CONFERENCE DAY 1: TUESDAY 29 AUGUST 2023

08:00	REGISTRATION OPENS	
SUB-THEME: HEAVY HAUL VISION 2030		
TIME	**OPENING PLENARY OF DAY 1 OF THE CONFERENCE**	
10h00 – 12h30	**TOPIC**	**PRESENTER**
10h00 - 10h20	Conference opening ceremony	
10h20 - 10h45	Welcoming Address	Antonio Merheb, IHHA Chairman, Brazil Scott Lovelace, IHHA CEO, USA
10h45 - 11h00	MRS Logistics Heavy Haul Journey	Guilherme Mello, CEO, MRS Logistics, Brazil
11h00 - 11h15	Words from Platinum Sponsor	Bradley Willems, CEO, Loram, USA
11h15 - 11h35	**Key Note Address:** Rail Reform, Regulations and Public-Private Partnerships as a key enabler to unlocking rail transportation, a Case Study of Brazil and India	Edpo Covalciuk Silva, Transport Specialist, World Bank, USA
11h35 - 11h55	Heavy Haul Vision 2030	Brian Monakali, Director Energy & Logistics Strategy, South32, IHHA Vice Chairman, South Africa
11h55 - 12h30	**Moderated Panel** Topic: Progress on Implementation of the Heavy Haul Vision 2030 - Case Studies	• Shaun Robertson, Infrastructure Lead, Rio Tinto, IHHA Director, Australia • Alexandre Fleischhauer, Chief Engineering and Maintenance, MRS Logistics, Brazil • Nkululeko Gobhozi, Chief Engineer Technology, Transnet, IHHA Director, South Africa • Rafael Gaier, Railways Engineering Manager, Vale S.A, Brazil
12h30 – 13h30	**LUNCH BREAK**	

CONFERENCE DAY 1: TUESDAY 29 AUGUST 2023 (CONT.)

PARALLEL TECHNICAL SESSIONS 1

13h30 - 15h35	Session 1A **Rolling Stock**	Session 1B **Vehicle Track Systems**	Session 1C **Track**	Session 1D **Track**	Session 1E **Operations**	Session 1F **Bridges & Tunnels**
13h30 – 13h55	SURA®35, a wheel solution for challenging Heavy Haul service scenarios ***Alberto Ronchi, Lucchini RS S.p.A., Lovere (BG), Italy***	Big Data Monitoring Framework for Instrumented Wagon and Track Recording Car: A Data Analysis For Vitória - Minas Railway ***Angelo Samuel Junqueira, University of São Paulo, Brazil***	Ballast Maintenance and Concrete Tie Performance ***Steve Wilk, BNSF Railway, United States***	Real Time Sound Analysis When Preheating For Aluminothermic Welds ***Frédéric Delcroix, Pandrol Sas, France***	Retrofitting of Conventional Railway Bogies to Convert them into Radial Bogies to Increase Operational Safety and Reduce Wheel Wear ***Adams Ribeiro, Amsted Rail, Brazil***	Vehicle-based Detection of Bridge Condition ***Gary Fry, Fry Technical Services, Inc., United States***
13h55 – 14h20	Investigating Vertical Split Rim Failures In North American Railroads Through Finite Element Analysis ***Alejandro Alvarez-Reyes, Ensco Inc., United States***	Digital twin service patterns for maintenance management of operational rail assets ***Anriette Bekker, Stellenbosch University, South Africa***	RUMO Logistic Ultrasonic Rail Inspection Using Non Stop Method ***Alexandre Leonardo, RUMO, Brazil***	Improvement in The Hardness and Wear Resistance of a Movable Crossing Via Heat Treatment ***Dr. Luiz Henrique Dias Alves, UFJF, Brazil***	Quantitative Analysis of North American Railroad Train Collisions ***Chen-yu Lin, National Yang Ming Chiao Tung University***	Use of The FMEA Technique For Monitoring Railway Infrastructure Assets (Bridges And Viaducts) ***João Paulo Martins, MRS Logistica S.A, Brazil***
14h20 – 14h45	Development and Evaluation of Locomotive Undercarriage Thermal Inspection Systems (Lutis) ***Anish Poudel, MxV Rail, United States***	Condition Monitoring Using Instrumented Wagon Data: an Unsupervised Approach ***Arthur Pires, State University of Campinas, Brazil***	Evaluation of Rail Performance in Different Track Gage Conditions and Under Heavy Axle Loads ***Ananyo Bandyopadhyay, MxV Rail, United States***	Track Modulus Assessment of Engineered Interspersed Concrete Sleepers in Ballasted Track ***Jaeik Lee, University of Illinois at Urbana-Champaign, United States***	312 Wagon ECPB WDP longest train service. Technical Paper ***Colani Mnisi, Transnet South Africa***	Bridge Maintenance Priorization Through Visual Inspection and Monitoring Results ***Jose Fernando Rodrigues, PROCERT Projetos e Certificação Estrutural, Brazil***
14h45 – 15h10	Additive Manufacturing: Producing Functional Parts for the South African Railway Industry ***Ashley Dillon Toth, Transnet Freight Rail, South Africa***	Remote Condition Monitoring & Management of Rolling Stock Asset Through Monitoring Systems ***Bheki Biyela, Transnet, South Africa***	Sandstones Excavatability Assessment Combining Rock Mechanical Properties and Seismic Velocity Determination: Case Study Applied to Furnas Formation (Brazil) ***André Fardin, USP/RUMO, Brazil***	Research on New High-speed Detection Technology of Rail Flaw Detection for Heavy Haul Railway ***Li Xi***	Next Generation Train Control - Beyond 40000 Tonnes ***Colin Cole, CQUniversity, Australia***	Advances on inspection of railway infrastructure using computer vision-based deep learning ***Rafael Cabral CONSTRUCT - LESE Faculty of Engineering, University of Porto, Portugal***

CONFERENCE DAY 1: TUESDAY 29 AUGUST 2023 (CONT.)

PARALLEL TECHNICAL SESSIONS 1

	Session 1A **Rolling Stock**	Session 1B **Vehicle Track Systems**	Session 1C **Track**	Session 1D **Track**	Session 1E **Operations**	Session 1F **Bridges & Tunnels**
13h30 - 15h35						
15h10 – 15h35	Optimization of a central beam for a modular freight wagon concept ***Christian Gomes Alves, German Aerospace Center, Germany***	Onboard bearing temperature continuous monitoring in freight operations using IOT ***Ronaldo Antunes, Vallourec, Brazil***	Electromagnetic Field Imaging (EMFI) for Rolling Contact Fatigue (RCF) Characterization in Rails ***Anish Poudel, MxV Rail, United States***	Fatigue - Wear life of Rails and the Estimation thereof Welds ***Luan Pretorius Transnet Freight Rail, South Africa***	The Evolution of Ptc – Potential Alternatives, Expected Improvements and Associated Challenges ***Paulo Vieira, Independent Consultant, Brazil***	Digital Twin Impact on Railway Infrastructure Management and Maintenance ***Ruan Richelly, Santos USP, Brazil***
15h35 – 16h15	**TEA BREAK**					

PARALLEL TECHNICAL SESSIONS 2

	Session 2A **Rolling Stock**	Session 2B **Vehicle Track Systems**	Session 2C **Track**	Session 2D **Track**	Session 2E **Operations**	Session 2F **Bridges & Tunnels & Human Factors**
16H15 - 18H20						
16h15 – 16h40	The influence of elevated temperatures on mechanical properties of wheel materials ***Cong Qiu, Monash Institute Of Railway Technology, Australia***	Freight Car-Track Interaction Under Periodic Crosslevel Through Computational Multibody Analysis ***Camila Moscibrocki, Rumo Logística, Brazil***	Innovative Applications of Ground Penetrating Radar in the Rail Environment ***Thomas Lee, Zetica Ltd, United Kingdom***	Big Data Straight from Track Inspection Technologies: Seeing Clearly ***Luc Faucher, CEFRAIL Research Centre - Sept-Iles College, Canada***	Artificial Intelligence-based Systems for Detection of Rail Operating Hazards and Safety Enforcement ***Derel Wust, 4AI Systems Inc, Australia***	Research on Heavy Haul Adaptive Technology and Strengthening Measures for Existing Railway Steel Bridge ***Ju Xiaochen, China Academy Of Railway Science Corporation Limited, China***
16h40 – 17h05	Wheel flat detection using wayside measurements and Hilbert-Huang Transform ***Anriëtte Bekker, Stellenbosch University, South Africa***	Quantitative Comparative Analysis of Conventional and Distributed Power Train Derailment Characteristics ***Chen-yu Lin, National Yang Ming Chiao Tung University***	Optimise Rail Service Life and Manage Rail Defects Through Multi-faceted Rail Grinding Approach in Australian Heavy Haul Networks ***Ash Athukoralalage, Speno Rail Matenance, Australia***	Performance of field ground rail grades in full-scale wheel/ rail laboratory tests ***Lucas Biazon, University Of Sheffield, Brazil***	Trains Autonomous Operation in Restricted Access Area ***Gabriel Barros, MRS Logística SA, Brazil***	Technology and Application of Steel Arch Frame Lining for Double Line Railway Tunnel Lining ***Jinfei Chai, China Academy Of Railway Science Corporation Limited, China***

CONFERENCE DAY 1: TUESDAY 29 AUGUST 2023 (CONT.)

PARALLEL TECHNICAL SESSIONS 2

16H15 - 18H20	Session 2A **Rolling Stock**	Session 2B **Vehicle Track Systems**	Session 2C **Track**	Session 2D **Track**	Session 2E **Operations**	Session 2F **Bridges & Tunnels & Human Factors**
17h05 – 17h30	Rework Rate in the Ultrasonic Inspection of Wheelset`s Axles ***Francisco Nascimento, Vale Sa, Brazil***	IOT Based Real-Time Monitoring of 3kV-25kV Railway Overhead Auto-Tension System: Predictive Maintenance Approach Using Data Aggregation ***Christopher Thembinkosi Mcineka, Transnet, South Africa***	Defect-free Rail Condition After Rail Milling in Heavy Haul Tracks ***Bernhard Eichinger, Linsinger Maschinenbau, Austria***	Assessment of Railway Track Preventive and Corrective Tamping Recovery ***Mahdi Khosravi, Lulea University Of Technology, Sweden***	A Long Time to Grow Up: the 272 Ore Train in MRS Enforcement ***Guilherme Schmidt Da Silva, MRS Logística SA, Brazil***	Experimental Study on Dynamic Performance of New Track Structure and Light Weight Foamed Concrete Bridge Foundation Under 40t Axle Load ***Zhanguo Ma, China Academy Of Railway Science Corporation Limited, China***
17h30 – 17h55	Increasing Axle Load in a Current Sider Wagon Fleet Using FEA ***Lucas Ribeiro, VLI, Brazil***	Performance-based Track Geometry and Rail Profile Inspection Technologies ***Dingqing Li, MxV Rail, United States***	Performance Analysis on Rail Grinding in Indian Railways ***Binoj J S, Vandhana International Pvt. Ltd., India***	Effect of Fixed Structures on Longitudinal Rail Stresses and Buckled Track Accidents ***Marcus Dersch, University Of Illinois, United States***	Impact of Advanced Train Control Technologies on Network Operational Performance of Freight Trains ***Hamed Pouryousef, Sharma & Associates, Inc., United States***	Safe Sustainable Accessible Aailways – Training Collaboration with Impact ***Ravi Ravitharan, Monash Institute of Railway Technology, Australia***
17h55 – 18h20	Effects of braking on wheel wear and tread damage ***Scott Cummings, MxV Rail, USA***	A proposal for Prevention and Prediction of Failures on Turnouts ***Gabriel Viegas, Vale, Brazil***	LCC (life-cycle cost) of Railway Rails: Operational Performance Applied as Differential Strategy on Vale's Railways ***Bras Oliveira, Brazil***	Increasing Transport load – Reaction of Mainetnance ***Peter Veit, Graz University of Technology, Austria***	An Intelligent Operating Strategy of Heavy Haul Train Based on Ensemble Light GBM ***Hongyong Lan, Beijing Jiaotong University, Beijing, China, China***	A Model that Promotes the Attraction and Training of Labor for the Operation and Maintenance of Railway Assets ***Renato Bahia, MRS Logistica SA, Brazil***
	WELCOME COCKTAIL FUNCTION					

CONFERENCE DAY 2: WEDNESDAY 30 AUGUST 2023

SUB-THEME: HEAVY HAUL SUSTAINABILITY

TIME	PLENARY 2	
08h15 – 10h30	**TOPIC**	**PRESENTER**
08h15 - 08h35	Vale's Heavy Haul Journey towards Sustainable operations	Alexandre Silva, Decarbonization, Manager, Vale S.A., Brazil
08h35 - 08h50	Words from Gold Sponsor	Johann Dumser, Director, Plasser & Theurer, Austria
08h50 - 09h40	**Moderated Panel of Senior Executives** Topic: Unpacking Global Rail Sustainability Challenges and Opportunities	**Moderator:** Marc Guigon, Director, UIC, France **Panel Members:** • Andrew Shaw, Chief Strategy & Planning Officer, Transnet, South Africa • Daniel Novo, Director, Vale S.A, Brazil • Francois Davenne, CEO, UIC, France • Kari Gonzales, President & CEO, MxV Rail, IHHA Director, USA
09h40 - 09h55	Unlocking the Power of Sustainability: Pandrol's Commitment to a Greener Heavy Haul Industry	Marco Aurelio Stail Filho, Commercial Head at Pandrol
09h55 - 10h30	Outcomes of the Heavy Haul Best Practice Benchmarking that was conducted by IHHA, amongst 10 Countries, in 2022-2023	Shaun Robertson, Infrastructure Lead, Rio Tinto, IHHA Director, Australia Mike Roney, IHHA Advisor, Canada
10h30 – 10h50	**TEA BREAK**	

CONFERENCE DAY 2: WEDNESDAY 30 AUGUST 2023 (CONT.)

PARALLEL TECHNICAL SESSIONS 3

10h50 - 13h30	Session 3A **Rolling Stock**	Session 3B **Vehicle Track Systems**	Session 3C **Track**	Session 3D **Track**	Session 3E **Operations**	Session 3F **Vehicle Track Systems**
10h50 – 11h15	Evaluation of Maintenance Interval Extension for the C80 Series Wagons ***Qi Xiao, China Academy Of Railway Science Corporation Limited Locomotive & Car Research Institute, China***	Establishing Correlations Between Rail Profile Quality Indices and Simulated Wheel-rail Contact Conditions ***Gustavo Silva, Simon Fraser University, Canada***	Large-scale soil investigations for greenfield railways using airborne geoscanning ***J.C. Silva Filho, Rumo Logística, Brazil***	Dynamic Indentation Test: an Effective Tool for Monitoring Railway Sleepers Quality and Performance on Track ***Maurício José de Paiva Salomão, Rumo Logistic, Brazil***	Virtual Block Track Circuits for Operational Efficiency ***Joel Kindt, MxV Rail, United States***	Assessment of Damage Mechanisms and Damage Prediction in Switch Rails Regarding Profile Changes ***Sebastian Gapp, Materials Center Leoben Forschung Gmbh, Austria***
11h15 – 11h40	Research on Anti-sliding Performance of Heavy-Haul Automatic Parking Device for Railway Vehicles ***Ruiyuan Shen, China Academy Of Railway Science Corporation Limited, China***	Research and Tests of Application of the Smart Sensing echnology in Train Longitudinal Force Monitoring ***Han Junfeng***	Geological Complexity Conditioning a Railway Derailment - Rehabilitation Measures ***Luisa Lopes***	Microstructural Evolution and Wear Resistance of Designed Nanobain Carbon-silicon Steel After Pin-on-disc Wear Test ***Mohammad Masoumi, Universidade Federal do ABC, Brazil***	An Intelligent Condition Monitoring System for Viable Railway Neutral Sections ***Kennedy Phala, Transnet Freight Rail, South Africa***	Distributed Power Over IP Wi-Fi Repeater ***Sérgio Cassemiro, MRS Logistica SA, Brazil***
11h40 – 12h05	Pure Sliding Wear Behaviour of Pearlite and Tempered Lower Bainite Microstructures in a 0.7wt%C Low Alloy Steel ***Samuel Da Silva De Souza, University of São Paulo, Brazil***	Big data in railroads: the use of unmanned inspection vehicles ***Arthur Bilheri, MRS Logística, Brazil***	Evolution of the facility for accelerated service testing ***Christopher Johnson, MxV Rail, United States***	Mechanical and microstructural features of post welding heat treated super-premium rail ***Paulo Machado, Federal University Of Pará, Brazil***	An approach to the adaptive control of longitudinal train dynamics ***Maxim Keyno, Far Eastern State Transport University, Russian Federation***	Expedite model to test rail grinding profiles considering a population of wheelsets ***Thiago Sá, University of São Paulo, Brazil***
12h05 – 12h30	Optimization of Suspension Parameters: Improved Dynamic Performance of Covered Freight Rolling Stock for Higher-speed Operations ***Abhishek Kumar Gautam, Research Designs and Standards Organisation Ministry of Railway, India***	Utilising Prognostics Principles to Estimate the Remaining Useful Life of Rolling Stock Components: Enhancing the Optimisation of Railway Operations ***Jacques Coetzee, Transnet Freight Rail, South Africa***	Water Influence on Track Performance ***Dalila Pires, VLI, Brazil***	The Rail Requirements in the Age of Climate Change: Optimization of Core Values While Simultaneously Contributing to a Sustainable Environment ***Rainer Hochfellner, Voestalpine Rail Technology, Austria***	Onboard Broken Rail Detection Concept and Evaluation ***Mohamad Khater, MxV Rail, United States***	Enhancing track maintenance planning through the integration of track geometry wavelength and time-series analyses with GPR data ***Mika Silvast, Loram Finland Oy, Finland***
12h30 – 13h30	**LUNCH BREAK**					

CONFERENCE DAY 2: WEDNESDAY 30 AUGUST 2023 (CONT.)

PARALLEL TECHNICAL SESSIONS 4

13h30 - 15h15	Session 4 A **Sustainable Innovation**	Session 4B **Vehicle Track Systems**	Session 4C **Track**	Session 4D **Track**	Session 4E **Operations**	Session 4F **Rolling Stock**
13h30 – 13h55	Analysis of Introduction of Hydrogen Traction to Brazilian Freight Railways ***Achila Mazini, University Of Birmingham, United Kingdom***	Effects of Undesired Slack on in-Train Forces ***Jonathan Sunde, Strato, Inc., United States***	Stress-strain Measurement and Evaluation of a Heavy Haul Rail Fastening System ***Eleir Bortoleto, Instituto Tecnológico Vale, Brazil***	The Utilization of Big Data Analysis and State-of-the-Art Technologies for the Scoping of Rail Re-Profiling ***Ralph Zhang***	Narrow Gauge Heavy Haul Colombian Railroad and its Safety Standards ***Pablo Arias Amezquita, Fenoco S.A., Colombia***	Influence of Microalloying on the Microstructures and Properties of Spall-ing Resistant Wheel for Heavy-Haul Railway ***Tao Cong, China Academy Of Railway Science Corporation Limited, China***
13h55 – 14h20	Analysis of noise mitigating measures for a heavy haul railway in Brazil ***Yesid Asaff, Federal University Of Santa Catarina, Brazil***	The Growth Mechanism of Different Depth Hook-type Rolling Contact Fatigue Crack in the Rail Crown ***Junpeng Li, Tongji University, China***	Techno-economic Impact of Using Premium Rails on Heavy Haul Lines ***Elizabeth Seshoka, Transnet Freight Rail, South Africa***	Effect of failing adjacent crossties on tie-life: a machine learning model ***Allan Zarembski, University of Delaware, United States***	Higher Reliability and Capacity Train Control: from Overlay PTC to Full Moving Block ***David Khasenye, MxV Rail, United States***	Advances in articulated freight car design for 1520 mm gauge railways ***Anna Orlova, United Wagon Company, Russian Federation***
14h20 – 14h55	Sustainability in Part Selection for Additive Manufacturing in the South African Railway Industry Using the Fuzzy Analytic Hierarchy Process ***Ashley Dillon Toth, Transnet Freight Rail, South Africa***	Wheel Profile Management and Optimization System (WPMOS) Design ***Kagiso Malinga, Transnet, South Africa***	The Value of Clean Ballast ***Franco Fanucci, Loram Maintenance Of Way, United States***	The Effect of Convex Bearers on Track Geometry Errors ***Riku Varis, Research Centre Terra, Tampere University, Finland***	Virtual coupling for freight trains: challenges for control and dynamics ***Qing Wu, Central Queensland University, Australia***	MRS Freight Cars Maintenance Strategy Evolution ***Julio Cesar Martins Da Costa E Silva MRS Logística SA, Brazil***
14h55 – 15h15	Efficient and Effective Grinding Through Infinite Pattern Control ***Chris Lidberg, Loram Maintenance Of Way, United States***	Polymeric sleepers – a new development methodology ***Renato Vargas, Braskem, Brazil***	Improvement of Aluminothermic Weld Performance with Innovative Air Quenching ***Lionel Winiar, Pandrol Sas, France***	Study of Mining Co-product as a Sustainable Sub Ballast for a Heavy Haul Track in Brazil ***Robson Costa, University of São Paulo, Brazil***	Automatic Radio Data Monitoring System ***Rafael Silva, MRS Logística SA, Brazil***	Driving Efficiency, Durability and Sustainability in Rolling Stock Life Cycle: the successful collaboration between RUMO and Lucchini RS ***Alberto Ronchi, Lucchini RS S.p.A., Lovere (BG), Italy***
15h15 – 15h40	**TEA BREAK**					

CONFERENCE DAY 2: WEDNESDAY 30 AUGUST 2023 (CONT.)

PARALLEL TECHNICAL SESSIONS 5

15h40 - 17h20	Session 5A **Sustainable Innovation**	Session 5B **Vehicle Track Systems**	Session 5C **Track**	Session 5D **Track**	Session 5E **Operations**	Session 5F **Vehicle Track Systems**
15h40 – 16h05	Contribution to Circular Economy Through Railway Sleepers Manufactured Using Recycled Materials ***Cong Qiu, Monash Institute Of Railway Technology, Australia***	Reduction of Train Derailments Based on Gauge Face Friction Management ***Leonardo Soares, DB Engineering & Consulting GmbH, Brazil***	Automated Assessment of Track Bed Drainage Utilising Mobile Terrestrial Laser Scanning and Ground Penetrating Radar ***Thomas Lee Zetica Ltd, United Kingdom***	Drone Imagens Applied To Turnouts Inspection ***Vítor Alves, Rail Transportation and Engineering Center, United States***	Implementation of Wagon-centric View Process to Improve Railway Productivity ***Rodrigo Gomes, Arm, Brazil***	Effect of rail cant on stress distribution ***Tiago Tepedino, Loram Do Brasil, Brazil***
16h05 – 16h30	The Railway Infrastructure in the Face of Climatic Events Such as Precipitation and Impacts Such as Floods ***Cristiene Ribeiro, UFRJ, Brazil***	Improving Bogie Performance to Reduce Wheel Wear in a Metric Gauge Railway ***Lucas Valente, VLI Logistica, Brazil***	The Critical State Line as a Key to the Behaviour of Railway Foundation Materials Under Increased Axle Loading ***Godisang David Mpye, University Of Pretoria, South Africa***	Computer Vision Based Track Conditions Detection ***Shanyue Guan, Purdue University, United States***	Machine Vision for Monitoring the Availability of Special Rolling Stock to Perform Work on Heavy Haul Sections ***Evgeny Shishkov, JSC VNIIZHT, Russian Federation***	Rail Side Wear and its Effect on Train Movement ***Tiia Loponen, Research Centre Terra, Tampere University, Finland***
16h30 – 16h55	Additive Manufacturing as a Long-term Solution to Railway Maintenance Delays ***Emma Molobi, Transnet Freight Rail, South Africa***	Optimizing the Effectiveness of Large-Scale Friction Management Programs ***Marco Santoro, LB Foster, Canada***	Numerical Evaluation of a Full-scale Laboratory Test Facility for Heavy-haul Railroad Tracks ***Guilherme Castro, University of São Paulo, Brazil***	3D Model Reconstruction of Rail Cracks with Special Morphology ***Shaofeng Wang, East China Jiaotong University, China***	Increasing Axle Loads on Existing Infrastructure ***Surendra Bisht, Aurecon, Australia***	Development of Deterministic Bogie Assessment Methods ***Walter Rosenberger, MxV Rail, United States***
16h55 – 17h20	Supporting the Sustainable Development of Railway Transport in Brazil ***Achila Mazini, University Of Birmingham, United Kingdom***	The Evolution of Wheel-rail System of Sweden's Heavy Haul Line ***Matthias Asplund, Trafikverket, Sweden***	Effect of the Microstructure and Work-hardening on a Hadfield Steel Railway Crossing ***Dr. Juan Ignacio Pereira, USP-University of São Paulo, Brazil***	Increased Service Life of Thermit® Welds by way of Improved Metallurgy and Enhanced Welding Procedures ***Jörg Keichel, Goldschmidt, Germany***	Simulation Study on the Influence of Longitudinal Dynamic Force on Extreme Long Heavy-Haul Trains ***Chongyi Chang, China Academy of Railway Sciences Corporation Limited, China***	Calculating Reliability and Cost Savings Improvement from Turnout Grinding ***Wesley Thomas, Loram Technologies Inc., Canada***

CONFERENCE DAY 2: WEDNESDAY 30 AUGUST 2023 (CONT.)

PARALLEL TECHNICAL SESSIONS 5

15h40 - 17h20	Session 5A **Sustainable Innovation**	Session 5B **Vehicle Track Systems**	Session 5C **Track**	Session 5D **Track**	Session 5E **Operations**	Session 5F **Vehicle Track Systems**
17h20 - 17h45	Sensitivity of potential battery electric locomotive energy benefits to heavy haul freight rail operating characteristics ***Tyler Dick, University of Texas at Austin, United States***	Automatic counting and identification of train wagons through computer vision and deep learning ***Rayson Laroca, Federal University Of Paraná, Brazil***	Rail Grinding Strategic Directed by the Magic Wear ***Décio Vincenzi, Rumo Logística, Brazil***	Outsourcing of Track maintenance : A Case Study From Sweden, Results and Lessons Learned ***Ulla Juntti, Luleå University Of Technology, Sweden***	The Impact and Solution of Constant Pressure Conversion of Freight Train on Vehicle Operation Safety ***Yingchun Zhu, Meishan Crrc Brake Science & Technology Co., Ltd., China***	Identification of Opportunities for Enhanced Train Marshalling and the Potential use of Optimization ***Yi Wang, Simon Fraser University, Canada***
	AWARDS AND GALA DINNER SPONSORED BY MRS LOGISTICS					

CONFERENCE DAY 3: THURSDAY 31 AUGUST 2023

SUB-THEME: INTEGRATING THE HEAVY HAUL VALUE CHAIN: MINES, RAIL AND PORTS

TIME	PLENARY 3	
08h15 - 10h30	**TOPIC**	**PRESENTER**
08h15 - 08h40	Excellence from the World's Longest Heavy Haul Rail Line, Haoji Railway, China	Dr. Chen Qiang, Director of Safety and Equipment Department at Haoji Railway Corporation, China
08h40 - 09h05	Revolutionizing Heavy Haul Rail: Impact of Automation on Workforce, Safety and Operations	Michael Reyland and Steve Keating, Operations Managers, Rio Tinto, Australia
09h05 - 09h20	Sustainability, a key with several characteristics	Jochen Holzfeind, CTO, Railway Systems by Voestalpine, Austria
09h20 - 09h45	Investing in Technology to elevate Safety critical controls – the BHP Rail experience	Warren Wellbeloved, General Manager, Rail, BHP, Western Australia Iron Ore
09h45 -10h10	Achieving Excellence in Heavy Haul at the Port Terminals - a Case Study	Adriano Mansk, Director, Vale S.A, Brazil
10h10 - 10h30	Words from Gold Sponsor	Rumo Logística, Brazil
10h30 – 10h50	**TEA BREAK**	

CONFERENCE DAY 3: THURSDAY 31 AUGUST 2023 (CONT.)

PARALLEL TECHNICAL SESSIONS 6

10h50 - 12h55	Session 6A **Sustainable Innovation**	Session 6B **Vehicle Track Systems**	Session 6C **Track**	Session 6D **Track**	Session 6E **Operations**	Session 6F **Vehicle Track Systems & Track**
10h50 – 11h15	Big Data Analytics Applied to Train Fuel Efficiency Management ***Fernanda Deltregia, VLI Logistica, Brazil***	Track Ballast Condition Monitoring with Smart Tamping Units ***Olja Barbir, Plasser & Theurer, Austria***	Under Sleeper Pads: Field and Laboratory Evaluation for Heavy Haul ***Jaeik Lee, University of Illinois at Urbana-Champaign, United States***	Improving Lateral Track Strength After Ballast Maintenance ***Stephen Wilk, MxV Rail, United States***	Compressor Brake Wagon Innovation Advancing Offloading Efficiency and Safety. ***Tebogo Mashego, Transnet Engineering, South Africa***	Development and Operation of Advanced TOR Locomotive Onboard Application System at One China Heavy Haul Railway ***Xin LU, L.B. Foster Rail Technologies Corp., Canada***
11h15 – 11h40	Locomotive Fleet Carbon Footprint Reduction Initiatives ***Luis Deltregia, MRS Logística SA, Brazil***	Wheel Rail Interface Management Requires Best Practice Processes for the Continuous Improvement of Rail / Wheel Profiles and Implementation Strategies. ***Peter Sroba***	Track Substructure Maintenance Management (SuMM); A Review with Examples ***Hamed Kashani, Loram Technologies Inc., United States***	Brazilian and Australian Turnout Related Initiatives that Contribute for Sustainability ***Simone Issomura, Australia***	Reinforcement and Supervised Learning Applied to Rail Yard Simulation Models ***Thales Dos Santos, MRS Logistica SA, Brazil***	A Rail Data Integration and Analytics System and Its Application to Heavy Haul Railway ***Yan Liu, National Research Council Of Canada, Canada***
11h40 – 12h05	Progressing AURIZON'S Decarbonisation Programme ***Roger Buckley, AURIZON, Australia***	An Innovative Method to Assess Track Response Under a Braking Heavy Haul Train ***Qing Wu, Central Queensland University, Australia***	Superior Wear Resistance of Novel HP335 Rail Steel ***Henrique Pereira, Universidade De São Paulo, Brazil***	Tamping Processes and Track Behaviour – An Integrated Analysis ***Stefan Offenbacher, Graz University of Technology, Austria***	Network Optimization in Mixed Rolling Stock Operations Scenario Over Indian Railways ***Vivek Mohan, Indian Railways, India***	Determination of critical flash butt welding parameters for welding R350LHT rail using processing maps. ***Velaphi Matjeke, Transnet Engineering, South Africa***
12h05 – 12h30	Mining Railroad Energy and Pathways to Decarbonisation ***Shaun Robertson, Rio Tinto, Australia***	Predictive and Prescriptive Maintenance and Management of Heavy Haul Rail Networks in the 21st Century ***Ravi Ravitharan, Monash Institute of Railway Technology, Australia***	Leveraging 3D Laser Scanning Data for Track Condition Change Detection ***J. Riley Edwards, University Of Illinois at Urbana-Champaign, United States***	Common Track Maintenance Problems and Remedies ***Surendra Bisht, Aurecon, Australia***	Modelling of Anti-theft Battery Back-up System on Railway Relay Rooms for Viable Infrastructure ***Kennedy Phala, Transnet Freight Rail, South Africa***	Modern Heavy Haul turnouts for higher tonnage ***Uwe Ossberger, Voestalpine Railway Systems, Austria***

CONFERENCE DAY 3: THURSDAY 31 AUGUST 2023 (CONT.)

PARALLEL TECHNICAL SESSIONS 6

	Session 6A Sustainable Innovation	Session 6B Vehicle Track Systems	Session 6C Track	Session 6D Track	Session 6E Operations	Session 6F Vehicle Track Systems & Track
10h50 - 12h55						
12h30 – 12h55		Rail Grinding and Milling – Complimentary and Competitive Technologies? ***Richard Stock, Plasser American / Plasser Canada, Canada***	Elastic Elements as a Sustainable Innovation to Reduce Maintenance – Experiences from Brazilian Heavy Haul Operators ***João Marcos, Getzner Werkstoffe, Gmbh, Austria***	Increase AxleLloads Sub Ballast Investigation: A Case Study in a North Brazilian Railroad ***Thiago Oliveira, Vale, Brazil***	An Intelligent Method of Speed Tracking Control for Heavy-haul Train Automatic Driving ***Xianhong Meng, Shuohuang Railway Development Co., Ltd, Suning, China***	A multiphase numerical investigation on ballast drainage improvement from maintenance ***Yu Qian, University Of South Carolina, United States***
12h55 – 14h00	**LUNCH BREAK**					

PARALLEL TECHNICAL SESSIONS 7

	Session 7A Sustainable Innovation & Motive Power	Session 7B Vehicle Track Systems	Session 7C Track	Session 7D Track	Session 7E Operations	Session 7F Extreme Conditions
14h00 - 15h40						
14h00 – 14h25	Evaluating rollout strategies for alternative locomotive propulsion technology on north American freight rail corridors using simulation and optimization ***Tyler Dick, University of Texas at Austin, United States***	Monitoring railway track quality and safety using dynamic inertial response of the carbody and truck ***Roberto Spinola Barbosa, Politchenic Shcool At University Of Sao Paulo, Brazil***	Impact of climate change on bridge-track interaction: observations from the olifants river bridge ***P Moyo, University of Cape Town, South Africa***	Rail Hardness Index: A Method for Choosing More Sustainable Steels ***Thiago Viana, VLI Logística, Brazil***	Monitoring Coupler Forces of QNS&L's 240-Car Train using a In-Service Railcar ***Albert Wahba, National Research Council Of Canada, Canada***	Study of Strategic Actions for Pluviometric Monitoring Points in a Railway ***Ana Carolina Azevedo, MRS Logística SA, Brazil***
14h25 – 14h50	Development trend research on special purpose box car of Chinese railway ***Xiaokun Zhou, Dalian Jiaotong, University, China***	Rail grease Thickener and Base Oil Viscosity Effect in Lubricity Performance ***Bruno Ferrer, UTFPR, Brazil***	MRS Operations at High Cant Deficiency ***Josué Bastos, MRS Logistics SA, Brazil***	Polymers – a New Solution Available for Railroad Tracks ***Aldo Machado, Braskem, Brazil***	A Preliminary Analysis of Key Issues in Heavy Haul Freight Train Accident Reports Based on Complex Network Theory ***Zhipeng Zhang***	Evaluation of Storm Wind Impact on Container Overturning ***Boris Poliakov, Emperor Alexander I St. Petersburg State Transport University, Russian Federation***

CONFERENCE DAY 3: THURSDAY 31 AUGUST 2023 (CONT.)

PARALLEL TECHNICAL SESSIONS 7

	Session 7A **Sustainable Innovation & Motive Power**	Session 7B **Vehicle Track Systems**	Session 7C **Track**	Session 7D **Track**	Session 7E **Operations**	Session 7F **Extreme Conditions**
14h00 - 15h40						
14h50 – 15h15	Heavy Haul Digital Twin – Proof of Concept for 8-Axle High Adhesion 10MWh Battery Electric Locomotive ***Maksym Spiryagin, CQUniversity, Australia***	Plastic flow and wear development in rail switch blades ***Ruby Kempka, University Of Sheffield, United Kingdom***	Microstructural Changes in the Gauge Corner for Heavy Haul Pearlitic Rails ***Juan Ignacio Pereira, Universidade De São Paulo, Brazil***	Spike Loading Environment in Different Fastening Systems ***Yin Gao, MxV Rail, United States***	Research on Condition Monitoring Technology of Pantograph-catenary System ***Zhiliang Wang, China Academy Of Railway Science Corporation Limited, China***	Dynamic Simulation of Uncontrolled Movement of Heavy Haul Trains in Cold Weather ***Daoxing Chen, Transportation Safety Board Of Canada, Canada***
15h15 – 15h40	A Modern Approach to Electrification for Heavy Haul ***Richard Wales, Andromeda Engineering, Australia***	Towards eliminating alternating rail gauge-face wear in South Africa ***Samkeliso Thwala, Transnet, South Africa***	Evolution of Bonded Insulated Rail Joints for Heavy Axle Loads ***Korhan Ciloglu, L.B. Foster Company, United States***	Feasibility of Introducing the Rail Milling Process on South African Heavy Haul lines: A Parametric Study ***Thulani Sitimela, Transnet, South Africa***	Infrastructure Intelligent Operation and Maintenance Technologies for Shuohuang Heavy Haul Railway ***Zhang Geming, China Academy Of Railway Science Corporation Limited, China***	South African Rail Network Resilience Due to Abnormal Conditions ***Darshan Panday Transnet Freight Rail, South Africa***
15h40 - 16h05	A Study of the Viability and Sustainability of Locomotive Fleet Modernisation ***Sakshna Sivnarain, Transnet Freight Rail, South Africa***		Technical-economic Turnout Assessments Based on Data Analysys ***Markus Loidolt, Graz University Of Technology, Austria***	Drainage Improvement of a Mud Spot with Shoulder Ballast Cleaning ***Stephen Wilk, MxV Rail, United States***	Unmanned Cog Rail Operation: a POC on the São Paulo Hills ***Sérgio Cassemiro, MRS Logística SA, Brazil***	Impact of Terrestrial Slides on Heavy Haul Railways ***Shang Wu, Tongji University, China***
16h05 - 16h30	**TEA BREAK**					

CONFERENCE DAY 3: THURSDAY 31 AUGUST 2023 (CONT.)

SUB-THEME: HEAVY HAUL STRATEGIC ROADMAP AND NEXT STEPS

TIME	CLOSING PLENARY 4	
16h00 – 17:30	**TOPIC**	**PRESENTER**
16h00 - 16h15	Best Papers Awards	Hannes Gräbe, Professor & Acting Head of Department, University of Pretoria, South Africa
16h15 - 16h25	Recognition of outstanding contribution to the success of Brazilian Railroads	Antonio Merheb, IHHA Chairman, Brazil & IHHA CEO Scott Lovelace
16h25 - 16h40	Wrap up of the Conference proceedings	Mike Roney, IHHA Advisor, Canada
16h40 - 17h00	IHHA Strategic Roadmap - where to from here?	Antonio Merheb, IHHA Chairman, Brazil
17h00 - 17h10	Announcement of the Hosting Country for IHHA 2025 Conference	Brian Monakali, Director Energy & Logistics Strategy, South32, IHHA Vice Chairman, South Africa
17h10 - 17h25	Presentation by the next Host Country	
17h25 - 17h40	Closing Speech	Antonio Merheb, IHHA Chairman, Brazil
	FAREWELL COCKTAIL FUNCTION	

FRIDAY 1 SEPTEMBER

TECHNICAL TOUR (TO BE CONFIRMED)