2021 IEEE IAS Electrical Safety Workshop (ESW 2021)

Tucson, Arizona, USA 7 – 12 March 2021



IEEE Catalog Number: CFP21ESW-POD ISBN: 978-1-6654-4636-5

Copyright © 2021 by the Institute of Electrical and Electronics Engineers, Inc. All Rights Reserved

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

*** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.

 IEEE Catalog Number:
 CFP21ESW-POD

 ISBN (Print-On-Demand):
 978-1-6654-4636-5

 ISBN (Online):
 978-1-6654-0487-7

ISSN: 2326-3288

Additional Copies of This Publication Are Available From:

Curran Associates, Inc 57 Morehouse Lane Red Hook, NY 12571 USA

Phone: (845) 758-0400 Fax: (845) 758-2633

E-mail: curran@proceedings.com Web: www.proceedings.com



TABLE OF CONTENTS

PROTECTING WORKERS FROM ELECTROMAGNETIC INDUCTION DURING LINE-	
STRINGING OPERATIONS: COPYRIGHT MATERIAL IEEE PAPER NO. ESW2021-02	1
David Wallis; Brian Erga	
WORKING TOGETHER, SIX FEET APART	6
Anthony Tony Demaria; Katie Scarlett Reyes; Joe Barrios	
TO GROUND OR NOT TO GROUND	9
Kenneth Sellars	
METHODS FOR EVALUATING DC ARC INCIDENT ENERGY IN PV SYSTEMS	15
WORKER CONTACT WITH ELECTRICITY: THE CHARACTERISTICS OF A WORKPLACE	
ELECTRICAL FATALITY	27
Brett Brenner; Daniel Majano	
TROUBLESHOOTING: THE "ACCEPTABLE" ENERGIZED WORK	36
Karl Cunningham; Michael Kovacic WHAT HAPPENS WHEN THE HOST EMPLOYER MAKES A MISTAKE?	10
Dennis Kennedy	42
A BALANCED SCORECARD OF LEADING AND LAGGING INDICATORS FOR YOUR	
ELECTRICAL SAFETY PROGRAM	51
H. Landis Floyd	,
EFFECTIVE JOB BRIEFINGS IMPROVE SAFETY	55
D. Ray Crow	
RELIABILITY AND SAFETY OF ELECTRIC POWER SYSTEMS	61
Alan Ross	
RECONDITIONED LOW-VOLTAGE CIRCUIT BREAKERS – ARE THEY REALLY SAFE?	65
DEFINING THE ROLE OF THE "EMPLOYEE IN CHARGE" IN ELECTRICAL SAFETY WORK	75
Al Havens	
EQUIVALENT FORMULAS FOR DETERMINING INCIDENT HEAT ENERGY FOR VARIOUS	
FAULT CURRENTS AND CLEARING TIMES USED IN NESC AND OSHA REGULATIONS	78
Marcia L. Eblen; Tom Short; Zarheer Jooma	
UNDERSTANDING AND GETTING INVOLVED IN NFPA'S STANDARDS DEVELOPMENT	
PROCESS	90
Diana V. Jones; David Pace	
5-MINUTE JOB – TRAINING AN UNQUALIFIED WORKER FOR WHEN THINGS GO WRONG Joe Rachford	
ARC FLASH INCIDENT IN WIND TURBINE	98
Ron Zieber; Wayne Oliver	
ELECTRICITY ACCIDENTS IN BRAZIL: THE DATA AND CHARACTERISTICS OF	
ACCIDENTS. WHAT IS BEING DONE TO CHANGE THIS SCENARIO.	102
Eng. Edson Martinho	
SOLID STATE CIRCUIT BREAKERS – THEIR TECHNICAL, OPERATIONAL AND	100
APPLICATION BENEFITS	109
PREVENTION THROUGH DESIGN, STRATEGIES TO REDUCE THE HAZARDS OF	
STATIONARY BATTERY SYSTEMS THROUGH INTELLIGENT DESIGN	118
Michael P. O'Brien; John R. Todora	110
ARC-FLASH PPE – A SIMPLIFIED CONSTANT ENERGY LINE TABLE METHOD	123
Rémi Hallé; Kirk Gray; Daniel Roberts; Marcelo Valdes	
LESSONS LEARNED DEVELOPING STANDARDIZED PPE LEVELS AND TASK-SPECIFIC	
RISK ASSESSMENTS FOR A MULTINATIONAL COMPANY	134
John Mason; Joshua Kerr; Donald Lockhart; Elihu Hugh Hoagland	
AN ACCIDENT WAITING TO HAPPEN	138
Wes Mozley	
A STATE BY STATE COMPARISON OF OCCUPATIONAL ELECTRICAL WORK FATALITIES	141
Tammy Gammon: Derek Viostol	

EPIDEMIOLOGY OF RATE OF FATALITY DUE TO ELECTRIC SHOCK, 2015–2017	150
COMPARISON OF IEEE 1584-2018 PREDICTIONS WITH TESTS ON REAL-WORLD	
EQUIPMENT	156
Tom A. Short; Marcia L. Eblen	
TEMPORARY TEST EQUIPMENT, RISK OF NOT MAINTAINING AN ELECTRICALLY SAFE	
WORK CONDITION	164
Michael King; Juan Pena	
Author Index	