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Contact Lines for Electric Railways

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Contact Lines For Electrical Railways Planning Design Implementation

Alphose Zingoni



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Contact Lines for Electric Railways Friedrich Kiessling, Rainer Puschmann, Axel Schmieder, Egid Schneider, 2018-01-03
Electric traction is the most favourable type of power supply for electric railways from both an ecological and an economic perspective. In the case of urban mass transit and high speed trains it is the only possible type of traction. Its reliability largely depends on contact lines which must operate in all climatic conditions with as high availability and as little maintenance as possible. Extreme demands arise when overhead contact lines are required to provide reliable and safe power transmission to traction vehicles travelling at speeds in excess of 250 km/h. The authors have used their worldwide experience to provide comprehensive descriptions of configuration, mechanical and electrical design, installation, operation and maintenance of contact lines for local and long distance transportation systems including high speed lines. In this book railway company professionals and manufacturers of contact line systems, students and those embarking on a career in this field will find practical guidance in the planning and implementation of systems, product descriptions, specifications and technical data including standards and other regulations. Special emphasis is laid on the interaction of the individual components of power supply especially between contact lines and pantographs. Since large sections of the book are dedicated to system aspects, consultant engineers can also use it as a basis for designing systems as well as interfaces to other subsystems of electric railway engineering. The contents of the book are rounded off by examples of running systems.

Contact Lines for Electrical Railways Friedrich Kiessling, Rainer Puschmann, Axel Schmieder, Egid Schneider, 2009-08-24
Electric traction is the most favourable type of power supply for electric railways from both ecological and economic perspectives. Its reliability largely depends on contact lines which must operate reliably in all climatic conditions with as little maintenance as possible. Extreme demands arise when overhead contact lines are required to provide reliable and safe power transmission to electric traction vehicles travelling at speeds in excess of 300 km/h. The authors have used their world wide experience to provide comprehensive descriptions of configuration, mechanical and electrical design, installation and operation of contact lines for electric railways on local and long distance transportation systems including high speed lines. The book provides students and those embarking on a career in this field with a detailed presentation of the subject including the electromechanical and structural requirements. Railway company professionals and manufacturers of contact line systems will find practical guidance in the planning and implementation of systems as well as appropriate specifications and the technical data they will need including standards and other regulations. Since large sections of the book are dedicated to the system aspects, consultant engineers can also use it as a basis for designing systems and interfaces to other subsystems of electric railway engineering.

Contact Lines for Electrical Railways Friedrich Kiessling, Rainer Puschmann, Axel Schmieder, 2001
From both ecological and economical perspectives electric traction is the most favorable type of power supply for railways. Its reliability depends to a large degree on the contact lines which have to operate safely under all relevant climatic conditions needing as

little maintenance as possible. Particularly extreme demands are made if overhead contact lines are expected to ensure safe power transmission to electric traction vehicles travelling at speeds over 300 km/h. The authors have used their world wide experience to provide a clear and comprehensive description of the configuration, mechanical and electrical design, installation and operation of contact lines for electric railways on local and long distance transportation systems. The book provides students and those embarking on a career in this field with a detailed description of the subject including the electromechanical and structural requirements. Railway company professionals and manufacturers of contact line systems will find practical guidance in the planning and implementation of systems as well as appropriate specifications and the technical data they will need including standards and regulations. Since large sections of the book are dedicated to the system aspects, consultant engineers can also use it as a basis for designing systems and interfaces to other subsystems of electric railway engineering.

Praxisbuch Prozessoptimierung Ernst Jankulík, Roland Piff, 2009-06-01. Das Buch stellt Modelle für die Messung von Hard und Soft Facts vor sowie praxisnahe Beispiele und Lessons Learned aus verschiedenen Branchen. Die Beispiele liefern ein Toolset aus dem man sich Messwerkzeuge und Optimierungsideen für das eigene Unternehmen heraussuchen kann.

Friction, Wear and Wear Protection Alfons Fischer, Kirsten Bobzin, 2011-02-10. The proceedings collect invited and contributed papers from more than 150 scientists and engineers worldwide which provide an up to date overview of the current research on friction and wear including new systematic approaches as well as innovative technical solutions.

Proceedings of the 3rd International Conference on Electrical and Information Technologies for Rail Transportation (EITRT) 2017 Limin Jia, Yong Qin, Jianguo Suo, Jianghua Feng, Lijun Diao, Min An, 2018-03-30. The proceedings collect the latest research trends, methods and experimental results in the field of electrical and information technologies for rail transportation. The topics cover novel traction drive technologies of rail transportation, safety technology of rail transportation system, rail transportation information technology, rail transportation operational management technology, rail transportation cutting edge theory and technology etc. The proceedings can be a valuable reference work for researchers and graduate students working in rail transportation, electrical engineering and information technologies.

Handbook of Railway Vehicle Dynamics, Second Edition Simon Iwnicki, Maksym Spiryagin, Colin Cole, Tim McSweeney, 2019-11-14. Handbook of Railway Vehicle Dynamics Second Edition provides expanded fully updated coverage of railway vehicle dynamics. With chapters by international experts, this work surveys the main areas of rolling stock and locomotive dynamics. Through mathematical analysis and numerous practical examples, it builds a deep understanding of the wheel-rail interface, suspension and suspension component design, simulation and testing of electrical and mechanical systems and interaction with the surrounding infrastructure and noise and vibration. Topics added in the Second Edition include magnetic levitation, rail vehicle aerodynamics and advances in traction and braking for full trains and individual vehicles.

Communication Technologies for Vehicles Francine Krief, Hasnaâ Aniss, Léo Mendiboure, Serge

Chaumette, Marion Berbineau, 2020-12-19 This book constitutes the refereed proceedings of the 15th International Workshop on Communication Technologies for Vehicles Nets4Cars Nets4Trains Nets4Aircraft 2020 held in Bordeaux France in November 2020 The 18 full papers were carefully reviewed and selected from 22 submissions The selected papers present original research results in areas related to the physical layer communication protocols and standards mobility and traffic models experimental and field operational testing and performance analysis

Power Supply, Energy Management and Catenary Problems Eduardo Pilo, 2010 In latter years energy efficiency has become a crucial concern for every transportation mode but it is in electrified railways where energy savings have shown a bigger potential due to i regenerative braking that allows converting kinetic energy into electric power and ii vehicle interconnection that allows other trains to use regenerated power Power supply and energy management will continue to develop in the future This book gathers under a single cover several papers published in the Computer on Railways series IX X and XI and focuses on power supply and energy management Some of the discussed themes are modelling simulation and optimisation of AC and DC infrastructure analysis of rolling stock consumption and innovative approaches in power supply operation This book will be invaluable to management consultants engineers planners designers manufacturers operators and IT specialists who need to keep abreast of the latest developments in the field

Proceedings of the 5th International Conference on Electrical Engineering and Information Technologies for Rail Transportation (EITRT) 2021 Limin Jia, Yong Qin, Jianying Liang, Zhigang Liu, Lijun Diao, Min An, 2022-02-21 This book reflects the latest research trends methods and experimental results in the field of electrical and information technologies for rail transportation which covers abundant state of the art research theories and ideas As a vital field of research that is highly relevant to current developments in a number of technological domains the subjects it covered include intelligent computing information processing communication technology automatic control etc The objective of the proceedings is to provide a major interdisciplinary forum for researchers engineers academicians and industrial professionals to present the most innovative research and development in the field of rail transportation electrical and information technologies Engineers and researchers in academia industry and government will also explore an insightful view of the solutions that combine ideas from multiple disciplines in this field The volumes serve as an excellent reference work for researchers and graduate students working on rail transportation and electrical and information technologies

Proceedings of the 6th International Conference on Electrical Engineering and Information Technologies for Rail Transportation (EITRT) 2023 Ming Gong, Limin Jia, Yong Qin, Jianwei Yang, Zhigang Liu, Min An, 2024-01-03 This book reflects the latest research trends methods and experimental results in the field of electrical and information technologies for rail transportation which covers abundant state of the art research theories and ideas As a vital field of research that is highly relevant to current developments in a number of technological domains the subjects it covered include intelligent computing information processing communication technology automatic control etc The objective of the proceedings is to

provide a major interdisciplinary forum for researchers engineers academicians and industrial professionals to present the most innovative research and development in the field of rail transportation electrical and information technologies Engineers and researchers in academia industry and government will also explore an insightful view of the solutions that combine ideas from multiple disciplines in this field The volumes serve as an excellent reference work for researchers and graduate students working on rail transportation and electrical and information technologies

Advances in Engineering Materials, Structures and Systems: Innovations, Mechanics and Applications Alphose Zingoni, 2019-08-21 Advances in Engineering Materials Structures and Systems Innovations Mechanics and Applications comprises 411 papers that were presented at SEMC 2019 the Seventh International Conference on Structural Engineering Mechanics and Computation held in Cape Town South Africa from 2 to 4 September 2019 The subject matter reflects the broad scope of SEMC conferences and covers a wide variety of engineering materials both traditional and innovative and many types of structures The many topics featured in these Proceedings can be classified into six broad categories that deal with i the mechanics of materials and fluids elasticity plasticity flow through porous media fluid dynamics fracture fatigue damage delamination corrosion bond creep shrinkage etc ii the mechanics of structures and systems structural dynamics vibration seismic response soil structure interaction fluid structure interaction response to blast and impact response to fire structural stability buckling collapse behaviour iii the numerical modelling and experimental testing of materials and structures numerical methods simulation techniques multi scale modelling computational modelling laboratory testing field testing experimental measurements iv innovations and special structures nanostructures adaptive structures smart structures composite structures bio inspired structures shell structures membranes space structures lightweight structures long span structures tall buildings wind turbines etc v design in traditional engineering materials steel concrete steel concrete composite aluminium masonry timber glass vi the process of structural engineering conceptualisation planning analysis design optimization construction assembly manufacture testing maintenance monitoring assessment repair strengthening retrofitting decommissioning The SEMC 2019 Proceedings will be of interest to civil structural mechanical marine and aerospace engineers Researchers developers practitioners and academics in these disciplines will find them useful Two versions of the papers are available Short versions intended to be concise but self contained summaries of the full papers are in this printed book The full versions of the papers are in the e book

Sustainable Buildings and Structures: Building a Sustainable Tomorrow Konstantinos Papadikis, Chee Chin, Isaac Galobardes, Guobin Gong, Fangyu Guo, 2019-09-26 Sustainable Buildings and Structures Building a Sustainable Tomorrow collects the contributions presented at the 2nd International Conference on Sustainable Buildings and Structures Suzhou China 25-27 October 2019 The papers aim at sharing the state of the art on sustainable approaches to engineering design and construction and cover a wide range of topics Sustainable Construction Materials Sustainable Design in Built Environment Green and Low Carbon Buildings Smart Construction and

Construction Management Sustainable Buildings and Structures Building a Sustainable Tomorrow will be of interest to academics professionals industry representatives and local government officials involved in civil engineering architecture urban planning structural engineering construction management and other related fields *High-Speed Rail in Poland* Andrzej Zurkowski, 2018-07-24 The Railway Research Institute Instytut Kolejnictwa in Warsaw was established in 1951 and was until 2000 part of the Polish State Railways PKP At present it serves as an independent entity it is subordinated to the minister responsible for transport Since its inception the Institute has been the centre of competence for technology technique and organization of operation and services in rail transport particularly in respect to innovation One of its fundamental tasks also includes activities connected with safety which are carried out in close cooperation with the National Safety Authority i.e. the Office of Rail Transport At the same time the Institute participated in the process of upgrading and modernization of the rail network in Poland Experience in high speed rail gained as a result of international cooperation and basing on the effort to increase speed on railway lines in Poland so far 200 km/h is included in the monograph *Koleje Dużych Prędkości w Polsce High Speed Rail in Poland* published in 2015 for the benefit of the Polish reader This monograph aims at reaching an international audience of experts so as to present Polish determinants of HSR implementation In order to elaborate this monograph apart from specialists from the Railway Research Institute experts from other research and academic centres were invited Not only presenting a wide range of problems connected with future construction of High Speed Lines in Polish conditions but also a number of operational ones The authors have created a reference work of universal character solving problems in order to build and operate high speed rail systems in countries on a similar level of development as Poland Features providing requirements for design and upgrade of engineering works on High Speed Rail development information on restructuring and building railway lines for countries starting to develop a High Speed Rail system dealing with organizational engineering socioeconomic and economic demands for transport services and the formation of human resources for constructing and operating a High Speed Rail system Presenting these problems on the international arena will facilitate future cooperation and application of world experience to create HSR in Poland and integrate the Polish HSR network into the international one **Handbook of Research on Emerging Innovations in Rail**

Transportation Engineering Rai, B. Umesh, 2016-05-31 The rail based transit system is a popular public transportation option not just with members of the public but also with policy makers looking to install a form of convenient and rapid travel Even for moving bulk freight long distances a rail based system is the most sustainable transportation system currently available The Handbook of Research on Emerging Innovations in Rail Transportation Engineering presents the latest research on next generation public transportation infrastructures Emphasizing a diverse set of topics related to rail based transportation such as funding issues policy design traffic planning and forecasting and engineering solutions this comprehensive publication is an essential resource for transportation planners engineers policymakers and graduate level

engineering students interested in uncovering research based solutions recommendations and examples of modern rail transportation systems

Advances in Dynamics of Vehicles on Roads and Tracks III Wei Huang, Mehdi Ahmadian, 2024-10-31 This book offers a timely snapshot of research and development in rail vehicle dynamics Gathering a set of peer reviewed contributions to the 28th Symposium of the International Association of Vehicle System Dynamics IAVSD which was held on August 21 25 2023 in Ottawa Canada this first volume of the proceedings covers a broad range of topics relating to rail vehicles Topics covered include modelling and simulation as well as design control and monitoring of rail vehicles and strategies to improve safety performance and ride comfort among others Overall this book provides academics and professionals with a timely reference on state of the art theories and methods that can be used to understand analyze and improve rail vehicle safety and performance in a wide range of operating conditions

Dynamics of Civil Structures, Volume 2 Juan Caicedo, Shamim Pakzad, 2025-08-07 Dynamics of Civil Structures Volume 2 Proceedings of the 33rd IMAC A Conference and Exposition on Balancing Simulation and Testing 2015 the second volume of ten from the Conference brings together contributions to this important area of research and engineering The collection presents early findings and case studies on fundamental and applied aspects of Structural Dynamics including papers on Modal Parameter Identification Dynamic Testing of Civil Structures Human Induced Vibrations of Civil Structures Correlation Updating Operational Modal Analysis Damage Detection of Structures Bridge Structures Damage Detection Models Experimental Techniques for Civil Structures

Structural Health Monitoring, Damage Detection & Mechatronics, Volume 7 Alfred Wicks, Christopher Niezrecki, 2025-08-07 Structural Health Monitoring Damage Detection Mechatronics Volume 7 Proceedings of the 34th IMAC A Conference and Exposition on Dynamics of Multiphysical Systems From Active Materials to Vibroacoustics 2016 the seventh volume of ten from the Conference brings together contributions to this important area of research and engineering The collection presents early findings and case studies on fundamental and applied aspects of Structural Dynamics including papers on Structural Health Monitoring Damage Detection Numerical Modeling Mechatronics System Identification Active Controls

Energy Conservation Update , 1981 Dynamics of Vehicles on Roads and Tracks Vol 2 Maksym Spiryagin, Timothy Gordon, Colin Cole, Tim McSweeney, 2017-12-06 The International Symposium on Dynamics of Vehicles on Roads and Tracks is the leading international gathering of scientists and engineers from academia and industry in the field of ground vehicle dynamics to present and exchange their latest innovations and breakthroughs Established in Vienna in 1977 the International Association of Vehicle System Dynamics IAVSD has since held its biennial symposia throughout Europe and in the USA Canada Japan South Africa and China The main objectives of IAVSD are to promote the development of the science of vehicle dynamics and to encourage engineering applications of this field of science to inform scientists and engineers on the current state of the art in the field of vehicle dynamics and to broaden contacts among persons and organisations of the various countries engaged in scientific research and development in the field of vehicle dynamics and

related areas IAVSD 2017 the 25th Symposium of the International Association of Vehicle System Dynamics was hosted by the Centre for Railway Engineering at Central Queensland University Rockhampton Australia in August 2017 The symposium focused on the following topics related to road and rail vehicles and trains dynamics and stability vibration and comfort suspension steering traction and braking active safety systems advanced driver assistance systems autonomous road and rail vehicles adhesion and friction wheel rail contact tyre road interaction aerodynamics and crosswind pantograph catenary dynamics modelling and simulation driver vehicle interaction field and laboratory testing vehicle control and mechatronics performance and optimization instrumentation and condition monitoring and environmental considerations Providing a comprehensive review of the latest innovative developments and practical applications in road and rail vehicle dynamics the 213 papers now published in these proceedings will contribute greatly to a better understanding of related problems and will serve as a reference for researchers and engineers active in this specialised field Volume 2 contains 135 papers under the subject heading Rail

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