

# **IET International Conference on Railway Engineering 2008**

**(ICRE 2008)**

**IET Seminar Digests 2008/001**

**Hong Kong, China  
25-28 March 2008**

**ISBN: 978-1-61567-884-6**

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

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571  
[www.proceedings.com](http://www.proceedings.com)

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

Copyright© (2008) by the Institution of Engineering and Technology  
All rights reserved.

Printed by Curran Associates, Inc. (2010)

For permission requests, please contact the Institution of Engineering and Technology  
at the address below.

Institution of Engineering and Technology  
P. O. Box 96  
Stevenage, Hertfordshire  
U.K. SG1 2SD

Phone: 01-441-438-767-328-328  
Fax: 01-441-438-767-328-375

[www.theiet.org](http://www.theiet.org)

# TABLE OF CONTENTS

<b>Lightning Disturbance to West Rail and Enhancements to the Earthing Design</b> .....	1
<i>H. Cheung, R.D. White</i>	
<b>Progress and Challenges of Urban Rail Transit in Mainland China</b> .....	8
<i>Hu Zhangxi</i>	
<b>Measuring the Dynamic Interaction Between Electric Vehicle Shoe-gear and the Third Rail</b> .....	14
<i>P.F. Weston, E. Stewart, C. Roberts, S. Hillmansen</i>	
<b>Innovative Systems Engineering Practices That Help Manage the Organisational and Technical Complexity of a Modern Railway Project</b> .....	18
<i>M. Stubbs, A. Knott</i>	
<b>Function Integrated Track System</b> .....	24
<i>E. Hohnecker</i>	
<b>Design and Implementation of a Railway Control Centre for Multiple Corridor Stations</b> .....	28
<i>V.P. Liska, V. Polach</i>	
<b>Feasibility of Using Building Reinforced Steel Bars to Transmit Signals</b> .....	33
<i>J.K.-t. Chan, M.H.L. Chow, A.P.K. Wai</i>	
<b>How to Enhance Security by Image Analytics</b> .....	39
<i>M. Seifert, V. Ramesh</i>	
<b>Using Formal Verification to Eliminate Software Errors</b> .....	44
<i>H. Agren</i>	
<b>Improvements to the Application of System Integration Management in a Metro System Project</b> .....	50
<i>J. Liang, V. Lo, P. Tsui, F. Wong, S. Wong</i>	
<b>Independent Verification and Validation</b> .....	56
<i>A. Sinde, C. Ho</i>	
<b>Advanced Features of Static Inverter and Their Influence on Rail Infrastructure and Vehicle Maintenance</b> .....	61
<i>G. Bachmann, D. Wimmer</i>	
<b>About the Synthesis of the Rolling Surfaces Profiles of the Railway Vehicles Wheels</b> .....	65
<i>I. Sebesan</i>	
<b>Analysis of Energy Storage Devices in Hybrid Railway Vehicles</b> .....	68
<i>S. Lu, D.H. Meegahawatte, S. Guo, S. Hillmansen, C. Roberts, C.J. Goodman</i>	
<b>Project Risk Management Framework for Railway Construction Projects</b> .....	74
<i>A. Johnson</i>	
<b>Safety Management Within Land Transport Authority in Singapore</b> .....	79
<i>J. Kwan, Chin Nang Tang, Kwee Seng Yap</i>	
<b>Effective Application of Systems Assurance Techniques on Complex Railway Development Projects</b> .....	84
<i>C. Ho</i>	
<b>Earthing the London Underground</b> .....	94
<i>R.D. White</i>	
<b>MTR Disneyland Resort Line - a Tourism Railway</b> .....	100
<i>W. Yeung</i>	
<b>Partnering for EMI Mitigation - a Case Study from the Lok Ma Chau Spur Line</b> .....	104
<i>R. So, Chi Fai Shek, S. Lui, E. Kwok</i>	
<b>Automating Resolution of Ticketing Issues - the Self-service Point</b> .....	110
<i>M. Choy, C. To</i>	
<b>Re-signaling the Paris Line 1: from Driver Operated Line to Driverless Line</b> .....	116
<i>G. Yelloz, P. Charon</i>	
<b>An Active RFID System for Railway Vehicle Identification and Positioning</b> .....	120
<i>L.T. Lee, K.F. Tsang</i>	
<b>Radio and Communications-based Train Control: Migration, Interoperation and System Engineering Issues</b> .....	124
<i>S.G. Shirlaw</i>	
<b>Condition Monitoring of Audio Frequency Track Circuits</b> .....	129
<i>P.F. Weston, J. Chen, E. Stewart, C. Roberts</i>	
<b>Locomotive's Spare Parts Optimization</b> .....	135
<i>M.G. Mattos, D.A.F. Reis, D.J.A. Magalhaes</i>	

<b>Evaluation of Rail Potential Control Devices Performance for Control of Rail Potential of DC Electrified Railway Systems</b> .....	140
<i>M. Niasati, A. Gholami</i>	
<b>Generic Functional Model for Driverless Rail Transit Systems</b> .....	147
<i>Oh Sin Hin, S. Chan</i>	
<b>New Project Management Practices for Metro Projects in China</b> .....	152
<i>I. Billy, W.K. Tam</i>	
<b>Human Factors in Railway Operations</b> .....	159
<i>K. Priestley, G. Lee</i>	
<b>A Generic Fault Detection and Diagnosis Approach for Railway Assets</b> .....	164
<i>Hao Bai, C. Roberts, C. Goodman</i>	
<b>Risk Based Asset Management - a Success Story</b> .....	172
<i>J. Ng</i>	
<b>Improving Business Performance Through Risk Based Asset Management</b> .....	177
<i>A. Martin, P. Bamford</i>	
<b>Planning of Pedestrian Link Projects in Hong Kong</b> .....	182
<i>I.C.C. Ip</i>	
<b>Estimating the Effect of Railway Sector Development on Economics Growth in Iran</b> .....	189
<i>M. Ameri, A.R. Arjroody, P.B. Ardebili</i>	
<b>High Speed Rail: Migration of Project System Safety to Operational System Safety</b> .....	197
<i>K.K. Sung</i>	
<b>Applications and Selections of Intelligent Surveillance System in Railway Industry</b> .....	203
<i>T.S.K. Chan, K.S.M. Chung</i>	
<b>Handoff Decision Algorithm with Dynamic Sampling Distance in GSM-R Network</b> .....	209
<i>Y. Li, Y.S. Yan</i>	
<b>Decision-support Tool for Tunnel Train-fire Scenarios MTRC Lok Ma Chau (LMC) Spur Line (Hong Kong)</b> .....	213
<i>Y.W. Tung</i>	
<b>Numerical Simulation of the Flow Around an ICE2 Train Under the Influence of a Wind Gust</b> .....	219
<i>S. Krajnovic</i>	
<b>Optimisation of Train Re-scheduling Using a Genetic Algorithm Applied to the Mimic Panel State Model of the Overall Rail Network</b> .....	225
<i>R. Takagi, R. Kokago, C. Goodman, P. Weston</i>	
<b>A Heuristic Algorithm for Fixed Train Runtime</b> .....	230
<i>Wenzheng Jia, Shaokuan Chen, Tinkin Ho, Baohua Mao, Yun Bai</i>	
<b>Overview of Stray Current Control in DC Railway Systems</b> .....	237
<i>M. Niasati, A. Gholami</i>	
<b>Energy Efficient Technologies for Railway Escalators</b> .....	243
<i>C.C.N. Kiang, K.W.E. Cheng, K.W.K. Chan</i>	
<b>Improvement of the OCS in the Information Age</b> .....	248
<i>A.W.C. Shing, P.P.L. Wong</i>	
<b>RCM System Modeling in Developing an Advanced Urban EMU</b> .....	255
<i>W. Jeong, G. Kim, S.H. Park, H.M. Lee, C.M. Lee, S. Oh</i>	
<b>Highly Reliable Power Supply for Passenger Coaches</b> .....	260
<i>Li Guo</i>	
<b>Reducing Train Weight and Simplifying Train Design by Using Active Redundancy of Static Inverters for the Onboard Supply of Rolling Stock</b> .....	266
<i>G. Bachmann, D. Wimmer</i>	
<b>Futuristic Railway Condition Monitoring System</b> .....	271
<i>S.L. Ho</i>	
<b>Author Index</b>	