

UNIVERSITY OF PRETORIA
FORMAT OF CURRICULUM VITAE

EVALUATION DATE: *(Office use only)*

1. BIOGRAPHICAL SKETCH

1.1 GENERAL INFORMATION

Surname	Wannenburg									
First names	Johann				ID Number					
Citizenship	South African				Title	Prof	Female		Male	X
Place of birth	Pretoria				Date of birth		24 January 1965			
Population group	African		Coloured		Indian		White	X	Other (Please specify)	
Department	Mechanical and Aeronautical Engineering				Position		Associate Professor			
Direct Telephone	012 420 3695				Direct Telefax					
E-mail	johann.wannenburg@up.ac.za									
Date of appointment	1 April 2017				Permanent full-time			Temporary full-time		X

1.2 ACADEMIC QUALIFICATIONS OBTAINED

Degree/ Diploma	Field of study	Higher education institution	Year	Distinctions
PhD	Mechanical Engineering	University of Pretoria	2007	
Masters	Mechanical Engineering	University of Pretoria	1992	
BEng	Mechanical Engineering	University of Pretoria	1986	AECI award for best first year B.Eng. student

1.3 WORK EXPERIENCE TO DATE

Name of employer	Capacity and/or type of work	Period From mm//yy to mm//yy
University of Pretoria	Associate Professor – Centre of Asset Integrity, Chair: Eskom Power Plant Engineering Institute	4/2017 - present
Anglo American Platinum	Senior Principal Engineer – Asset	2014-1/2017

	<p>Management</p> <p>Functions: Lead the Physical Asset Management function in Anglo American Platinum.</p>	
Anglo American	<p>Head of Engineering: Governance</p> <p>Functions: Technical governance, custodian of Asset Management Framework for Group, technology strategy, custodian of Group Technical Standards, large capital projects review, safety and technical risk management, asset optimisation.</p>	2010-2014
Anglo Platinum	<p>Senior Principal (Group) Mechanical Engineer</p> <p>Functions: Technical governance, technology development, specialized consulting, business improvement.</p>	2008-2010
Anglo Technical Division	<p>Manager: Specialized Engineering</p> <p>Functions: Resource Centre management, technology development, specialized consulting.</p>	2003-2008
Advantech Industrial	<p>Director, Acting Managing Director</p> <p>Functions: Factory and financial management, business development.</p>	2000-2003
BKS Advantech	<p>Director</p> <p>Functions: Engineering and financial management, business development, design and consulting.</p>	1995-2003
University of Pretoria	<p>Senior Lecturer, Department of Mechanical Engineering</p> <p>Subjects: Strength of Materials, Design (pre-graduate), Fracture Mechanics, Fatigue, Structural Integrity (post-graduate).</p>	1989-1998
Consultant	<p>Mechanical Engineer</p> <p>Functions: Consultancy, research & development in Structural Mechanics, project management.</p>	1987-1997

2. TEACHING ACTIVITIES

2.1 Courses presented		
Course	Level (e.g. second year, Masters)	Self developed (Yes or No)
Strength of Materials	Second year	
Design	Fourth year	
Fracture Mechanics	Honours	Yes
Fatigue	Honours	
Structural Integrity	Honours	Partly
Vibration	Third year	
Condition Based Maintenance	Honours	Partly
Maintenance Engineering	Fourth Year	

2.2 Other education and pedagogic courses presented		
Course	Year	Institution
Welding fatigue	Post graduate	Wits

3 TEACHING OUTPUTS

3.1 Educational publications and products

- Comprehensive training handbook and material for Asset Management training of Engineers, Planners and Foremen in Anglo American
- Interactive, web-based, experimental learning simulation package for training senior technical personnel on a comprehensive set of Anglo American technical standards

4. OTHER TEACHING CONTRIBUTIONS

4.1 Membership of national and international bodies

4.2 Visits to local and overseas universities as guest professor or lecturer in regard to teaching

4.3 Participation in national and international teaching associations, bodies, committees

Member of advisory boards for Civil Engineering and Mechanical & Aeronautical Engineering Departments of the University of Pretoria.

5 RESEARCH ACTIVITIES

5.1 Former supervision or co-supervision (*completed*)

Name of student	Degree/Title of dissertation/ thesis and date	Supervisor	Co-supervisor(s)	Duration of studies (years)
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Henning Mostert	Doctor of Philosophy in Surgery, 'The Effect of a Reverse Shoe and Polystyrene Padding on the Biomechanics of the Front Hoof of the Horse'		Johann Wannenburg	2
Theunis Blom	M Eng Mech 'Remaining Life Analysis for a Pressure Vessel subjected to Cyclic Loads based on Fracture Mechanics'	Johann Wannenburg		2
Jurie Niemand	M Eng Mech, 'The Refinement of Vehicle Usage Characterisation Techniques for Statistical Determination of Durability Test Requirements'	Johann Wannenburg		2
E P W Prinsloo	M Eng Mech, 'Fatigue Equivalent Static Load: Methodology for the Design of Vehicle Structures'	Johann Wannenburg		2
Francois van Tonder	M Eng Mech, 'Numerical verification of a proposed dynamic fatigue design methodology'	Johann Wannenburg		2

5.2 Current post-graduate students					
Name of student	Degree enrolled for and date of first registration	Project title	Supervisor	Co-supervisor(s)	Year of registration
Johan van Zyl	M Eng	Remaining Life Assessment of Components based on Failure Statistics and Failure Mechanism Model	Johann Wannenburg	Stephan Heyns	2016

5.3 Obtaining research funds (Optional)			
Origin of research funds (e.g. contract research, THRIP, international funding organisations, other(s))	Title of research project or programme	Duration	Money allocated (R) (Optional - exact amounts not required)
Received funds from THRIP, SPII, SIMRAC, Industry, IDC			
Industry partner for various THRIP			

projects			

6 RESEARCH OUTPUTS

6.1 Publications in peer-reviewed or refereed journals

- An overview of numerical methodologies for durability assessment of vehicle and transport structures, International Journal of Vehicle Systems Modeling and Testing, v 5, n 1, p 72-101, June 2010.*
- Application of a fatigue equivalent static load methodology for the numerical durability assessment of heavy vehicle structures, International Journal of Fatigue, v 31, n 10, p 1541-1549, October 2009.*
- The derivation of structural usage profiles for vehicles from failure statistics, International Journal of Vehicle Design, v 47, n 1-4, p 269-289, October 2008.*
- The Effect of a Long Post Weld Heat Treatment on the Integrity of a Welded Joint in a Pressure Vessel Steel, International Journal of Pressure Vessels and Piping, 1997 *
- Remaining Life Analysis for a Pressure Vessel subjected to Cyclic Loads based on Fracture Mechanics, International Journal of Fatigue, 1995*
- The Determination of Cost-effective NDE Inspection Schedules for Structures containing Defects based on Probabilistic Fracture Mechanics, International Journal of Pressure Vessels and Piping, 1994
- Probabilistic Establishment of Vehicle Durability Test Requirements based on Field Failure Data, Environmental Engineering, 1993
- The Use of Probability Theory in Fracture Mechanics - A Case Study, International Journal of Pressure Vessels and Piping, 1992*

* Co-author

6.2 Books and/or chapters in books

NA

6.3 Published full-length conference papers/keynote addresses

- Statistical Investigation Of The Risk Of Accidental Impact Opening Of Mine Shaft Detaching Hooks, Hoist and Haul 2005 Conference Proceedings, 5 - 7 September 2005 in Perth, WA.*
- Structural Design of South African Large Telescope, Proceedings of SPIE - The International Society for Optical Engineering, v 4837, n 1, 2002.*

* Co-author

6.4 Non-refereed publications or popular articles

NA

6.5 Patents

6.6 Technical reports

(Author and Co-Author of more than 100 technical reports – sample of reports listed below)

Measurements and analysis on Rossing pre-screening building.

Investigation into 24800litre U-Frame tank container weld-on flange.

Okapi front axle failure investigation

Engineering guideline: safe practices for lifting of plates and beams

Measurements and structural analysis on reachback and carry vehicle

Structural Measurements On A Kress Carrier At The Saldanha Steel Plant

Measurements And Structural Analysis On Mazda Ranger Shock Absorber Bracket

Stress Analysis On ISO Container Structure For Load Transfer Area Loading

Measurements And Analysis Of Loads On Joy 6ls Longwall Shearer

Development Of Aluminium General Freight Liquid Tanker (GFLT)

Strain measurements and fatigue evaluation on the Hencon LTV

Design Report: Salt Telescope Structure

Design Report: Salt Telescope Mirror Truss

Design Report: Salt Telescope Dome

Summary Report: Solution For Taiwan Push-Pull Train Gear Case Mounting

Failure Investigation On Kumba Sep Jig Structure

Measurements And Failure Investigation On WLRT Mill Motor Shaft

Failure Analysis On Alstom Mill Motor Shaft

Review Of Investigations And Proposed Solutions For HBMS Ball Mill Problems

Safety Risk Assessment On Kleinkopje Komatsu Hm300 Articulated Utility Truck

BRPM Secondary Trommel – Redesign Design Audit

Structural Assessment On Dt Hi-Load Dumptruck Bodies

PPRust Dump Truck Comparison

Safety Risk of Mine Conveyance Detaching Hooks

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7 OTHER SCHOLARLY RESEARCH-BASED CONTRIBUTIONS

7.1 Participation in conferences, workshops and short courses - specify type of contribution
7.2.1 National
7.2.2 International <ul style="list-style-type: none">• International Colloquium on Ageing of Materials and Life-Extension Strategies of Engineering Plant, Stellenbosh, 1993 Author• International Conference on Hoisting and Haulage, 2005, Perth Author

7.2 Teamwork and collaboration with others: Involved (as sponsor, advisor) with growing a significant research group in the field of Asset Management at the Industrial Engineering department of US.

7.3 Membership in national and international bodies NA
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7.4 Visits to local and overseas universities or research institutes as guest professor or researcher
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8 ARTISTIC OUTPUTS (*if applicable*)

NA

9 MANAGEMENT AND ADMINISTRATIVE DUTIES

Broad experience in company, team and project management and entrepreneurship in the engineering
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and mining industries.

10 COMMUNITY SERVICE OR PROFESSIONAL SKILLS

10.1 Outreach projects

Initiator and project manager of a project during 2012-2013, funded by Anglo Platinum (R3m), to develop alternative teaching methods and material for secondary school mathematics teaching, which involved experimental learning methods, gaming and virtual environments. After successful piloting in a non-performing school in Rustenburg, the project was terminated due to lack of funding.

10.2 Professional service performed

- Leading the Physical Asset Management function in Anglo American Platinum (26 operations, +10 000 employees involved in PAM), including the development of framework material, implementation, change management and training across all aspects of PAM (maintenance strategy, LCC, work management, defect elimination, information management etc.)
- Leading development of comprehensive set of group technical standards for global mining company, including asset management and safety standards. Involvement with and coordination of technical standards programme across the mining value chain.
- Managing and leading of multi-disciplined engineering teams (including mechanical, electrical, C&I, civil, industrial and structural)
- Development of total mining value chain experimental learning tool for senior technical personnel
- Development of specialized web-based asset management systems, e.g. Shaft Inspection & Maintenance Management System.
- Extensive technical engagement and collaboration with mining and transportation industry OEM companies on design, technology development, failure analysis and implementation of equipment and products including:
 - Haul truck frames and dump bodies (e.g. significant involvement with the design of light weight dump bodies with DT Hi-load, VRN)
 - Longwall systems (e.g. establishing cutting forces acting on shearer and chocks with JOY)
 - Mills and crushers
 - Load Haul Dumpers ((e.g. establishing new metal fatigue design criteria for design of LHDs with Sandvik, Atlas Copco)
 - Ultra-low profile, electrical hard-rock mining equipment (technology development with Dok-Ing)
 - Hard-rock continuous miners (e.g. JOY rock cutter)
 - Electric drills (e.g. Hilti)
 - Trains (e.g. design and manufacturing with Dorbyl, Hyundai)
- Responsible for technical engagement and governance of global mining industry supply chain initiatives such as strategic supplier relationship management, China sourcing.
- Leading various large capital projects engineering reviews.
- Development of statistical and behavior based safety model for mining industry.
- Management of design and development of UG mining equipment, e.g. specialized mechanized mining equipment, skips, box fronts.
- Development of comprehensive energy consumption model for major mining company and management of energy savings projects on e.g. compressed air, electric drilling.
- Development of Health & Usage Monitoring Systems for mining equipment.
- Investigation into risk of accidental detachment due to falling objects of detachment hooks in mine shafts.
- Project manager on design and supply of ϕ 24 m dome, ϕ 11 m mirror truss and 50 t structure for South African Large Telescope Production management on road-rail overhead line maintenance vehicles.

- Design, analyses, dynamic simulation, industrialization of rail vehicle structures.
- Techno-economic modelling of transport industry processes.
- Establishment of fatigue usage profiles for vehicles using probabilistic methods.
- Design and finite element analysis on tanker trailers and ISO tank containers..
- Strain gauge measurement and fatigue analysis projects for petro-chemical, mining and vehicle industries.
- Design projects on vehicle (heavy and commercial) structures, including usage of finite element techniques.
- Laboratory testing projects on mining and vehicle structures, including up to five axes servo-hydraulic test rigs.
- Fracture mechanics analysis on hydro-electric power station pipeline.

10.3 Clinical service

NA

10.4 Involvement with other universities/scientific institutions

External supervision of a number of Masters and PhD students at different universities

10.5 Referee duties

NA

11 AWARDS AND SCIENTIFIC/SCHOLARLY RECOGNITION

11.1 Evaluation status as scientist/scholar

AECI award for best first year B.Eng. student.

11.2 Research awards and prizes

Project manager on design and supply of ϕ 24 m dome, ϕ 11 m mirror truss and 50 t structure for South African Large Telescope. *Project was awarded 2003 South African Institute of Steel Construction Joint Overall Winner and Hi-tech Category Winner.*

11.3 Teaching awards and prizes

NA

11.4 Artistic awards and prizes

NA