohy
Staff Director,	Fran Zappulla

### IEEE Publishing Operations

IEEE prohibits discrimination, harassment, and bullying.  
For more information, visit <http://www.ieee.org/web/aboutus/whatis/policies/p9-26.html>.

## IAS Society Officers

President	Bruno Lequesne
President Elect	Blake Lloyd
Vice President	David Durocher
Treasurer	Don Zinger
Administrative Office	Lynda Bernstein IEEE, 445 Hoes Lane Piscataway, NJ 08854 +1 732 465 6627 phone +1 732 562 3881 fax l.m.bernstein@ieee.org ias-administrator@ieee.org

IEEE Industry Applications Magazine: (ISSN 1077-2618) (IAMEG) is published bimonthly by The Institute of Electrical and Electronics Engineers, Inc., Headquarters: 3 Park Avenue, 17th Floor, New York, NY 10016-5997, +1 212 419 7900. Responsibility for the contents rests upon the authors and not upon the IEEE, the Society or its members. IEEE Service Center (for orders, subscriptions, address changes): 445 Hoes Lane, Piscataway, NJ 08854 USA; [www.ieee.org](http://www.ieee.org). Individual copies: IEEE members \$20.00 (first copy only), nonmembers \$46.00 per copy.

**Subscription Rates:** Society members included with membership dues. Subscription rates available upon request.

**Copyright and reprint permissions:** Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limits of U.S. Copyright law for the private use of patrons 1) those post-1977 articles that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923 USA; 2) pre-1978 articles without fee. For other copying, reprint or republication permission, write Copyrights and Permissions Department, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. Copyright © 2011 by The Institute of Electrical and Electronics Engineers, Inc. All rights reserved. Periodicals postage paid at New York, NY and at additional mailing offices. Postmaster: Send address changes to IEEE Industry Applications Magazine, IEEE, 445 Hoes Lane, Piscataway, NJ 08854 USA. Canadian GST #125634188

PRINTED IN U.S.A.

Digital Object Identifier 10.1109/MIAS.2010.939640

May | June 2011  
Vol. 17, No. 3 • ISSN 1077-2618  
<http://www.ieee.org/ias>



© FOTORESEARCH

## Electrical Safety

## features

- 12 Protecting at the Speed of Light  
Combining arc-flash sensing and arc-resistant technologies.  
*John A. Kay, Juba Arvola, and Lauri Kumpulainen*
- 19 Safety-Management Systems  
Potential impact of ANSI Z10 and CSA Z1000.  
*H. Landis Floyd, II*
- 25 Unit Substation Design  
For optimizing reliability and electrical workplace safety.  
*David B. Durocher*
- 37 Wind-Power Generation  
Impact of wind generators on distribution systems.  
*Charles J. Mozina*
- 44 Electrical Equipment Isolation  
Key elements for developing and executing electrical equipment switching procedures.  
*Shahid Jamil and John D. Aeiker*
- 51 Selective Coordination  
Short-circuit higher-withstand requirement in MCCs.  
*Rajiv Kumar, Douglas Reed, Robert Morris, and Samuel Terry*
- 56 Circulating Ground Currents  
The paralleling of UPSs and generators.  
*William A. Brown, James M. Kennedy, and Charles Linkhart*

## departments and columns

From the Editor's Desk 2  
President's Message 4  
Electrical Safety 6  
History 8  
Conference News 66

Society News 68  
Education Department News 70  
Standards 72  
Chapter News 75  
Conference Calendar 79