

# **2nd International Conference on Reliability Engineering (ICRE 2017)**

IOP Conference Series: Materials Science and Engineering  
Volume 351

Milan, Italy  
20 – 22 December 2017

ISBN: 978-1-5108-6282-1  
ISSN: 1757-8981

**Printed from e-media with permission by:**

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



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2017) by the Institute of Physics  
All rights reserved. The material featured in this book is subject to  
IOP copyright protection, unless otherwise indicated.

Printed by Curran Associates, Inc. (2018)

For permission requests, please contact the Institute of Physics  
at the address below.

Institute of Physics  
Dirac House, Temple Back  
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481  
Fax: 44 1 17 920 0979

[techtracking@iop.org](mailto:techtracking@iop.org)

**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  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# Table of contents

## Volume 351

**2017 2nd International Conference on Reliability Engineering (ICRE 2017)**

**20–22 December 2017, Milan, Italy**

**Accepted papers received: 16 April 2018 - Published online: 14 May 2018**

### **Preface**

[2017 2nd International Conference on Reliability Engineering \(ICRE 2017\)](#)

[2017 2nd International Conference on Reliability Engineering \(ICRE 2017\)](#)

[Peer review statement](#)

### **Papers**

#### **Equipment Monitoring and Reliability Analysis**

[Towards generating ECSS-compliant fault tree analysis results via ConcertoFLA](#)

B Gallina, Z Haider and A Carlsson.....1

[Steel Bar corrosion monitoring based on encapsulated piezoelectric sensors](#)

Ying Xu and Tianyou Tang.....8

[Effect of tooth profile modification on wear in internal gears](#)

M S Tunalioglu and B Tuc.....13

[A study on the real-time reliability of on-board equipment of train control system](#)

Yong Zhang and Shiwei Li.....18

[On circular  \$m\$ -consecutive- \$k, l\$ -out-of- \$n\$ :F systems](#)

F S Makri.....32

[Environmental sustainability assessment of hydropower plant in Europe using life cycle assessment](#)

M A P Mahmud, N Huda, S H Farjana and C Lang.....40

### **Product Design and Reliability Testing**

[Probabilistic framework for product design optimization and risk management](#)

J K Keski-Rahkonen.....48

[Statistical Bayesian method for reliability evaluation based on ADT data](#)

Dawei Lu, Lizhi Wang, Yusheng Sun and Xiaohong Wang.....61

### **Circuit System Analysis and Detection**

[Multistage degradation modeling for BLDC motor based on Wiener process](#)

Qingyang Yuan, Xiaogang Li and Yuankai Gao.....68

[Analysis of SET pulses propagation probabilities in sequential circuits](#)

Shuo Cai, Fei Yu and Yiqun Yang.....73

[Survey of key technologies on millimeter-wave CMOS integrated circuits](#)

Fei Yu, Lei Gao, Lixiang Li, Shuo Cai, Wei Wang and Chunhua Wang.....79

## **Engineering Maintenance and Quality Management**

### [Qualitative study on maintenance management in Moroccan industries](#)

Amal Naji, Mohamed El Oumami, Otmane Bouksour and Zitouni Beidouri.....87

### [Maintenance of buildings: Italian examples of deviations between planned and incurred costs](#)

Manuela Rebaudengo and Paolo Piantanida.....95

### [A bi-objective model for optimizing replacement time of age and block policies with consideration of spare parts' availability](#)

Imad Alsyuf.....100

## **Information Technology and Security**

### [Cycling transport safety quantification](#)

Jiri Drbohlav and Josef Kocourek.....106

### [Life-Cycle environmental impact assessment of mineral industries](#)

Shahjadi Hisan Farjana, Nazmul Huda and M. A. Parvez Mahmud.....115

### [Trajectory data privacy protection based on differential privacy mechanism](#)

Ke Gu, Lihao Yang, Yongzhi Liu and Niandong Liao.....122

### [Residual translation compensations in radar target narrowband imaging based on trajectory information](#)

Wenjue Yue, Bo Peng, Xizhang Wei, Xiang Li and Dongping Liao.....128