

MEHMET ALİ GÜLER

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EDUCATION

LEHIGH UNIVERSITY **Bethlehem, PA, USA**
Ph.D., Mechanical Engineering, **2001**
Emphasis on contact mechanics of ceramics, applied mathematics and numerical methods
Dissertation: “Contact Mechanics of Functionally Graded Coatings (FGMs)”
Advisor: Prof. F. Erdogan

LEHIGH UNIVERSITY **Bethlehem, PA, USA**
M.S., Mechanical Engineering, **1996**
Emphasis on punch problems for graded materials, numerical methods.
Thesis: “The problem of a rigid punch with friction on a graded elastic medium”
Advisor: Prof. F. Erdogan

UNIVERSITY OF SUSSEX **Brighton, UK**
M.S., Computer Technology in Manufacturing **1991**
Emphasis on control systems, simulation, computer aided design and manufacturing
Thesis: “Self organizing control of hardboard manufacturing and coupled tank systems”
Advisor: Prof. A. W. Self

MIDDLE EAST TECHNICAL UNIVERSITY (METU) **Turkey**
B.S., Mechanical Engineering **1990**
Thesis: “Computer aided selection of DC servomotors”
Advisor: Prof. I. H. Filiz

EXPERIENCE

TOBB UNIVERSITY OF ECONOMICS AND TECHNOLOGY **Ankara, TURKEY**
Associate Professor **2010-present**
Assistant Professor **2006-2010**

- Taught courses from sophomore level to graduate level, which covered the areas of statics, dynamics, machine design, finite element method for mechanical engineers and theory of elasticity.
- Conducted research in the areas of mechanics of thin films on graded coatings, explicit dynamic analysis, crashworthiness, simulation of forming and springback and rotary bending of tubes

Oyak Renault **Bursa, TURKEY**
Consultant **2012**

- Helped Renault Engineers in doing FEA analysis of side crush analysis for the project titled “Renault Fluence mid-floor part monolithic design and production of the prototype by hot forming technology” funded by The Scientific and Technical Research Council of Turkey (TÜBİTAK TEYDEB Project number 3110357)

GE Marmara Technology Center (GE MTC) **Gebze, TURKEY**
Consultant **2010**

- Helped GE MTC Engineers in doing FEA analysis of Aircraft Engine components using ANSYS

VIRGINIA COMMONWEALTH UNIVERSITY **Richmond, VA, USA**
Visiting Assistant Professor **2007**

- Conducted research in springback prediction of Advanced High Strength Steels used in automobile components.

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Adana, TURKEY
2005-2006

TEMSA GLOBAL
Senior Structural Engineer

- Managed all phases of bus rollover simulation projects (ECE R66), including building the FEA models in ANSA, preparation of mass lists, verification of all necessary analysis data (e.g. center of gravity and mass moment of inertias of rigid components, engine, axles, fuel pump, AC etc), analysis setup in LS-DYNA, running, verification, and certification.
- Performed 3D stress analysis of automotive parts under structural and dynamic loads using ANSYS and determined the critical locations and suggested design changes to obtain maximum life of components.
- Carried out modal analysis of various type of busses and created animations to illustrate several modes of excitation.

CD-ADAPCO (Analysis Design and Application Company)
Senior Structural Engineer

Melville, NY, USA
2000-2005

- Reviewed contracts with customer to determine analysis requirements and goals and best methods to achieve them.
- Identified possible causes of failure of a glass lining in a reactor.
- Conducted single cylinder thermal analysis of a six-cylinder diesel engine to understand the thermal behavior of the cylinder and the head.
- Performed 3D stress analysis of rotating parts in the gas turbines and compressors under thermal, structural and dynamic loads using ANSYS.
- Carried out modal analysis of a generator and created a movie to illustrate several modes of excitation.
- Performed thermal and structural analysis of EGR coolers used in truck engines, identified the regions susceptible to cracking and recommended design changes to obtain maximum life of the components.
- Models included thermal and structural loading, intermittent contact, friction and non-linear material properties.
- Generated finite element meshes using PROSTAR based upon geometry defined by CAD data and/or engineering drawings.
- Designed mesh features based upon anticipated stress levels and priori knowledge of critical areas.
- Created numerous programs and scripts to automate model generation, analysis set-up, and verification.

LEHIGH UNIVERSITY
Research Assistant

Bethlehem, PA, USA
1994-2000

- Research focused on stress analysis and fracture characterization of ceramic coatings on metal substrates, involving both mechanical and thermal stresses. Additionally, analyzed the influence of parameters affecting failure.
- Developed analytical models to study the contact mechanics of Functionally Gradient Materials (FGMs). Applied these models to problems ranging from thermal barrier coatings to biological systems like bones.

HONORS & AWARDS

- Scholarship for graduate studies abroad, Turkish Higher Education Council, 1993-1999.

PROFESSIONAL ACTIVITIES

- Reviewed for International Journal of Vehicle Design, Mechanics of Materials, Journal of Reinforced Plastics and Composites, Journal of Aerospace Engineering, The Arabian Journal for Science and Engineering, Surface & Coatings Technology, European Journal of Mechanics - A/Solids, Mechanics Research Communications, Journal of Material Processing and Technology, Acta Mechanica, International Journal of Fatigue, International Journal of Solids and Structures.
- Organized with other colleagues “5th International Powder Metallurgy Conference”, TOBB ETU, Ankara, Turkey, 10/2008.
- Chaired sessions and presented papers in the “9th US National Congress on Computational Mechanics”, July 2007, San Fransisco, California, USA.

PUBLICATIONS

- Y. Alinia, **M.A. Guler**, S. Adibnazari (2014), "The effect of material property grading on the rolling contact stress field", *Mechanics Research Communications*, Vol. 55 , pp. 45-52.
- Y. Alinia, **M.A. Guler**, S. Adibnazari (2014), "On the contact mechanics of a rolling cylinder on a graded coating. Part 1: Analytical formulation", *Mechanics of Materials*, Vol. 68 , pp. 207-216.
- **M.A. Guler**, Y. Alinia, S. Adibnazari (2013), "On the contact mechanics of a rolling cylinder on a graded coating. Part 2: Numerical results", *Mechanics of Materials*, Vol. 66 , pp. 134-159.
- R. Elloumi, **M.A. Guler**, I. Kallel-Kamoun, S. El-Borgi, (2013), "Closed-form solutions of the frictional sliding contact problem for a Magneto-electro-elastic half-plane indented by a rigid conducting punch", *International Journal of Solids and Structures*, Vol. 50 (24) , pp. 3778-3792.
- S. Dag, **M.A. Guler**, B. Yildirim, A.C. Ozatag, A.C. (2013), "Frictional Hertzian contact between a laterally graded elastic medium and a rigid circular stamp". *Acta Mechanica*, Vol. 224 (8), pp. 1773-1789.
- **M.A. Guler**, Y. Alinia and S. Adibnazari, (2012), "On the rolling contact problem of two elastic solids with graded coatings", *International Journal of Mechanical Sciences*, Vol. 64, pp. 62-81.
- L. Sözen, **M.A. Guler**, D. Bekar and E. Acar, (2012), "Investigation and prediction of springback in rotary-draw tube bending process using finite element method", *Journal of Mechanical Engineering Science, Proceedings of the Institution of Mechanical Engineers Part C*, Vol. 226, pp. 2967-2981.
- D. Bekar, E. Acar, F. Ozer and **M.A. Guler**, (2012), "Analyzing batch-to-batch and part-to-part springback variation of DP600 steels using double loop Monte Carlo simulation", *Journal of Engineering Manufacture, Proceedings of the Institution of Mechanical Engineers Part B.*, Vol. 26 (8), pp. 1321-1333.
- D. Bekar, E. Acar, F. Ozer and **M.A. Guler**, (2012), "Robust springback optimization of a dual phase steel seven-flange die assembly", *Structural and Multidisciplinary Optimization*, Vol. 46 (3), pp. 425-444. → cited 11 time (Source Web of Science).
- **M.A. Guler**, Y.F. Gülver and E. Nart, (2012), "Contact analysis of thin films bonded to graded coatings", *International Journal of Mechanical Sciences*, Vol. 55 (1), pp. 50-64. → cited 1 time (Source Web of Science).
- **M.A. Guler**, S. Adibnazari and Y. Alinia, (2012), "Tractive rolling contact mechanics of graded coatings", *International Journal of Solids and Structures*, Vol. 49, pp. 929-945. → cited 1 time (Source Web of Science).
- S. Dag, T. Apatay, **M.A. Guler**, M. Gulgeç, (2012), "A surface crack in a graded coating subjected to sliding frictional contact", *Engineering Fracture Mechanics*, Vol. 80, pp. 72-91. → cited 1 time (Source Web of Science).
- **M.A. Guler**, A.O. Atahan and B. Bayram, (2011), "Crashworthiness evaluation of an intercity coach", *International Journal Heavy Vehicle Systems*, 18 (1), pp. 64 - 82. → cited 1 time (Source Web of Science).
- E. Acar, **M.A. Guler**, B. Gerçeker, M.E. Cerit, B. Bayram, (2011) "Multi-objective crashworthiness optimization of tapered thin-walled tubes with axisymmetric indentations," *Thin-Walled Structures*, 49, pp. 94-105. → cited 10 times (Source Web of Science).
- T. Apatay, S. Dag, **M.A. Guler**, M. Gulgeç, (2010), "Subsurface contact stresses in a functionally graded coating loaded by a frictional flat stamp", *Journal of the Faculty of Engineering and Architecture of Gazi University*, 25 (3), pp. 611-623. → cited 1 times (Source Web of Science)
- **M.A. Guler**, M.E. Cerit, B. Bayram, B. Gerçeker and E. Karakaya, (2010), "The effect of geometrical parameters on the energy absorption characteristics of thin-walled structures under axial impact loading ", *International Journal of Crashworthiness*, 15 (4), pp. 377 - 390. → cited 7 times (Source Web of Science).
- S. Dag, **M.A. Guler**, B. Yildirim, A.C. Ozatag, (2009), "Sliding frictional contact between a rigid punch and a laterally graded elastic medium", *International Journal of Solids and Structures*, Vol. 46 (22-23), pp. 4038-4053. → cited 6 times (Source Web of Science).
- **M.A. Guler**, (2008), "Mechanical modeling of thin films and cover plates bonded to graded substrates", *Journal of Applied Mechanics - Transactions of the ASME, Special Issue Honoring Professor Fazil Erdogan's Contributions to Mixed Boundary Value Problems of Inhomogeneous and Functionally Graded Materials*, edited by M.-J. Pindera and G.H. Paulino, Vol. 75 (5), Article Number: 051105. → cited 7 times (Source Web of Science).
- **M.A. Guler**, K. Elitok, B. Bayram and U. Stelzmann, (2007), "The influence of seat structure and passenger weight on the rollover crashworthiness of an intercity coach", *International Journal of*

Crashworthiness, Vol. 12 (6), pp. 567 – 580. → cited 8 times (Source Web of Science).

- **M.A. Guler** and F. Erdogan, (2007), “The frictional sliding contact problems of rigid parabolic and cylindrical stamps on graded coatings”, *International Journal of Mechanical Sciences*, Vol. 49 (2), pp. 161-182. → cited 45 times (Source Web of Science).
- **M.A. Guler** and F. Erdogan, (2006), “Contact mechanics of two deformable elastic solids with graded coatings”, *Mechanics of Materials*, Vol. 38 (7), pp. 633-647. → cited 42 times (Source Web of Science).
- **M.A. Guler** and F. Erdogan, (2004), “Contact mechanics of graded coatings”, *International Journal of Solids and Structures*, Vol. 41 (14), pp. 3865-3889. → cited 79 times (Source Web of Science).

INTERNATIONAL CONFERENCE PUBLICATIONS

- A.O. Ozcan, D. Bulgurlu, I. Vuruskan, N. Sezer-Uzol and **M.A. Guler** , (2011), "Design and analysis of a vertical axis wind turbine: Part I: Aerodynamic design and CFD analysis", 6th Ankara International Aerospace Conference, Ankara, Turkey, 14-16 September 2011
- I. Vuruskan, D. Bulgurlu, A.O. Ozcan, **M.A. Guler** and N. Sezer-Uzol, (2011), "Design and analysis of a vertical axis wind turbine: Part II: Structural design and analysis", 6th Ankara International Aerospace Conference, Ankara, Turkey, 14-16 September 2011
- D. Bekar, E. Acar, F. Ozer and **M.A. Guler**, (2011), “Robust springback optimisation of DP600 steels for U-channel forming”, *World Congress on Engineering 2011, WCE 2011*, London, U.K.
- **M.A. Guler**, Y.F. Gulver and S. Dag, (2010), “Mechanical modeling of thin films bonded to functionally graded materials”, *Proceedings of the 10th International Symposium on Multiscale, Multifunctional and Functionally Graded Materials*, Sendai, Japan, 2008, *Materials Science Forum*, 631-632, pp. 333-338.
- **M.A. Guler**, L. Sözen, R. M. Görgülüarslan, E. M. Kaplan, (2010), “Prediction of Springback in CNC Tube Bending Process Based on Forming Parameters”, *11th International LS_DYNA Users Conference*, Detroit, Michigan.
- M. E. Cerit, **M.A. Guler**, B. Bayram, U. Yolum, (2010), “Improvement of the Energy Absorption Capacity of an Intercity Coach for Frontal Crash Accidents”, *11th International LS_DYNA Users Conference*, Detroit, Michigan.
- **M.A. Guler**, A.O. Atahan and B. Bayram, (2009), “Effectiveness of using seat belt on the rollover crashworthiness of an intercity coach”, *21th International Technical Conference on the Enhanced Safety of Vehicles*, ESV, Stuttgart, Germany.
- **M.A. Guler**, Y.F. Gülver and S. Dag, (2008), “Mechanical modeling of thin films bonded to functionally graded materials”, in *Proceedings of the 5th International Powder Metallurgy Conference*, Ankara, Turkey, pp. 369-378 (in Turkish).
- **M.A. Guler**, F. Erdogan and S. Dag, (2008), “Contact problems with friction in graded materials”, in *Proceedings of the Multiscale and Functionally Graded Materials Conference 2006*, Honolulu, Hawaii, USA. Editors G. H. Paulino, M.-J. Pindera, R. H. Dodds, Jr., F. A. Rochinha, E. V. Dave, and L. Chen, *American Institute of Physics*, Vol. 978, pp. 784 - 789.
- **M.A. Guler**, F. Erdogan and S. Dag, (2008), “Modeling of thin films and cover plates bonded to graded substrates”, in *Proceedings of the Multiscale and Functionally Graded Materials Conference 2006*, Honolulu, Hawaii, USA. Editors G. H. Paulino, M.-J. Pindera, R. H. Dodds, Jr., F. A. Rochinha, E. V. Dave, and L. Chen, *American Institute of Physics*, Vol. 978, pp. 790 - 795.
- K. Elitok, **M.A. Güler**, B. Bayram, B. and U. Stelzmann, (2006), “An Investigation on the Rollover Crashworthiness of an Intercity Coach, Influence of Seat Structure and Passenger Weight”, in *9th International LS-Dyna Users Conference*, Detroit, USA, pp. 11-17 – 11-34.
- **M.A. Guler** and F. Erdogan, (1998), “Contact Mechanics of FGM coatings”, in the *8th Japan-US Conference on Composite Materials*, Baltimore, Maryland, USA, September, 1998. *The 8th Japan-US Conference on Composite Materials*, Baltimore, Maryland, USA.

NATIONAL CONFERENCE PUBLICATIONS

- O. Üşenmez, M. Tekir, Y.Z. Akman, N. Sezer-Uzol, **M.A. Güler**, (2012), “Sessiz Helikopter Tasarım Ve Analizi İçin İzlenen Adımlar Ve Yöntemler”, *SAVTEK 2012*, 6. Savunma Teknolojileri Kongresi, Ankara, Turkey.
- **M.A. Guler**, L. Sözen, R.M. Görgülüarslan, E.M. Kaplan, (2010), “Investigation On Deformation Characteristics Of Rotary Draw Tube Bending And Roll Bending Operations”, *5th Automotive Technologies Congress*, Bursa, Turkey.
- **M.A. Guler**, N. Babacan, U. Yolum, Y. Demiryürek, (2010), “CONWEP Yöntemi ile Mayın Patlama Benzetimi”, *5. Savunma Teknolojileri Kongresi*, Ankara, Turkey.

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- M. E. Cerit, **M.A. Guler**, B. Bayram, B. Gerçeker, E. Karakaya, (2009), “Farklı Kesitli Ezilme Kutularının Enerji Yutma Kapasitelerinin Karşılaştırılması”, 16. Ulusal Mekanik Kongresi, Kayseri, Turkey.
- **M.A. Guler**, M. Koç, U. Stelzmann, (2008), “Springback Evaluation for Flange Design in Stamping of Advanced High Strength Steels”, 4th Automotive Technologies Congress, Bursa, Turkey.
- K. Elitok, **M.A. Guler**, F.H. Avcı and U. Stelzmann, (2005), “Regulatory Bus Roll-Over Crash Analysis Using LS-DYNA”, Conference for Computer-Aided Engineering and System Modeling, İstanbul, Turkey.

CONFERENCE PRESENTATIONS

- S. Adibnazari, **M.A. Guler**, Y. Alinia, (2011), “Rolling Contact Mechanics of FGM Coatings”, ASME 2011 International Mechanical Engineering Congress & Exposition, Denver, Colorado, USA.
- Y.F. Gülver, **M.A. Guler**, E. Nart, (2011), “Mechanics of Thin Films Bonded To Graded Coatings”, ASME 2011 International Mechanical Engineering Congress & Exposition, Denver, Colorado, USA.
- **M.A. Guler**, F. Ozer, M. Yenice and M. Kaya, (2010), “Springback Prediction of DP600 Steels for Various Material Models, The 13th International Conference on Metal Forming, Toyahashi, Japan.
- T. Apatay, S. Dag, **M.A. Guler** and M. Gulgeç, (2010), “Subsurface stresses in an FGM coating loaded by a sliding flat punch”, Fourth European Conference on Computational Mechanics, Minisymposium on Fracture and Contact Mechanics for Interface Problems, Paris, France.
- **M.A. Guler**, (2008), "Mechanical Failure of Thin Films Bonded to Graded Substrates", The Mechanics Conference to Celebrate the 100th Anniversary of the Department of Engineering Science and Mechanics, Professor Liviu Librescu Memorial Sessions, Virginia Tech, Blacksburg, Virginia, USA.
- S. Dag, **M.A. Guler** and B. Yildirim, (2007), "Contact mechanics of laterally graded materials", 9th US National Congress on Computational Mechanics, San Fransisco, California, USA.
- **M.A. Guler**, (2003), "The Effect of Material Grading on the Contact Mechanics of FGM Coatings", ASME International Mechanical Engineering Congress and RD&D Expo, Washington DC, USA.
- F. Erdogan, S. Dag and **M.A. Guler**, (2000), "Contact and crack problems in functionally graded materials", 20th International Congress of Theoretical and Applied Mechanics, August 2000, Chicago, Illinois, USA.

GRANTED RESEARCH PROJECTS

- **M.A. Guler** (2013-2015), “Optimization of the structural parts and packaging of a dishwasher using Finite Element Method”, funded by The Scientific and Technical Research Council of Turkey (TÜBİTAK). Budget 266,727 TL.
- **M.A. Guler** and B. Aksoylu, (2013 – 2015), “Development of a method to predict strength and failure of layered composites using peridynamic theory”, Budget 255,070 TL.
- **M.A. Guler** (2013), “Dynamic Analysis of a VSP Support Bracket as a senior design project”, funded by OYAK RENAULT, Budget 2,714 TL.
- **M.A. Guler** (2013), “Design of a Shock Absorbing Component for a Front Bumper of an Automobile as a senior design project”, funded by OYAK RENAULT, Budget 2,714 TL.
- **M.A. Guler** (2012), “Frontal crash analysis for the design of an automobile cockpit carrier as a senior design project”, funded by OYAK RENAULT, Budget 2,714 TL.
- **M.A. Guler**, R.M. Görgülüarslan and Fırat Özer, (2011), “Side crash simulation analysis for monolithic production of reinforced parts as a senior design project”, funded by OYAK RENAULT, Budget 5,830 TL.
- **M.A. Guler** and E. Acar, (2009 – 2011), “Accurate prediction and robust optimization of springback in dual phase steels during sheet metal forming operations”, funded by The Scientific and Technical Research Council of Turkey (TÜBİTAK). Budget 127,375 TL.
- **M.A. Guler**, (2008 – 2010), “Development of passive safety system for absorbing crash energy during frontal crashes involving intercity busses”, funded by Ministry of Industry and Trade of Turkey under the scope of SAN-TEZ project. Budget 450,000 TL.
- **M.A. Guler** and S. Dag, (2007 – 2009), “Computational and Analytical methods for contact

mechanics analysis of functionally graded materials”, funded by The Scientific and Technical Research Council of Turkey (TÜBİTAK). Budget 138,280 TL.

M.S. STUDENTS

- O.M. Bircan (2014), “An analytical approach to design form-turning insert profiles: investigation of rake face design on tool life”
- A.T. Camcı (2013), “Improvements on the range and the performance of a light electric vehicle by making use of a continuously variable transmission”
- F. Özer, (2011), “Springback prediction in Advanced High Strength Steels after forming operations”
- D. Bekar, (2011), “Robust optimization of springback predictions in dual phase steels during sheet metal forming operations” co-supervised with Dr. E. Acar
- L. Sözen, (2011), “Springback prediction in rotary tube bending operations”
- M.E. Cerit, (2011), “Development of passive safety system for absorbing crash energy during frontal crashes involving intercity busses”
- Y.F. Gülver, (2009), “Mechanical modeling of thin films bonded to functionally graded coatings”.

REFERENCES

- Professor F. Erdogan, Department of Mechanical Engineering and Mechanics, Lehigh University, 19 Memorial Drive West, Bethlehem, PA 18015, USA, Tel: (610) 866-6204, E-mail: fe00@lehigh.edu
- Professor H.F. Nied, Department of Mechanical Engineering and Mechanics, Lehigh University, 19 Memorial Drive West, Bethlehem, PA 18015, USA, Tel: (610) 758 4128, E-mail: hfn2@lehigh.edu
- Professor U. Kaynak, Department of Mechanical Engineering, TOBB University of Economics and Technology, Sogutozu, 06560, Ankara, TURKEY, Tel: +90 (312) 292-4065, E-mail: ukaynak@etu.edu.tr
- Professor Terry J. Delph, Department of Mechanical Engineering and Mechanics, Lehigh University, 19 Memorial Drive West, Bethlehem, PA 18015, USA, Tel: (610) 758-4119, E-mail: tjd1@lehigh.edu
- Professor Erdogan Madenci, Department of Aerospace and Mechanical Engineering, The University of Arizona, PO Box 210119, Tucson AZ 85721-0119, Tel: (520) 621-6113, E-mail: madenci@email.arizona.edu