

BIOGRAPHY



Hirpa G. Lemu, PhD

University of Stavanger, Norway
 Assoc. Professor of Mechanical Design Engineering
 E-mail: Hirpa.g.lemu@uis.no ; Hirpa@ux.uis.no

Qualifications

2002 PhD, Dept. of Production and Quality Engineering, NTNU, Norway.
Application of Hybrid Computational Intelligent Systems in Integrated CAD/CAM.

1996 MSc, Dept. of Production and Quality Engineering, NTNU, Norway.
Intelligent Systems for Fault Diagnosis and Condition monitoring.

1989 BSc, Dept. of Mechanical Engineering, Addis Ababa University, Ethiopia.
Mechanical Design Engineering.

Teaching

PhD level: Advanced Mechanical Design and Simulation

MSc level: Computer-aided Technologies in Engineering,

BSc level: Design of Machine Elements, Finite Element Methods for Structural Analysis, Technical Drawing and 3D modeling, Strength of Materials,

Professional courses: Geometrical Tolerances in Industrial Applications, 3D Modeling Techniques.

Recent Publications (selected)

1. H.G. Lemu and T. Trzepieciński, (2013), Study of frictional conditions of AA5251 aluminum alloy sheets using drawbead simulator test and numerical methods, *Journal of Materials & Design* (in review).
2. A. Safari, H.G. Lemu, S. Jafari and M. Assadi (2013), Evaluation of Population-Based Optimization Approaches for NURBS and Bezier Driven Geometric Modeling in Turbomachinery, *Engineering Optimization* (in review).
3. M. P. Omran, A. Amani and H.G. Lemu (2012), Analytical approximation of nonlinear vibration of strings with large amplitudes, *Journal of Mechanical Science and Technology*, Ref. MEST-D-12-00989R2 (accepted).
4. H.G. Lemu and T. Trzepieciński, (2012). Numerical and experimental study of frictional behavior in bending under tension test. *Strojniški vestnik- Journal of Mechanical Engineering*, DOI:10.5545/sv-jme.2012.383 (in print).
5. H.G. Lemu (ed.): *Anisotropy Research - Recent Developments*. ISBN-10: 1620819775 | ISBN-13: 978-1620819777, NOVA Scientific Pub Inc. NY (2012).
6. T. Trzepieciński and H.G. Lemu, (2012), Study of anisotropy in metal forming using Finite Element Methods. In: *Anisotropy Research: Recent Advances*, ed. H.G. Lemu (2012), NOVA Science Publisher Inc., NY.
7. A. Safari and H.G. Lemu (2012), Optimum NURBS curve fitting for geometry parameterization of gas turbine blades' sections: Part I – Evolutionary optimization techniques and Part II - Swarm Intelligence Techniques, In: *Proc. of ASME 2012 Int. Mechanical Engineering Congress*, Nov. 9 – 15, Houston Texas, USA.
8. T. Trzepieciński and H.G. Lemu, (2012). Application of genetic algorithms to optimize neural networks for selected tribological tests. *Journal of Mechanics Engineering and Automation*, **2** (2), 69-76.
9. A. Safari and H.G. Lemu (2012), A comparative study of optimum Bezier and NURBS curve fitting for measured point cloud of airfoil shapes, In: *Proc. of Int. Workshop of Advanced Manufacturing and Automation (IWAMA 2012)*, Tapir Academic Press.
10. R. Petrova and H.G. Lemu (2012), Design study for dynamic behavior of wind turbine blade, In: *Proc. of Int. Workshop of Advanced Manufacturing and Automation (IWAMA 2012)*, Tapir Academic Press.
11. H.G. Lemu and T. Trzepieciński, (2012), FEM based deformability analysis of metal forming: influence of material models and analysis approaches, In: *AIP Conf. Proc.* **1431**, 702 (2012); Doi: 10.1063/1.4707626.
12. H.G. Lemu, (2012), Study of capabilities and limitations of 3D printing technology, In: *AIP Conf. Proc.* **1431**, 857 (2012); Doi: 10.1063/1.4707644.

13. A. Safari, H.G. Lemu (2012), Review of recent researches on gas turbine blade design/optimization techniques and approaches, In: *Int. Journal of Earth Sciences and Engineering*, p. 351-361, Proc. of *Int. Conference of Recent Advances and Challenges in Energy (RACE - 2012)*, January 4 – 6, 2012, Manipal, India.
14. H.G. Lemu and T. Trzepieciński, (2012), Study of material modeling strategies for deformability analysis of rectangular cups, *Advances in Material Processing Technologies*, **498**, 243-248.
15. H.G. Lemu and S. Kurtovic, (2012), 3D printing for rapid manufacturing: study of dimensional and geometrical accuracy, In: *Advances in Production Management Systems. Value Networks: Innovation, Technologies, and Management*, IFIP Advances in Information and Communication Technology, **384**, 2012, pp 470-479.
16. H.G. Lemu, J. Frick, T. Uhl, W. Lisowski and P. Piwowarczyk, (2012), Study on need assessment of mechatronics education in Norway and Poland, In: *Advances in Production Management Systems. Value Networks: Innovation, Technologies, and Management*, IFIP Advances in Information and Communication Technology, **384**, 2012, pp 557-566.
17. H.G. Lemu (2011), Influence of interference fit and surface roughness on contact resistance of tubing connections, *Journal of Mechanics Engineering and Automation*, **1** (4), 285 – 292.
18. T. Trzepieciński and H.G. Lemu (2011). Investigation of anisotropy problems in sheet metal forming using Finite Element Method, *International Journal of Material Forming*, **4** (4), 357–69.
19. H.G. Lemu, (2010), Study of design optimization using finite element method and genetic algorithm, In: *Proc. of Int. Workshop of Advanced Manufacturing and Automation*. Ed. K. Wang, O. Myklebust and D. Tu, Tapir Academic Press, P. 127 – 134.
20. H.G. Lemu and J.H. Foggi, (2010), Finite element based stress prediction for design of composite materials, In: *Proc. of Int. Workshop of Advanced Manufacturing and Automation*. Ed. K. Wang, O. Myklebust and D. Tu, Tapir Academic Press, P. 149 – 156.

Research Areas

- Simulation based design optimization of performance of energy conversion systems.
- Applied mechanics in design of mechanical components.
- Multi-body dynamics simulation of mechanisms.
- Modeling and analysis of material anisotropy, advanced composite materials, etc.
- Non-linear structural analysis of flexible wind turbine blade (morphing blade technology).
- Material modeling and analysis using Finite Element Methods.
- Fluid-structure interaction and computational fluid dynamics simulations.
- Computer-aided systems in design, analysis and manufacturing (CAD/CAM/FEM = CAE).
- Simulation data management.
- Safety and reliability of offshore structures and mechanical systems.

Professional membership

- ASME (American Society of Mechanical Engineers).
- NAFEMS (National Agency for Finite Element Methods and Standards).
- TEKNA (The Norwegian Society of Technical and Scientific Professionals).