Andrea Mura

Education:

- PhD in Mechanical Design and Machine Construction: 26th May 2008 - Politecnico di Torino presenting a thesis titled: "Numerical Methods for the Analysis of Structures with Viscoelastic Materials".
- Master degree in Mechanical Engineering: 22th July 2004 - Politecnico di Torino presenting a thesis done at the Faculté Politechnique de Mons (Belgium) titled "Kinematical and dynamic analysis of hexapod AMRU5 robot". Score: 107/110.

Research Activity

After the PhD the research activity was related to the investigation about transmission design, and in particular to the failure of the main powertrain components such as spline couplings, gears, ball screws and bearings. The activities have been carried on also by collaborating with important enterprises working in the aerospace and automotive fields.

Research activities and collaborations with enterprises:

GE Avio Aero (theoretical and experimental activity about spline couplings and gears); Sea&Shympony (collaboration about gear systems); Moog (theoretical and experimental activity about ball screws); Flexider (theoretical and experimental activity about components and materials fatigue life); Magneti Marelli (experimental activity about automotive components).

Awards

He awarded the prize "The best Presenter in Information Technology" at the Fifth International PhD, DLA Symposium University of Pecs (Hungary), presenting the work "Influence of the viscoelastic FLD patches disposition on damping performances of steel plates".

Supervision of students

- Student's advisor for theses (management of people and activities).
- Academic referent for students during their stage period in enterprises.

Teaching

Academic courses: a) Fundamentals of strength of materials, b) Fundamentals of Machine Design and Drawing, c) Numerical Control,

Other activities

- Member of the Editorial Board of the international journal "American Journal of Science and Technology" published by the American Association for Science and Technology AASCIT.
- Member of the technical board of the journal "Organi di Trasmissione" edited by Tecnichenuove – Milano.
- Partner of the journal "il Progettista Industriale" published by Tecnichenuove – Milano.
- Partner of the journal "Organi di Trasmissione" published by Tecnichenuove – Milano.
- Reviewer for: Experimental mechanics (Springer); Proceedings of the Institution of Mechanical Engineers, Part L: Journal of Materials: Design and Applications" (SAGE); Journal of Zhejiang University-SCIENCE A - Applied Physics & Engineering (Springer); Frontiers of Mechanical Engineering; Materials Research Innovations (Maney); American Journal of Science and Technology (AASCIT); Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science (SAGE); Proceedings of the Institution of Mechanical Engineers, Part J: Journal of Engineering Tribology (SAGE); Mechatronics (Elsevier).
- Development and design of automatic industrial machines, test rigs and devices (management of people and activities, coordination of suppliers).
- Collaboration with the Technology transfer office of the Politecnico di Torino

Main Publications

[1] A. Mura, G. Curti, F. Curà, Influence of the viscoelastic FLD patches disposition on damping performances of steel plates, Pollak Periodica Vol. 5, No. 1, pp. 73–86 (2010) DOI: 10.1556/Pollack.5.2010.1.5. ISSN: 1788-1994 (Print) 1788-3911 (Online).

[2] F. Curà, A. Mura, F. Scarpa, Modal strain energy based methods for the analysis of complex patterned free layer damped plates, Journal of Vibration and Control, August 2012; vol. 18, 9: pp. 1291-1302, DOI: 10.1177/1077546311417277.

[3] Mura A., Six d.o.f. displacement measuring device based on a modified Stewart platform, Mechatronics 21 (2011) 1309–1316, DOI: 10.1016/j.mechatronics.2011.09.001.

[4] F. Curà, A. Mura, R. Sesana, Aging characterisation of metals for exhaust systems, International Journal of Automotive Technology Volume 13, Number 4 (2012), 629-636, DOI: 10.1007/s12239-012-0061-0.

[5] V. Cuffaro, F. Curà, A. Mura, Analysis of the pressure distribution in spline couplings, Proc IMechE Part C: J Mechanical Engineering Science (2012) 226(12) 2852–2859, DOI: 10.1177/0954406212440670.

[6] Mura A., Multi-dofs MEMS displacement sensors based on the Stewart platform theory, Microsyst Technol 18 (2012) 575–579, DOI 10.1007/s00542-012-1470-8.

[7] F. Curà, A. Mura, M. Gravina, Load distribution in spline coupling teeth with parallel offset misalignment, Proc IMechE Part C: J Mechanical Engineering Science Vol. 227 Issue 10 October 2013 pp. 2193 – 2203, DOI:10.1177/0954406212471916.

[8] Mura A., Sensitivity analysis of a six degrees of freedom displacement measuring device, Proc IMechE Part C: J Mechanical Engineering Science 2014, Vol 228(1) 158–168, DOI: 10.1177/0954406213482071.
[9] F. Curà, A. Mura, Experimental procedure for the evaluation of tooth stiffness in spline coupling including angular misalignment, Mechanical Systems and Signal Processing 40 (2013) 545–555, DOI: 10.1016/j.ymssp.2013.06.033.
[10] V. Cuffaro, F. Curà, A. Mura, Experimental investigation about surface damage in straight and crowned misaligned splined couplings, Key Engineering Materials Vols. 577-578 (2014) pp 353-356, doi:10.4028/www.scientific.net/KEM.577-578.353.
[11] V. Cuffaro, F. Curà, A. Mura, Test Rig for Spline Couplings Working in Misaligned Conditions, Journal of Tribology 136(1), January 2014, doi:10.1115/1.4025656.
[12] F. Curà, A. Mura, Experimental and theoretical investigation about reaction moments in misaligned splined couplings, Mechanical Systems and Signal Processing 45 (2014), pp. 504–512, DOI: http://dx.doi.org/10.1016/j.ymssp.2013.12.005.
[13] F. Curà, A. Mura, Analysis of a load application point in spline coupling teeth, J Zhejiang Univ-Sci A (Appl Phys & Eng) 2014 15(4):302-308, doi:10.1631/jzus.A1300323.
[14] V. Cuffaro, F. Curà, A. Mura, Fretting wear damage in crowned splined couplings, Power Transmission World - April 2014, ISSN 2280-2045.
[15] V. Cuffaro, F. Curà, A. Mura, Surface characterization of spline coupling teeth subjected to fretting wear, Procedia Engineering 74 (2014) 135 – 142, DOI: 10.1016/j.proeng.2014.06.237.
[16] F. Curà, A. Mura, R. Sesana, Experimental investigation of fatigue and aging performance of automotive exhaust flexible couplings, Proc IMechE Part C: J Mechanical Engineering Science 2015, Vol. 229(7) 1215–1223, DOI: 10.1177/0954406214549268.
[17] F. Curà, A. Mura, C. Rosso, Investigation about crack propagation paths in thin rim gears, Fracture and Structural Integrity, [S.l.], 30, pp. 446-453, sep. 2014, doi: 10.3221/IGF-ESIS.30.54.
[18] V. Cuffaro, F. Curà, A. Mura, Oil debris monitoring in misaligned spline couplings subjected to fretting wear, Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science 2015, Vol. 229(12) 2261–2269, doi: 10.1177/0954406214556401.
[19] F. Curà, A. Mura, C. Rosso, Effect of rim and web interaction on crack propagation paths in gears by means of XFEM technique, Fatigue Fract Engng Mater Struct, Vol. 38 (10), pp. 1237–1245, October 2015, doi: 10.1111/ffe.12308.
[20] W. Qureshi, F. Curà, A. Mura, Principal component analysis for characterization of fretting wear experiments on spline couplings, Procedia Engineering 109 (2015) 73 – 79, doi:10.1016/j.proeng.2015.06.209.
[21] G. Barbato, V. Cuffaro, F. Curà, G. Genta and A. Mura, Uncertainty evaluation of Ruiz parameter for spline coupling wear analysis, Proc IMechE Part C: J Mechanical Engineering Science, article in press 2015, DOI: 10.1177/0954406215603740.
[22] F. Curà, A. Mura, C. Rosso, Effect of centrifugal load on crack path in thin-rimmed and webbed gears, Fracture and Structural Integrity, [S.l.], 34 (2015) 512-520; DOI: 10.3221/IGF-ESIS.34.57.
[23] V. Cuffaro, F. Curà, A. Mura, Damage identification on spline coupling teeth by means of roughness parameters, Theoretical and Applied Fracture Mechanics (2015) in press, DOI: 10.1016/j.tafmec.2015.09.008.