

# CURRICULUM VITAE



## PERSONAL INFORMATION

Name **MAZZÙ ANGELO**  
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Nationality Italian  
Date of birth 20/05/1973  
Place of birth Breno (BS) - Italy  
Sex M

## WORKING EXPERIENCE

- Period 2002-2016
- Employer University of Brescia  
Piazza del Mercato, 15  
Brescia (Italy)
- Employment Since November 1<sup>st</sup>, 2002, to December 31<sup>st</sup>, 2014  
Researcher  
Confirmed in role in 2006
- Research activity Since January 1<sup>st</sup>, 2015  
Associate professor
  - Rolling contact fatigue. Angelo Mazzù has studied this topic along his whole professional activity, mainly in researches on materials for bearings, rails and railway wheels. Angelo Mazzù is the person in charge of the rolling contact laboratory (RCLab) of the University of Brescia, which includes advanced facilities for rolling contact testing. By means of these facilities, he carried out many researches in collaboration with external companies and research centers, aimed at experimentally simulating the effect of loads and environmental factors on the deterioration of materials subjected to cyclic contact. In particular, the collaborations with the railway wheel manufacturer Lucchini RS (Italy), the University of Maribor (Slovenia) and the INSA of Lyon (France) are mentioned. Angelo Mazzù also carried out theoretical and numerical research on models and methods for assessing rolling contact fatigue, even developing his own software for simulating the effects of repeated contact on materials.
  - Other activities. Many other activities were carried out on structural mechanics applied to different objects such as vehicles, pressure pipe lines and other mechanical components. Also some activities were carried out within projects of international cooperation with counties dealing with the problem of desertification and deforestation.
  - Review of scientific papers. Since 2010 an intense reviewing activity has been carried out for many international scientific journals such as Tribology Transactions, Wear, Engineering Fracture Mechanics, Tribology International, Fatigue & Fracture of Engineering Materials and Structures, International Journal of Fatigue.

- Teaching activity
  - 2002 – 2005: Collaboration to the teaching activity in university courses for students of Mechanical engineering
  - 2005 – today: Appointed of university courses for students of Mechanical Engineering, Management Engineering and Automation Engineering on Machine Design, Vehicle Structural Mechanics, Numerical Methods for Structural Mechanics.
  - 2002 – today: supervisor of more than 40 degree theses; supervisor of two PhD theses.
- Participation to conferences
  - 2000 – today: participation to 18 international conferences and 4 national conferences on different topics of mechanical engineering.
- Participation to financed projects
  - 2006 - 2009 European project “Participative management of forestry resources and promotion of eco-friendly economic initiatives in the Logone Valley (LOGONE)”
  - 2009 - 2012 European project “Applied research for the valorisation and the transformation of natural resources within a process of fight against poverty in Chad and Cameroon (VALRENA)”
  - 2004 National project PRIN 2004 “Predicting criteria for damage phenomena in wheel-rail contact”

## EDUCATION

- Period 1999 - July 14, 2003
- Institution University of Brescia
- Discipline Materials for engineering
- Degree PhD – Title of the thesis: “Cyclic contact fatigue”
  
- Period 1992 - December 22, 1998
- Institution University of Brescia
- Discipline Mechanical Engineering
- Degree Master degree – Title of the thesis: “Design of a vehicle in innovative material for cableway plant”

## PERSONAL SKILLS

MOTHER TONGUE  
OTHER LANGUAGES

ITALIAN  
ENGLISH, FRENCH

## PUBLICATIONS

Proceedings of international conferences:

- [1] G. Donzella, A. Mazzù, L. Solazzi, *Study of the rolling contact fatigue in lubricated contacts*, Proc. 2<sup>nd</sup> World Tribology Congress (WTC2001), Vienna (Austria), 4-7 September 2001
- [2] G. Donzella, A. Mazzù, L. Solazzi, *Subcase crack propagation threshold and microhardness profile influence in rolling contact fatigue of carburised components*, 10<sup>th</sup> International Conference on Fracture, Honolulu (USA), 2-6 December 2001
- [3] A. Mazzù, *Calculation by weight functions of mode II stress intensity factors in two-dimensional subsurface cracks*, Fifth World Congress on Computational Mechanics (WCCM V), Vienna (Austria), 7-12 July 2002
- [4] A. Mazzù, M. Faccoli, *Competition between low creepage wear and rolling contact fatigue in a rail steel*, Giornata di studio "Rolling Contact Fatigue – Esperienze e Sviluppi Recenti", Brescia (Italy), 15 November 2002
- [5] D. Cattaneo, A. Mazzù, S. Sorlini, P. Zambetti, *Study of appropriate technologies for production and utilisation of biomass briquettes in developing countries*, 2<sup>nd</sup> World Conference and Technology exhibition on biomass for energy, industry and climate protection, Rome (Italy), 10 – 14 May 2004
- [6] G. Donzella, M. Faccoli, A. Mazzù, R. Roberti, *Experimental investigation on competition between wear and RCF in a rail steel*, 11<sup>th</sup> International Conference on Fracture, Turin (Italy), 20 – 25 March 2005
- [7] G. Donzella, A. Mazzù, *Experimental and numerical assessment of damage in rolling contact fatigue*, 11<sup>th</sup> International Conference on Fracture, Turin (Italy), 20 – 25 March 2005
- [8] A. Mazzù, S. Sorlini, P. Zambetti, *Experimentation of an appropriate technology of biomass recovery for artisanal food transformation in Senegal*, 14<sup>th</sup> European Biomass Conference & Exhibition. Biomass for Energy, Industry and Climate Protection, Paris (France), 17 – 21 October 2005
- [9] G. Donzella, M. Faccoli, A. Mazzù, C. Petrogalli, R. Roberti, *RCF – wear competition in railway wheel – rail interface*, Giornata di studio "Structural Integrity of Railway Wheels and Wheel/Rail Interface", Brescia (Italy), 30 November 2006
- [10] A. Mazzù, G. Donzella, M. Faccoli, C. Petrogalli, R. Roberti, *Progressive damage assessment in the near-surface layer of railway wheel-rail couple under cyclic contact*, 8<sup>th</sup> International Conference on Contact Mechanics and Wear of Rail/Wheel Systems (CM2009), Florence (Italy), 15 – 18 September 2009
- [11] G. Donzella, M. Faccoli, A. Mazzù, C. Petrogalli, H. Desimone, *On rolling contact fatigue of gear steels with different inclusion content*, International Conference on Crack Paths (CP2009), Vicenza (Italy), 23 – 25 September 2009
- [12] S. Parmigiani, D. Zani, C. Invernizzi, A. Mazzù, V. Villa, A. Lezzi, *A biomass powered Ringbom-Stirling engine for developing countries: a low-budget solution for distributed electricity generation*, International Conference on Renewable Energies and Power Quality (ICREPQ'10), Granada (Spain), 23 – 25th March 2010
- [13] A. Mazzù, M. Faccoli, M. Lancini, C. Petrogalli, D. Nélías, A. Ghidini, *A procedure for wheel and rail steels characterization in rolling contact*, Second International Conference on Railway Technology: Research, Development and Maintenance, Ajaccio (France), 8-11 April 2014
- [14] A. Mazzù, C. Petrogalli, M. Lancini, A. Ghidini, M. Faccoli, *A comparative study of two high performance railway wheel steels*, 10<sup>th</sup> International Conference on Contact Mechanics and Wear of Rail/Wheel Systems (CM2015), Colorado Springs (USA), 30 August – 3 September 2015

[15] A. Mazzù, C. Petrogalli, M. Lancini, A. Ghidini, M. Faccoli, *Rolling contact fatigue assessment of railway wheel steels with wet contact*, Third International Conference on Railway Technology: Research, Development and Maintenance, Cagliari (Italy), 5-8 April 2016

Papers on international journals:

[16] G. Donzella, A. Mazzù, L. Solazzi, *Prediction of the elastic shakedown limit in elastohydrodynamically lubricated line contacts*, Proc. 2000 AIMETA International Tribology Conference, L'Aquila (Italy), 20-22 September 2000, published on Int. J. of Applied Mechanics and Engineering, 2001, vol. 6, No. 4, pp. 1051-1060

[17] E. Bormetti, G. Donzella, A. Mazzù, *Surface and subsurface cracks in rolling contact fatigue of hardened components*, STLE 57<sup>th</sup> Annual Meeting, Houston (USA), 19-23 May 2002, published on Tribology Transactions, July 2002, vol.45, No. 3, pp. 274-283

[18] A. Mazzù, *A mode II weight function for subsurface cracks in a two-dimensional half-space*, Fatigue and Fracture of Engineering Materials and Structures, 2002, vol. 25, pp. 911-916

[19] G. Donzella, M. Faccoli, A. Ghidini, A. Mazzù, R. Roberti, *The competitive role of wear and RCF in a rail steel*, Engineering Fracture Mechanics, 2005, vol. 72, Issue 2, pp. 287-308

[20] A. Mazzù, *Study, design and prototyping of an animal traction cam based press for biomass densification*, Mechanism and Machine Theory, 2007, vol. 42, pp. 652-667

[21] A. Mazzù, *Experimental and Numerical Characterization of a Rail Steel Behavior Under Cyclic Contact Stresses*, 6th International Conference on Fracture and Damage Mechanics, 17-19 July 2007, Madeira, Portugal, published on Key Engineering Materials, Vols. 348-349 (2007), pp. 569-572

[22] A. Mazzù, *A simplified non-linear kinematic hardening model for ratcheting and wear assessment in rolling contact*, Journal of Strain Analysis for Engineering Design, 2008, Vol. 43, Issue 5, pp. 349-360.

[23] G. Donzella, A. Mazzù, C. Petrogalli, *Competition between wear and rolling contact fatigue at the wheel rail interface: some experimental evidence on rail steel*, Proceedings of IMechE, Vol 223, Part F: Journal of Rail and Rapid Transit, 2009, pp. 31-44

[24] A. Mazzù, *Surface plastic strain in contact problems: prediction by a simplified non linear kinematic hardening model*, Journal of Strain Analysis for Engineering Design, 2009, Vol. 44, Issue 3, pp. 187-199.

[25] A. Mazzù, *Design of a press for densification of waste biomass in developing countries*, International Journal of Engineering Research in Africa, 2010, Vol. 3, pp. 1 – 17.

[26] G. Donzella, M. Faccoli, A. Mazzù, C. Petrogalli, R. Roberti, *Progressive damage assessment in the near-surface layer of railway wheel – rail couple under cyclic contact*, Wear, 2011, Vol. 271, pp. 408-416.

[27] G. Donzella, M. Faccoli, A. Mazzù, C. Petrogalli, H. Desimone, *Influence of inclusion content on rolling contact fatigue in a gear steel: Experimental analysis and predictive modelling*, Engineering Fracture Mechanics, 2011, Vol. 78, pp. 2761-2774.

[28] G. Donzella, C. Petrogalli, A. Mazzù, *Application of a failure assessment diagram under rolling contact to components with hardness variable along the depth*, 11th International Conference on the Mechanical Behavior of Materials (ICM11), Milano (Italia), 5 – 11 Giugno 2011, published on Procedia Engineering, 2011, Vol. 10, pp. 746-751.

[29] M. Vaccari, F. Vitali, A. Mazzù, *Improved cookstove as an appropriate technology for the Logone valley (Chad – Cameroon): Analysis of fuel and cost savings*, Renewable Energy, 2012, Vol 47, pp. 45 – 54.

- [30] G. Donzella, A. Mazzù, *Extension to finite life of a failure assessment diagram for contact fatigue loading*, International Journal of Fatigue, 2012, Vol 44, pp. 217–224.
- [31] A. Avanzini, G. Donzella, A. Mazzù, C. Petrogalli, *Wear and rolling contact fatigue of PEEK and PEEK composites*, Tribology International, 2013, Vol. 57, pp. 22–30.
- [32] G. Donzella, A. Mazzù, C. Petrogalli, *Failure assessment of subsurface rolling contact fatigue in surface hardened components*, Engineering Fracture Mechanics, 2013, Vol. 103, pp. 26–38.
- [33] A. Mazzù, *A numerical approach to subsurface crack propagation assessment in rolling contact*, Failure and Fracture of Engineering Materials and Structures, 2013, Vol. 36, pp. 548–564.
- [34] J.P Temga, A. Mazzu', J.P. Nguetnkam, D. Palazzini, R. Ndjouenkeu, F. Vitali, *Valorisation of crude earth as sustainable building material: a case of international cooperation in the Logone Valley (Chad–Cameroon)*, International Journal of Sustainable Engineering, 2014, Vol. 7, Issue 3, pp. 222 – 234.
- [35] Temga J. P., Mazzù A., Nguetnkam J. P., Palazzini D., Ndjouenkeu R., Vitali F., (2014) "International university cooperation for valorizing crude earth as building material in chad and cameroon" in Dansero E., De Filippi F., Fantini E., Marocco I. (Eds.), *Imagining Cultures of Cooperation - Proceedings of the III CUCS Congress, Turin 19-21 September 2013*, JUNCO - Journal of Universities and international development Cooperation, n. 1, <http://www.ojs.unito.it/index.php/junco/> ISBN 978-88-96894-16-3, pp..196-203.
- [36] A.Mazzù, C.Petrogalli, M.Faccoli, *An integrated model for competitive damage mechanisms assessment in railway wheel steels*, Wear 322-323 (2015), 181–191.
- [37] G. Donzella, A. Mazzù, C. Petrogalli, *Experimental and numerical investigation on shear propagation of subsurface cracks under rolling contact fatigue*, Procedia Engineering 109 (2015), 181-188.
- [38] A. Mazzù, L.Solazzi, M. Lancini, C. Petrogalli, A. Ghidini, M. Faccoli, *An experimental procedure for surface damage assessment in railway wheel and rail steels*, Wear 342-343 (2015), 22–32.
- [39] M. Lancini, I. Bodini, D. Vetturi, S. Pasinetti, A Mazzù, L. Solazzi, C. Petrogalli, M Faccoli, *Using vibration measurements to detect high wear rates in rolling contact fatigue tests*, ACTA IMEKO 4(4) (2015), 66-74.
- [40] L. Solazzi, A. Mazzù, M. Gelfi, *Failure analysis of a cyclic contact testing machine pin*, Journal of Failure Analysis and Prevention 17 (2017), 315-320, DOI 10.1007/s11668-017-0242-2.
- [41] M. Faccoli, C. Petrogalli, M. Lancini, A. Ghidini, A. Mazzù, *Rolling Contact Fatigue and Wear Behavior of High-Performance Railway Wheel Steels Under Various Rolling-Sliding Contact Conditions*, Journal of Materials Engineering and Performance 26(7) (2017), 3271–3284.