

MAIN CONFERENCE PROGRAMME

SUNDAY - 3 SEPTEMBER

14h00-18h00	Onsite Registration Open
18h00	Welcome Cocktail Function - Sponsored by Gibb

MONDAY - 4 SEPTEMBER

CONFERENCE DAY 1 - OPENING PLENARY SESSION

07h00-08h00	Registration	
08h00-08h30	Conference opening ceremony	Cultural Performance
08h30-08h45	Welcoming Delegates to the conference	Mr. Brian Monakali
	Introduction of IHHA Board Members	Mr. Semih Kalay/Scott Lovelace
08h45-09h00	Official Opening Address	Mr. Siyabonga Gama, Group Chief Executive, Transnet SOC Limited
09h00-09h20	Key Note Address Topic: Impact of the 4 th Industrial/Technological Revolution on Railways	Dr Cheryl Martin, World Economic Forum (WEF)
09h20-09h30	Presentation by Emerging Railway professional 1	
09h30-09h40	Presentation by Emerging Railway professional 2	
09h40-09h50	Russia's Heavy Haul Developments - Rail expansion plans & technological advancements	Country Director
09h50-10h00	China's Heavy Haul Developments - Rail expansion plans & technological advancements	Mr. Shen Ruiyuan
10h00-10h10	Official Opening of the Exhibition Hall	Mr. Ravi Nair, Chief Executive, Transnet Freight Rail

MONDAY - 4 SEPTEMBER

08:30 - 10:10

CONFERENCE DAY 1 - CONCURRENT SESSIONS

10:10 - 10:35

MORNING TEA

10:35 - 12:40

CONCURRENT SESSIONS

	Session TR 1 Rail Failure Chair: Michael Roney	Session TR 10 High Axle Loads Chair: Mdu Mlaba	Session VTS 1 Rail Flaw Detection Chair: Matt Witte	Session BT 1 Bridges Chair: Willem Kuys	Session MP 1 Locomotives Chair: Oredus Mattheus
10:35 - 11:00	The effect of high impact wheel loads on rail fracture from transverse defects H. Tournay, X. Shu & P. Rakoczy Transportation Technology Center Inc. United States	Consequences regarding an Increase in Axle Load in Heavy Haul Operation on existing Infrastructure in a Test Period on Ofofbanen; Norway H. Gåsemyr Bane NOR SF Norway	A novel approach for analysis of correlation among different railway infrastructure inspection condition parameters M. Capodiferro, L. Carotti, P. Pace & C. Evangelisti Mermec Spa Italy	Study of Load-decrement on Small-span Bridges by Track Structure in Railway Heavy-Haul Transport Upgrade Jiyuan LIU China Academy Of Railway Sciences China	Improving locomotive energy efficiency through pre-empting and operating at more efficient system states through the utilization of regenerated braking energy. K.R.K. Boshoff & J.W. Gevers Transnet Engineering South Africa
11:00 - 11:25	Improving Rail Integrity on the Sishen-Saldanha Line J. Duvel & K. Mistry Transnet Freight Rail South Africa	Experimental study on track dynamic characteristics of 30t axle load in revenue service railway Z.G. Ma, G.M. Zhang & L.C. Qie & Z. Pan China Academy Of Railway Sciences China	Development of an incipient rail buckle detection system using continuously measured vehicle data P.Reichl, D. Zheng, C. Thompson & H. Sethi Monash University Australia	Transition from bridge approach to bridge end and fouled ballast maintenance and drainage D.D. Cantrell Cantrell Rail Services, Inc. United States	High adhesion locomotive performance under individual axle and bogie traction control strategies with the presence of wheel diameter difference M. Spiryagin, P. Wolfs, C. Cole, Q. Wu, Y.Q. Sun, T. Mcsweney, V. Spiryagin & S. Alahakoon Central Queensland University, Australia
11:25 - 11:50	Quantifying rail bending stresses for assessing the rail structural integrity S. Fallah Nafari, M. Gül, M.T. Hendry & J.J.R. Cheng University of Alberta Canada	Higher axle loads on existing tracks - Opportunity to improve utilisation S. Bisht Aecom Australia Pty Ltd Australia	Data fusion strategies for rail flaw detection with increased reliability S. Alahakoon, M. Spiryagin, C. Cole & Y. Q. Sun Central Queensland University Australia	Evaluation of hybrid composite beam span bridges under heavy haul traffic D. Otter, S. Dick & A.M. Rakoczy Transportation Technology Center Inc., United States	Assessing obstacles to renewable energy in heavy haul traction R.D. van der Meulen & L.C. Möller Railway Corporate Strategy CC South Africa

MONDAY - 4 SEPTEMBER

CONFERENCE DAY 1 - CONCURRENT SESSIONS

10:35 - 12:40 CONCURRENT SESSIONS					
	Session TR 1 Rail Failure Chair: Michael Roney	Session TR 10 High Axle Loads Chair: Mdu Mlaba	Session VTS 1 Rail Flaw Detection Chair: Matt Witte	Session B&T 1 Bridges Chair: Willem Kuys	Session MP 1 Locomotives Chair: Oredus Mattheus
11:50 - 12:15	Effect of microstructure on fracture toughness and fatigue crack growth strength of rails applied in a Brazilian railroad T. G. Viana, L. P. Moreira, L. B. Godefroid, G. L. Faria & L. C. Cândido VLI Brazil	Track structure design: Breaking the narrow gauge 30 ton barrier D.J. Hewson, P.J. Gräbe & F.J. Shaw R&H Rail (Pty) Ltd. South Africa	Finite element simulation study on rail flaw detection using laser induced ultrasonic guided waves M. Pathak, S. Alahakoon, Y.Q. Sun, M. Spiragin & C. Cole Central Queensland University Australia	Prioritization of the time rehabilitation in railway ridges based on risk and fatigue index R. Montoya, L.F. Marthã, J. Junqueira, M. Botelli & A. Merheb MRS Logística Brazil	Insulation coordination based model for dual voltage locomotives for the coal line G Maluleke & S.E Sibande Transnet Freight Rail South Africa
12:15 - 12:40	Big data analytics: predicting asset health risk (rail failures and derailments) N.J. van der Westhuizen, K. Smart, M. Dick, G. Drapé & R. Maldonado EnSCO United States	Dynamic loads evaluation in existing railroad infrastructure under increasing axle loads and speed A. Merheb, L. Valente, R. Marotta, F. Moreira & R. Montoya University of São Paulo Brazil	Ultrasonic broken rail detector and rail condition monitor technology F.A Burger & P. Loveday Institute for Maritime Technology South Africa	Conversion of a ballasted deck bridge to a ballast-less deck in 94 hours – construction complications and in service considerations R.J. Ellaby Aurizon Australia	Research brake monitoring technology about freight trains on DaQin O. Dongfang, X. Lei, X. Weiyuan, A. Hong, S. Jianning, & L. Jianchao Meishan CRRC Brake Science & Technology Co.,Ltd China
12:40 - 13:40 LUNCH					
13:40 - 15:20 CONCURRENT SESSIONS					
	Session TR 2 Rail Failure Chair: Sergey Zakharov	Session TR 11 Turnouts Chair: Paul Reichl	Session VTS 2 Vehicle Track Interaction Chair: Ulrich Spangenberg	Session OP 1 Train Handling Chair: Marthin Mulder	Session MP 2 Traction Power Supply Chair: Dave van der Meulen
13:40 - 14:05	Rolling contact fatigue life prediction for rails and welds in heavy haul systems C. L. Pun, D. Welsby, P. Mutton & W. Yan Monash University Australia	Turnout Innovation in the Outback: Axle Loads > 40 metric tons ; Installation Times < 4 hours A.T.Tang, H. Ossberger & F. Sodica Fortescue Metals Group Australia	Vehicle-track system dynamics and its influence on operational efficiency R.D. Fröhling Transnet Freight Rail South Africa	Improving operational efficiency through dynamic train scheduling: a case study N.Tlhoaele, D. van Niekerk & R. Bennetto Transnet Freight Rail South Africa	On-the-fly 3kV DC to 25kV AC automatic section transition of locomotives J.W. Clay, P.L. Croucamp & L.O. Borchard Transnet Freight Rail South Africa
14:05 - 14:30	Thermography methods and modelling approaches for rail foot flaw detection Christopher Bosomworth Central Queensland University Australia	Advancements in fastening systems technology for turnouts in North American heavy haul G. Click, B. Duffner & B. Abbott Voestalpine Nortrak Canada	On estimating the risk of wheel damage for wagons with paper rolls considering various dynamic conditions R. Prevolnik, C. Casanueva, S. Hossein Nia & S. Stichel ALTEN Sweden	Improved distributed power train handling strategies P.N. Naidoo & J.M. Mulder Transnet Freight Rail South Africa	Energy management on heavy haul lines T.C. Govender, T. Chetty & C.J. Rossouw Transnet Freight Rail South Africa
14:30 - 14:55	Development and evaluation of a phased array rail inspection system M. Witte, A. Poudel & S. Kalay Transportation Technology Center, Inc. United States	A study of the life cycle of turnouts on the South African heavy haul network W. Swart & W. van der Westhuizen Transnet Freight Rail South Africa	Study of freight cars and track interaction in heavy train operation on the Russian railways Y.S. Romen & S.M. Zakharov JSC Railway Research Institute Russian Federation	Optimization of iron ore train operation with focus on fuel savings H.L. Ghelere & V.A. Parreira Vale Brazil	Research and development of cooling technology for Railway overloading high-power electric locomotive Li Shimin Zelc China

MONDAY - 4 SEPTEMBER

CONFERENCE DAY 1 - CONCURRENT SESSIONS

13:40 - 15:20

CONCURRENT SESSIONS

	Session TR 2 Rail Failure Chair: Sergey Zakharov	Session TR 11 Turnouts Chair: Paul Reichl	Session VTS 2 Vehicle Track Interaction Chair: Ulrich Spangenberg	Session OP 1 Train Handling Chair: Marthin Mulder	Session MP 2 Traction Power Supply Chair: Dave van der Meulen
14:55 - 15:20	<p>Comparison of rolling contact fatigue crack initiation models under heavy haul conditions</p> <p>G. Trummer, K. Six, A. Woelfle, W. Huang & E. Magel <i>Virtual Vehicle Research Center Austria</i></p>	<p>Overhead track equipment and track geometry parameters on the performance of the Pantograph</p> <p>R. Ludzulu & L. Msibi <i>Transnet Freight Rail South Africa</i></p>	<p>Influence of Increased Axle Load of Heavy-Haul Freight Locomotive on Acting Force between Wheel and Rail</p> <p>Li Hua-xiang, Lv Shi-yong, Zhao Ming-yuan & Liu Peng <i>CRRC Datong Co., Ltd. China</i></p>	<p>Use of electro-dynamic braking on locomotives and its effect on rolling contact fatigue</p> <p>T. Nordmark, S.A. Khan & C. Domay <i>Luleå University of Technology Sweden</i></p>	<p>Traction performance of remote in-train locomotives in distributed power heavy haul trains</p> <p>Qing Wu <i>Central Queensland University Australia</i></p>

15:20 - 15:45 **AFTERNOON TEA**

15:45 - 17:25

CONCURRENT SESSIONS

	Session TR 3 Rail Grinding Chair: Wolfgang Schoech	Session TR 12 Sleepers and Fastening Chair: Fana Marutla	Session VTS 3 Track Condition Monitoring Chair: Willem Ebersöhn	Session BT 2 Bridges and Culverts Chair: Pilate Moyo	Session MP 3 Locomotives Chair: Paul Bester
15:45 - 16:10	<p>Moving towards predictive rail grinding</p> <p>D. Hampton, E. Magel & R. Harris <i>CSX Transportation Canada</i></p>	<p>A study on fatigue test conditions for certification of rail fastening systems</p> <p>T. Deshimaru, S. Tamagawa, H. Kataoka, Y. Sonoda <i>Railway Technical Research Institute Japan</i></p>	<p>Development of single tie push test technology for track lateral resistance measurement in a new Brazilian heavy haul railroad</p> <p>B. Barboza, R. Santos, L.C. Rampinelli & C. Jorge <i>VLI Brazil</i></p>	<p>The implementation of a small-scale unnamed aerial system (UAS) for railway culvert inspections</p> <p>C.H. Vong, R. Ravitharan, P. Reichl, J. Chevin, H. Chung & P. Campbell <i>Monash University Australia</i></p>	<p>Baseline study on the occupational exposure to electromagnetic fields in South African railway</p> <p>N.N. Khoza & D.H. Brouwer <i>Transnet Freight Rail South Africa</i></p>
16:10 - 16:35	<p>Analysis of Rail Grinding as a Means to Optimize Rail-Head Fatigue Life under Heavy Axle Loads</p> <p>G. Fry & P.Tangtragulwong <i>TTCI United States</i></p>	<p>Development of a new load-deflection method for characterization of North American heavy haul concrete sleepers</p> <p>J.C. Bastos, A. Álvarez-Reyes, M.S. Dersch, & J.R. Edwards <i>University of Illinois at Urbana-Champaign United States</i></p>	<p>Distributed track condition monitoring using train-based telemetry systems</p> <p>J.R. White & G. Hardie <i>Monash University Australia</i></p>	<p>Study on of limited value of fill depth on culvert structures under heavyhaul</p> <p>L. Dong, Y. Su, B. Niu, D. Li & S. Hu <i>China Academy of Railway Sciences China</i></p>	<p>Obsolescence management for heavy load locomotive</p> <p>Y. Du, R. Mao & Y. Zhang <i>CRRC Zhuzhou Locomotive Co., Ltd. China</i></p>
16:35 - 17:00	<p>Rail grinding technology and strategy implementation in a new Brazilian heavy haul railroad</p> <p>B.M. Borges, C.G. Jorge, R.P. Santos, T.G. Viana & P.H.P. Lobato <i>VLI Brazil</i></p>	<p>Lateral load performance of concrete sleeper fastening systems under non-ideal conditions</p> <p>B.G.J. Holder, Y. Qian, M.S. Dersch & J.R. Edwards <i>University of Illinois at Urbana-Champaign United States</i></p>	<p>Delivering informative quality network health information with the "MPV multi-purpose vehicle" concept</p> <p>A. Carty <i>Speno Rail Maintenance Australia</i></p>	<p>Influence of the tie-ballast interface on transition zone performance</p> <p>S.T. Wilk & T.D. Stark, J.G. Rose, T.R. Sussmann (Jr.) & H.B. Thompson II <i>University of Illinois at Urbana-Champaign United States</i></p>	<p>Redefinition of locomotives maintenance strategy using reliability and maintenance engineering</p> <p>M.E. de O. Rocha, C. Andrade, D. Vieira, J. Dutra, M. Faustino, M. Soares & P.B. de Souza <i>MRS Logística Brazil</i></p>
17:00 - 17:25		<p>Laboratory mechanical fatigue performance of under-ballast mats subjected to North American loading conditions</p> <p>A. de O. Lima, M. S. Dersch, Y. Qian, E. Tutumluer & J.R. Edwards <i>University of Illinois at Urbana-Champaign United States</i></p>	<p>Quantifying track substructure performance using continuous and autonomous vertical track deflection data</p> <p>J.W. Palese, C.M. Hartsough, S. Farritor & G.R. Newman <i>Harsco Rail United States</i></p>		<p>Discrete element modelling of railway electrical traction supply systems</p> <p>C.P. Botha <i>R&H Rail (Pty) Ltd South Africa</i></p>

TUESDAY – 5 SEPTEMBER

CONFERENCE DAY 2 – PLENARY SESSION

08:00 - 10:10	ACTIVITY	SPEAKER
08h00-08h05	Opening Day 2	Mr. Scott Lovelace
08h05-08h15	US's Heavy Haul Developments - Rail expansion plans & technological advancements	Country Director
08h15-08h25	South Africa's Heavy Haul Developments - Rail expansion plans & technological advancements	Country Director
08h25-08h35	Australia's Heavy Haul Developments - Rail expansion plans & technological advancements	Country Director
08h35-08h45	India's Heavy Haul Developments - Rail expansion plans & technological advancements	Country Director
08h45-08h55	Brazil's Heavy Haul Developments - Rail expansion plans & technological advancements	Country Director
08h55-09h25	Presentation of the Benchmarking Study Outcomes on Global Technological Development Trends (past, current and future) amongst Heavy Haul countries	Mr. Michael Roney
09h25 - 10h10	Panel Discussion Topic: How will Railway of the future look like, considering the 4 th Industrial Revolution, technological developments, scarcity of Capital, environmental aspects, Socio-economic factors	Chairperson: Ms. Lisa Stabler, President, TTCI



TUESDAY - 5 SEPTEMBER

08:30 - 10:10

CONFERENCE DAY 2 - CONCURRENT SESSIONS

10:10 - 10:35

MORNING TEA

10:35 - 12:40

CONCURRENT SESSIONS

	Session TR 4 Rail Welding Chair: Gary Fry	Session TR 13 Ballast & Geotechnical Chair: Ted Sussmann	Session VTS 4 Wear and Rolling Contact Fatigue Chair: Lungi Maminza	Session OP 2 Systems Chair: Semih Kalay	Session RS 1 Monitoring Technology Chair: Lisa Stabler
10:35 - 11:00	<p>Predicting the occurrence and cost of temporary speed restrictions on North American freight lines</p> <p>A.H. Lovett, C.T. Dick & C.PL. Barkan <i>University of Illinois at Urbana-Champaign</i> <i>United States</i></p>	<p>Substructure Maintenance Management: A Two-Decade Update</p> <p>James Hyslip <i>Hyground Engineering</i> <i>United States</i></p>	<p>Improved performance of wheels and rails through profile design and maintenance</p> <p>S. Cummings, A. Keylin & S. Kalay <i>Transportation Technology Center, Inc.</i> <i>United States</i></p>	<p>Addressing the Sub-Saharan African Corridor Dilemma – A Systems Methodology</p> <p>N. Cloete-Hopkins & B. Lacquet <i>Wits Transnet Centre of Systems Engineering (TCSE)</i> <i>South Africa</i></p>	<p>Implementation of machine vision based wayside condition monitoring systems in Australian heavy haul railroads</p> <p>A.C. Meyer <i>Beena Vision Asia Pacific Pty Ltd</i> <i>Australia</i></p>
11:00 - 11:25	<p>Welding with improved reliability</p> <p>J. Keichel, J. Yang, D. Liebenthal, P. Radmann & H. Smith <i>Elektro-Thermit GmbH & Co. KG</i> <i>Germany</i></p>	<p>Increased track availability with elastic elements – practical experience</p> <p>L. Mayer & H. Steger <i>Getzner Werkstoffe GmbH</i> <i>Austria</i></p>	<p>Investigation of wheel & rail rolling contact fatigue by using a full scale simulator</p> <p>H. Tournay & A. Tajaddini <i>Transportation Technology Center Inc.</i> <i>United States</i></p>	<p>Systemic railway engineering relevance in heavy haul railway systems</p> <p>C.J. Dutton & F.J. Mülke <i>Docd Engineering Services cc</i> <i>South Africa</i></p>	<p>Integrated Infrastructure Asset Management Solution</p> <p>W Ebersöhn <i>Encada, LCC</i> <i>United States</i></p>
11:25 - 11:50	<p>Employing the design of experiments for optimization and modeling of thermite welds of rails used on the EFC line</p> <p>L.H.D Alves, A. Machado, R. De Souza, R.M.M. Filho & R. Baldez <i>Federal University Of Juiz De Fora, Brazil</i></p>	<p>Discrete element modeling of track settlement characteristics at the transition zone of heavy-haul railway bridge approaches</p> <p>Y. Xiao, Z. Zhang, Q. Zhang & L. Chen <i>Central South University</i> <i>China</i></p>	<p>New insights into curve squeal mitigation measures</p> <p>D.J. Fourie, P.J. Gräbe, P.S. Heyns, R.D. Fröhling & U. Spangenberg <i>Transnet Freight Rail</i> <i>South Africa</i></p>	<p>Composing a heavy haul engineering symphony in differential life cycle costing</p> <p>P.C. Lombard <i>University Of Pretoria</i> <i>South Africa</i></p>	<p>Development and testing of freight wagons for 27t per axle loads for 1520 mm gauge railways</p> <p>A. Orlova, R. Savushkin, A. Sokolov, S. Dmitriev, E. Rudakova, A. Krivchenkov, M. Kudryavtsev & V. Fedorova <i>United Wagon Company</i> <i>Russian Federation</i></p>
11:50 - 12:15	<p>Simulation of the thermite welding process using 3D casting software</p> <p>L.T. Mapaila, T.M. Sitimela & L.L. Msibi <i>TTransnet Freight Rail</i> <i>South Africa</i></p>	<p>Prevention and renovation of heavy haul railway in the Datong-Qinghuangdao railway line</p> <p>G. Lin-quan <i>Taiyuan Railway Administration</i> <i>China</i></p>	<p>Recent advances in top of rail onboard locomotive application</p> <p>J. Cotter, J. VanderMarel, X. Lu, P. Fan, X. Meng & J. Jia <i>LB Foster Rail Technologies</i> <i>Canada</i></p>	<p>Increasing capacity on Transnet's general freight operations through running longer trains - a case study of the chrome railway system</p> <p>L. Ratshilingano & B. Monakali <i>Transnet Freight Rail</i> <i>South Africa</i></p>	<p>Condition based maintenance of railcar roller bearings using predictive wayside alerts based on acoustic bearing detector measurements</p> <p>K.R. Mulligan, S. de Blois, A. Aronian & R. Campbell <i>Self Employed</i> <i>Canada</i></p>
12:15 - 12:40	<p>Rail welding in Japan</p> <p>R.I. Yamamoto <i>Railway Technical Research Institute</i> <i>Japan</i></p>	<p>Model for assessment of ballasted track maintenance requirements</p> <p>L. Rorke, D. J. Vorster, A. J. Wepener & S. Deosaran <i>Aurecon</i> <i>South Africa</i></p>	<p>The influence of maintenance-induced variations in bogie geometry on hollow-wear rates of ore line wagon wheels</p> <p>G. Hettasch & U. Spangenberg <i>Transnet Freight Rail</i> <i>South Africa</i></p>	<p>Heavy haul operation on the Russian railways: present state, problems and ongoing research</p> <p>V.V. Stepov <i>JSC Railway Research Institute</i> <i>Russian Federation</i></p>	<p>Complete wheel condition monitoring using an automated machine vision system</p> <p>K. Nayebi <i>Beena Vision Systems Inc.</i> <i>United States</i></p>

12:40 - 13:40

LUNCH

TUESDAY - 5 SEPTEMBER

CONFERENCE DAY 2 - CONCURRENT SESSIONS

13:40 - 15:20 CONCURRENT SESSIONS					
	Session TR 5 Continuously Welded Rail Chair: Darrell Cantrell	Session TR 14 Track Maintenance Chair: Danie Barnard	Session VTS 5 Wear and Rolling Contact Fatigue Chair: Harry Tournay	Session OP 3 Network Capacity Chair: Roy Allen	Session RS 2 Rolling Stock General Chair: Lwazi Goqwana
13:40 - 14:05	Fundamentals of track buckling prevention and rail stress management A. Kish Kandrew Inc. Consulting Services United States	Systematic track maintenance based on monitoring and identification of cost drivers R. Schilder ARTS Schilder & Partner GmbH Austria	Master-surface to master-surface contact formulation applied to wheel-rail interaction A. Gay Neto, P.R. Refachinho de Campos & T.F. Medeiros Pereira Refachinho de Campos University of São Paulo Brazil	Reducing the costs of rail network control D.J. Wust & G. D. Hjort 4Tel Pty Ltd. Australia	Development of an integrated onboard operational systems (IOOS) architecture N.M.X. Gobhozi Transnet Freight Rail South Africa
14:05 - 14:30	Re-engineering rail stressing in Aurizon D. Buntine Aurizon Australia	Using decision support systems to make informed decisions in the railway industry A. Dinat & M. Munshi Transnet Freight Rail South Africa	A case made design method of target profile for rail grinding G. Shen, X. Mao & D. Chen Tongji University China	A parametric model of the train delay distribution to improve planning of heavy haul cycle times M.C. Shih, C.T. Dick & C.P.L. Barkan University of Illinois at Urbana-Champaign United States	Narrow gauge freight axles for heavy haul applications; comparative evaluation of design solutions according to the European standard EN1303 A. Ronchi & C. Canova LucchiniRS S.p.A. Italy
14:30 - 14:55	Determining the stress state of rails after aluminothermic welding using a thermal-stress analysis N. Rooskrans & L. Msibi Transnet Freight Rail South Africa	Research on a preventive tamping maintenance model for heavy haul railway based on inspection data J.J. Qu & Z.T. Ke & F. Yang & G. Zhao China Academy of Railway Sciences China	Reduction of rolling contact fatigue initiation through wheel and rail profile changes U. Spangenberg, P.S. Els & R.D. Fröhling University of Pretoria South Africa	Monitoring of lightning protection's degradation level to achieve preventative maintenance M.M. Mashaba Transnet Freight Rail South Africa	Condition based and predictive rollingstock maintenance C.R. Prebble & K. Nayebi Aurizon Australia
14:55 - 15:20	Reduction of cut-out rate of insulated rail joints A. Maree & G. Ackermann Transnet Freight Rail South Africa	Machine learning approaches for tamping effectiveness prediction C.W. Tan, G.I. Webb, F. Petitjean & P. Reichl Monash University Australia	Wheel life prediction model considering wear and rolling contact fatigue: example LKAB iron-ore locomotive S. Hossein-Nia, C. Casanueva, S. Stichel & T. Nordmark Royal Institute of Technology Sweden	Analysis of lessons learned on conversion from copper to carbon contact strips fitted on heavy haul locomotives L.L. Ngubane, F. Matoro, A. Singh & S.E. Sibande Transnet Freight Rail South Africa	Mechanization of wagon cleaning process on Vitoria a Minas railroad B.S. de Oliveira Vale Brazil
15:20 - 15:45 AFTERNOON TEA					
15:45 - 17:00 CONCURRENT SESSIONS					
	Session TR 6 Rail Welding Chair: Josiah Mpofo	Session TR 15 Sleeper Performance Chair: Jonathan Duvel	Session OP 8 Train Optimisation Chair: Konrad van der Merwe	Session OP 4 Network Capacity Chair: Deirdre Strydom	Session RS 3 Wheels Chair: Danie Fourie
15:45 - 16:10	Applicability of the Niyama criterion to predict the volume fraction shrinkage porosity in aluminothermic welds T.M. Sitimela & L.L. Msibi Transnet Freight Rail South Africa	Steel sleeper performance in Vitória-Minas Railway (EFVM) railway R. Maximo & S. Nobre Vale Brazil	Determination of maximum safe wagon length for head end power trains S. Singh, P.N. Naidoo, S.J. Maartens & R.D. Fröhling Transnet Freight Rail South Africa	Building capacity through structured heavy haul operations on single-track shared corridors in North America D. Mussanov, N. Nishio & C.T. Dick University of Illinois at Urbana-Champaign United States	Heavy haul wheel optimisation combining material and structural design towards better performance and higher axle loads F. Demilly, S. Hencoco & F. Fortin MG VALDUNES Trith Saint Léger France

TUESDAY – 5 SEPTEMBER

CONFERENCE DAY 2 – CONCURRENT SESSIONS

16:10 - 17:00					
CONCURRENT SESSIONS					
	Session TR 6 Rail Welding Chair: Josiah Mipofu	Session TR 15 Sleeper Performance Chair: Jonathan Duvel	Session OP 8 Train Optimisation Chair: Konrad van der Merwe	Session OP 4 Network Capacity Chair: Deirdre Strydom	Session RS 3 Wheels Chair: Danie Fourie
16:10 - 16:35	<p>Study on post weld heat treatment of welded rail joints</p> <p>X. Zhan & S. Wang <i>China Academy of Railway Sciences China</i></p>	<p>Effect of track conditions on the flexural performance of concrete sleepers on heavy-haul freight railroads</p> <p>Z. Gao, M. S. Dersch, Y. Qian, & J. R. Edwards <i>University of Illinois at Urbana-Champaign United States</i></p>	<p>Feasibility of implementing wagon dividers to reduce train resistance</p> <p>W. Botha, S. Singh & R. Fröhling <i>Transnet Freight Rail South Africa</i></p>	<p>The heavy haul service on the eastern section of the Baikal-Amur mainline</p> <p>Y.A. Davydov, T.N. Kalikina, A.K. Plyaskin & M.Y. Keyno <i>Far Eastern State Transport University Russian Federation</i></p>	<p>Effect of manufacturing related flaws on railway wheel material properties</p> <p>V.J. Matjeke, J.W. Van Der Merwe & A.S. Bolokang <i>Transnet Engineering South Africa</i></p>
16:35 - 17:00	<p>Reducing dynamic loads at rail welds via improved running surface alignment requirements</p> <p>J.M. Cookson, G. Hardie & P.J. Mutton <i>Monash University Australia</i></p>	<p>Heavy haul rail fastening system design and considerations for friction and elasticity</p> <p>W. Bösterling, N. Wiethoff & B. van Dyk <i>Vossloh Fastening Systems GmbH Germany</i></p>	<p>Ofofbanen towards higher axle load</p> <p>H. Voldsund <i>Norwegian Railway Directorate Norway</i></p>	<p>Exploring the advantages of operating a scheduled railway in the South African context</p> <p>W.C. Kuys, A Fenske & Volker Klahn <i>Self Employed South Africa</i></p>	<p>On the convective heat transfer from railway wheels</p> <p>J.L. Cuperus & G. Venter <i>University of Stellenbosch South Africa</i></p>
18h00-00h00					
AWARDS AND GALA DINNER – SPONSORED BY SIEMENS					



WEDNESDAY – 6 SEPTEMBER

08:30 - 10:10

CONFERENCE DAY 3 - CONCURRENT SESSIONS

08:30 - 10:10

CONCURRENT SESSIONS

	Session TR 7 Rail Welding Chair: Nigel Peters	Session TR 16 Rails and Grinding Chair: Kanak Mistry	Session VTS 6 Rolling Stock Monitoring Chair: Kris Kilian	Session OP 7 Train handling Chair: Sizwe Nkosi	Session RS 4 Bogies Chair: Anna Orlova
08:30 - 08:55	Flat spot defect formation and resolution in rail flashbutt welds J.M. Cookson, C. Qiu & P.J. Mutton Monash University Australia	Preventative rail maintenance by grinding – exploring the limits W. Schoech Speno International SA Switzerland	Identification and monitoring of polygonised railway wheels using existing wheel impact monitoring measurement data E. Reitmann, R.D. Fröhling & G. Hettasch Transnet Freight Rail South Africa	Experiment of a 30-tonne Axle Load Train in Shuohuang Railway J.Z. Jia, X.H. Meng, Z.T. Ke, G.M. Zhang, S.T. Hu & Z.G. Ma Shuohuang Railway Development Co., Ltd. China	Improving and measuring wagon bogie maintenance through a strategic maintenance approach T. Legodi, M. Sivnarain & P. Mokhako Transnet Freight Rail South Africa
08:55 - 09:20	Improving aluminothermic weld performance on Transnet's heavy haul systems K. Mistry & J. Duvel Transnet Freight Rail South Africa	Field evaluation of fatigue and wear resistant rail steels under heavy axle loads A. Banerjee, J. LoPresti, S. Kalay & K. Ninness Transportation Technology Center Inc United States	Preventive and predictive maintenance by using distributed acoustic sensing P. Bradley & M. Rosenberger Fruscher Sensor Technology Austria	Assessment of automated train brake effectiveness – Phase 1 Y. Liu, L. Steiginga, T. Davies, K. R. Mulligan, T. Heffernan, M. Lipsett, D. Juhaszova, D. Iler, T. Roman & A. Aronian National Research Council Canada	Study of low track force dynamic performance of new type bogie for Plateau locomotive C. Wang, S. Luo & J. Du & H. Fan Southwest Jiaotong University China
09:20 - 09:45	Rail capping system for improved performance and life cycle cost A. Sundgren, U.A. Juntti, S. M. Famurewa & M. Asplund ReRail AB Sweden	A model for predicting lateral buckling in rails D.H. Allen & G.T Fry Texas A&M University United States	Evaluation of bolster spring faults on heavy haul wagon dynamic behaviour C. Lia, S. Luo, C. Cole, M. Spiryagin & Y. Sun Southwest Jiaotong University China	Improvement and application of coupling device used on heavy haul train with capacity over 30,000 tonnes Y.J. Cui, Q.M. Meng, Z. Zhu, Y.B. Yu & Y. Jiang CRRC Qiqihar Rolling Stock Co., Ltd. China	Premature failure of polymer bogie centre liners on three piece bogies on South Africa's coal export line C. Antunes, M. Sivnarain & R.D. Fröhling Transnet Freight Rail South Africa
09:45 - 10:10	Performance evaluation of improved rail welding procedures under heavy axle loads A. Banerjee, M. Archuleta & J. LoPresti Transportation Technology Center Inc. United States	Developing technologies to improve the reliability of flash-butt welds K. Saita, M. Ueda, T. Miyazaki & T. Yamamoto Yawawa R&D Lab. Japan	Data analysis of wagon axle loads on Malmbanan T. Nordmark, J. Lin, L. Zhang & R. Fjellberg Luleå University of Technology Sweden	Study on effects of combination strength and toughness fatigue X.F. Qin, C.L. Tian, H. Li, H.F. Li & Z.X. Qin CRRC Qiqihar Rolling Stock Co., Ltd. China	Monitoring, Managing and Mitigating In-train Forces R. Bowey, A. Shamdani & A. Stevens Monash University Australia

10:10 - 10:35

MORNING TEA

10:35 - 12:40

CONCURRENT SESSIONS

	Session TR 8 Rail Materials & Grinding Chair: Johan van Aardt	Session TR 17 Track Geometry & Design Chair: Rainer Wenty	Session VTS 7 Wheel rail Interaction Chair: Tshilidzi Munyai	Session OP 6 Network Safety Chair: Clay McDonald	Session RS 5 Wheels Chair: Gerhard Telen
10:35 - 11:00	Comparative test study on type and material of rails used in 30t axle load heavy haul railway Y. Zhang, C. Li, Z. Yu, Q. Zhou, W. Li, S. Zhang & F. Gan China Academy Of Railway Sciences China	A structured approach for selecting a bulk rail corridor during feasibility stage F.J. Heyns Aurecon South Africa	Improved the wheel-rail system of Sweden's Iron Ore Line M. Asplund, S.A. Khan & T. Nordmark Swedish Transport Administration Sweden	Factors that prevent labor unions from endorsing non-intrusive train driver monitoring technologies in South Africa B.A. Mabaso & N.M.X. Gobhozi Transnet Engineering - Research & Development South Africa	Automated inspection of cracked wheels in heavy haul operations A. Poudel, M. Witte & S. Kalay Transportation Technology Center, Inc. United States

WEDNESDAY – 6 SEPTEMBER

CONFERENCE DAY 3 – CONCURRENT SESSIONS

10:35 - 12:40	CONCURRENT SESSIONS				
	Session TR 8 Rail Materials & Grinding Chair: Johan van Aardt	Session TR 17 Track Geometry & Design Chair: Rainer Wenty	Session VTS 7 Wheel rail Interaction Chair: Tshilidzi Munyai	Session OP 6 Network Safety Chair: Clay McDonald	Session RS 5 Wheels Chair: Gerhard Telen
11:00 - 11:25	<p>Research and applications of a new type bainitic forging steel for frog</p> <p>Y.L. Lin, Q.Y. Zhou, Y.H. Zhang & F.S. Liu <i>China Academy of Railway Sciences China</i></p>	<p>Track structural design for maintenance and rehabilitation with automated track inspection data</p> <p>T.R. Sussmann & H. B. Thompson II <i>Volpe Center United States</i></p>	<p>The impacts on friction management at railways - Sand and loss of wheel concavity</p> <p>L.S. Soares, A.M. Freitas, M. Santoro & R.C. do Carmo & F.O. Vidon <i>Rumo Logística S.A. Brazil</i></p>	<p>The influence of visual pursuit on railway accidents</p> <p>B.H. Tabai, M. Bagheri & V. Sadeghi-Firoozabadi <i>Iran University of Science and Technology Iran</i></p>	<p>An innovative steel grade family for forged-rolled solid wheels designed for environments with presence of sand, debris or gravel on the rails</p> <p>A. Ghidini, A. Mazzù, C. Petrogalli & M. Faccoli <i>Lucchini RS Italy</i></p>
11:25 - 11:50	<p>An advanced methodology for developing grinding patterns to efficiently address corrugation removal and establish profile</p> <p>C.M. Hartsough, J.W. Palese, S. DiVentura & J. Zhang <i>Harsco Rail United States</i></p>	<p>The effect of climate change on the stability and settlement of railway embankments</p> <p>P.Vorster, P.J. Gräbe & S.W. Jacobsz <i>GIBB (Pty) Ltd. South Africa</i></p>	<p>Using stress-based damage models to describe subsurface damage in crossings</p> <p>J. Wiedorn & W. Daves, H. Ossberger, U. Ossberger & M. Pletz <i>Materials Center Leoben Forschung GmbH Austria</i></p>	<p>Systemic cost of risk for heavy haul operations in South Africa</p> <p>J. van der Merwe, C. Malan, J. Havenga, A. de Bod, Z. Simpson & S. Swarts <i>BHI Consult South Africa</i></p>	<p>Strategies to prevent wheel failures under heavy axle loads</p> <p>H. Tournay, K. Jones & S. Kalay <i>Transportation Technology Center Inc. United States</i></p>
11:50 - 12:15	<p>Study on the formation of a white etching layer on bainitic rail and the grinding method for preventing rail squats</p> <p>M. Tsujie, F. Urakawa, Y. Kanematsu, M. Matsui & H. Chen <i>Railway Technical Research Institute Japan</i></p>	<p>Smart track geometry analyses as key to sustainability</p> <p>M. Landgraf & F. Hansmann <i>Graz University of Technology Austria</i></p>	<p>Wheel and rail life extension with on-board top of rail friction control</p> <p>R. Stock, D. Elvidge, K. Oldknow & D.T. Eadie <i>L.B. Foster Rail Technologies Canada</i></p>	<p>Quantitative prediction of the risk of heavy haul freight train derailments due to collisions at level crossings</p> <p>S.G. Chadwick, C.PL. Barkan & M.R. Saat <i>University of Illinois at Urbana-Champaign United States</i></p>	<p>Data analytics for condition based wheel maintenance</p> <p>S. M. Famurewa, L. Zhang, U. Kumar & M. Asplund <i>Luleå University of Technology Sweden</i></p>
12:15 - 12:40	<p>Delivering quality turnout grinding with the "utility grinder" concept</p> <p>S. Thomas <i>Speno Rail Maintenance Australia</i></p>	<p>Track geometry degradation on the Swedish heavy haul line – correlation between measured support stiffness gradients and differential settlement</p> <p>J.C.O. Nielsen, E.G. Berggren, A. Hammar, F. Jansson & R. Bolmsvik <i>Chalmers University of Technology Sweden</i></p>	<p>Mechanical deterioration of wheels and rails under winter conditions – mechanisms and consequences</p> <p>R. Deuce, A. Ekberg & E. Kabo <i>Bombardier Transportation Germany</i></p>	<p>Semi-quantitative risk assessment of adjacent track accidents on shared-use rail corridors</p> <p>C.Y. Lin, C.PL. Barkan & M.R. Saat <i>University of Illinois at Urbana-Champaign United States</i></p>	<p>Study on crack initiation life of heavy haul wheel under the coupling action of braking thermal load and rolling contact fatigue</p> <p>L. Li, C.Y. Chang, J.B. Wang & D. Chen <i>China Academy of Railway Sciences China</i></p>
12:40 - 13:40	LUNCH				
13:40 - 15:20	CONCURRENT SESSIONS				
	Session TR 9 Geotechnical Chair: Jim Hyslip	Session BT 3 Tunnels and Structures Chair: Jaco Vorster	Session VTS 8 Derailment Analysis and Safety Chair: Georg Heftasch	Session OP 5 Network Safety Chair: Nompumelelo Mlotshwa	Session RS 6 Maintenance Chair: Carl Meyer
13:40 - 14:05	<p>Measuring device for in situ determination of the track modulus in a heavy haul track</p> <p>R. Costa, R. Moffa, E. Moura, J. Pires, L.L.B. Bernucci & L. Oliveira <i>University of São Paulo Brazil</i></p>	<p>Overvaal rail tunnel: securing South Africa's economic arteries</p> <p>J.W. Muir & H.Gouws <i>Aurecon South Africa</i></p>	<p>Rail break and derailment prediction using probabilistic graphical modelling</p> <p>R.M.C Taylor & J.A. du Preez <i>Transnet Freight Rail South Africa</i></p>	<p>Assessment of intervention options for the increased tonnage and utilisation of a single line railway with sensitive formation conditions.</p> <p>D.J. Vorster, L. Rorke, A. J. Wepener & J. Venter <i>Aurecon South Africa</i></p>	<p>Laboratory based accelerated fatigue testing of F-type couplers</p> <p>S.P.Nkosi & R.S. Hartley <i>Transnet Freight Rail South Africa</i></p>

WEDNESDAY – 6 SEPTEMBER

CONFERENCE DAY 3 - CONCURRENT SESSIONS

13:40 - 15:20 CONCURRENT SESSIONS					
	Session TR 9 Geotechnical Chair: Jim Hyslip	Session BT 3 Tunnels and Structures Chair: Jaco Vorster	Session VTS 8 Derailment Analysis and Safety Chair: Georg Heftasch	Session OP 5 Network Safety Chair: Nompumelelo Mlotshwa	Session RS 6 Maintenance Chair: Carl Meyer
14:05 - 14:30	Permanent and resilient deformation behaviour of heavy haul formation materials subjected to environmental changes R. Vandoorne, G.D. Mpye & P.J. Gräbe <i>University of Pretoria South Africa</i>	Ventilation options for heavy haul operations through the Overvaal tunnel S. Htay, D. Edwards, C. Biotto & E. Bennett <i>Aurecon Australia</i>	Implementing a derailment distance criteria for simulation of derailment risk S. Younes, D. Welsby, A. Shamdani & M. Kwong <i>Institute Of Railway Technology Australia</i>	Systemic factors in the investigation of railway occurrences in South Africa J. Hutchings <i>University of the Witwatersrand South Africa</i>	Study on railway freight wagon body acceleration fatigue test methodology Q. Zhang, X.W. Li, Y B. Yu, L.D. Li & W. Yan <i>CRRC Qiqihar Rolling Stock Co., Ltd. China</i>
14:30 - 14:55	Formation design philosophy for Swaziland rail link project A. Ramadwa & J.K. Kae <i>Transnet Freight Rail South Africa</i>	Experimental study on ground vibration caused by heavy haul railway and the effects of vibration on ambient buildings PH. Liu, X. Meng, Y.G. Wang, Y.Q. Yang, Z.T. Ke & W. Wang <i>China Academy Of Railway Sciences China</i>	The coupler and buffer compressed stability and running safety analysis of heavy-haul locomotives G. Li, Z.C. Zhang, G.F. Chu & H.L. Zu <i>China Academy of Railway Sciences China</i>	Implementing locomotive video and voice recorder and monitoring systems to improve safety in Canada D. Chen <i>Transportation Safety Board Canada</i>	Cyclic twist load measurement and fatigue design of rolling stock body structures J. Amaro, T. Constable, D. Birkin & E. Hecht <i>Aurizon Australia</i>
14:55 - 15:20	Semi-automatic condition-based track maintenance and rehabilitation planning M. Silvast, A. Nurmikolu, B. Wiljanen & E. Mäkelä <i>Roadscanners Oy Finland</i>	How testing and monitoring can support heavy haul railway bridge management: the experience gained in South Africa F. Busatta & P. Moyo <i>University of Cape Town South Africa</i>	Principal factors contributing to heavy haul freight train safety improvements in North America: a quantitative analysis B. Wang, C. Barkan & R. Saat <i>University of Illinois at Urbana-Champaign United States</i>	Bond monitor and fault locator for safety and reliability of AC railway. U.M. Cella, J.S. Goffey & P.F. Nussey <i>Aurizon Australia</i>	Curve fitting and extrapolation for the main welded joints of heavy haul wagon body in China W. Liu, Z. Liu, W. Hu, Y. Wang & H. Liu <i>Beijing Jiaotong University China</i>
15:20 - 15:45 AFTERNOON TEA					

WEDNESDAY – 6 SEPTEMBER

CONFERENCE CLOSING SESSION

15:45 - 17:00	ACTIVITY	SESSION CHAIR
15h45-15h55	IHHA Hall of Fame Award	Mr. Semih Kalay & Mr. Scott Lovelace
15h55-16h15	Best Papers Awards	Mr. Semih Kalay & Mr. Brian Monakali
16h15-16h35	Wrap up of the Conference proceedings	To be confirmed
16h35-16h40	Announcement of the Hosting Country for Next Conference	Mr. Semih Kalay
16h40-16h50	Words from Country Director to host the next conference	
16h50-17h00	Vote of Thanks	Mr. Brian Monakali
17h00-20h00 CONFERENCE CLOSING COCKTAIL FUNCTION - SPONSORED BY SPENO		

THURSDAY – 7 SEPTEMBER

POST CONFERENCE TECHNICAL TOUR

08:00 - 18:30	LOCATION	ACTIVITY A Technical Tour is planned to Saldanha Port Terminal, the largest port on the west coast of Africa. The tour will take place the day after the conference on 07 September 2017. At 141 km from Cape Town, Saldanha port and the iron ore line is the closest heavy haul operation to the conference.	DURATION
08:00	Cape Town Convention Centre	Delegates to meet	
08:30	Cape Town Convention Centre	Bus Departs	
10:30	Saldanha Bay	Arrive at Saldanha Transnet Port Terminal • A visit to the Saldanha Port Terminal manganese and iron ore handling facilities • Transnet Port Walk-about • A visit to the Tippler operations • Panoramic View at TPT Tower Building • A Drive along a section of Iron Ore Line up to Elands Bay with Rail network heavy haul infrastructure components will be viewed	3 hours
13:30	Die Strandloper, Langebaan	Lunch	
16:30	Die Strandloper, Langebaan	Bus departs from Saldanha back to Cape Town	

