



**Robert Giachetti, Ph.D., P.E.**

Director of Mechanical Engineering

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Dr. Robert Giachetti, Director of Mechanical Engineering for Fusion Engineering, LLC, is an experienced mechanical engineer who specializes in biomechanics, human performance, machine design, and dynamic systems. He has applied these specialties to cases involving human-machine interaction, evaluation and testing of consumer products, acute and repetitive stress injuries, accident investigation, human performance testing, failure analysis, and intellectual property disputes. Dr. Giachetti's diverse background has enabled him to work in an equally diverse set of engineering issues spanning the gamut from rail cars to children's toys. Dr. Giachetti is a licensed professional engineer in Illinois and Oklahoma. He is an active member in ASTM and ASME committees related to sports equipment, consumer products, and power transmission and gearing.

#### EXPERTISE

#### ENGINEERING APPLICATIONS

- Accident investigation
- Mechanical modeling & simulation
- Machine guarding & safety
- Machine failure investigation
- Worker injury
- Slip trip and falls
- Fall protection
- Vibration and dynamic analysis
- Patent validity and infringement
- Consumer product design, usage & injury analysis
- Product recalls & corrective actions
- Exercise equipment design, usage & injury analysis
- Kitchenware design, usage & analysis
- Human and surrogate testing

#### EXPERIENCE

#### ENGINEERING ROLES AND RESPONSIBILITIES

##### **EXPONENT, INC.**

**2008 – 2020**

##### SENIOR MANAGING ENGINEER

MECHANICAL ENGINEERING PRACTICE AND BIOMECHANICS PRACTICE.

Consulted on a broad range of Mechanical and Biomechanical related projects. Consumer product design review, testing, usage, and recalls. Intellectual property analysis: patent infringement and validity. Industrial equipment review, failure analysis. Machine guarding and injury analysis. Occupational injury analysis: acute injury and repetitive stress injury. Human whole-body vibration monitoring in vehicle operators. Slip, trip, and falls. 2D dynamic simulation and custom motion capture. Development of instrumented testing.

##### **BIOTECHPLEX**

**2001**

##### INTERNSHIP

Assisted with consulting work on the mechanical performance of assay trays.

##### **BRANER USA**

**1998-1999**

##### PROJECT ENGINEER

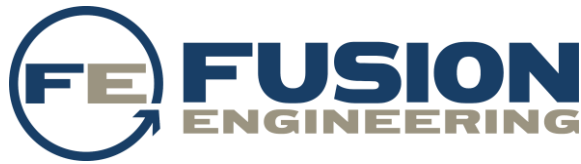
Design of sheet metal processing lines. Prepare shop drawings in AutoCAD 14, design line geometry, and prepare bills of material.

##### **ALLOY SLING CHAIN INDUSTRIES, LTD.**

**1998**

##### ESTIMATOR

Design of atypical lifting equipment in AutoCAD 14 and Mechanical Desktop, assess wire rope repair orders, and quote standard and atypical equipment.



**EDUCATION**

**ACADEMIC ACHIEVEMENTS**

**PH.D., MECHANICAL ENGINEERING**

**2008**

UNIVERSITY OF WISCONSIN-MADISON

**Emphasis:** Dynamic Systems, Experimental Methods & Measurement, Design, Human Performance

**Research:** Vibrations, human performance and effort generation. Human upright postural control. Virginia Horne Henry Research Grant.

**Minor:** Mechanics and Aeronautics

**M.S., MECHANICAL ENGINEERING**

**2000**

UNIVERSITY OF ILLINOIS AT CHICAGO

**Emphasis:** Dynamics, Design

**Research:** 3D modeling and finite element analysis of total knee replacements.

**B.S. MECHANICAL ENGINEERING**

**1997**

MARQUETTE UNIVERSITY

**Minor:** Physics

**Scholarship**

**PROFICIENCIES**

**SOFTWARE AND HARDWARE CAPABILITIES**

- LabView: Specialized skills in data acquisition and analysis. Integration of multiple sensing technologies in real time analysis
- 3DSSPP: Human modeling, balance, and task evaluation
- Working Model: 2D dynamic simulation
- Matlab, Mathcad, AutoCAD, EES, Sketchup
- Mark-10 equipment. Vbox hardware. NI-DAQ data acquisition
- EnglishXL, Wessex Pendulum, BOT3000
- Optical motion capture

**LICENSURE**

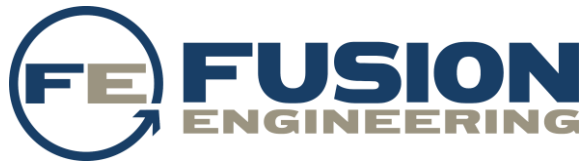
**PROFESSIONAL LICENSES AND MEMBERSHIPS**

LICENSED PROFESSIONAL ENGINEER

- Illinois
- Oklahoma

MEMBER

- ASTM International
- ASME (American Society of Mechanical Engineers)
- ICPHSO (International Consumer Product Health and Safety Organization)



**ACTIVITIES**

**PROFESSIONAL ACTIVITIES, TRAINING, & CERTIFICATIONS**

- OSHA 30-hour construction safety training
- American Gear Manufacturer's Association: Detailed Gear Design 15 hour training
- AutoCAD 14 trained
- Mechanical Desktop 2.0 trained
- NCEES PAKS Committee Participant
- ASME Power Transmission and Gearing ("PTG") Committee
  - PTG Conference Session Organizer
  - Publication peer reviewer
- ASTM Committee F15 on Consumer Products
  - Chair subgroup comprised of government, industry, and consumer advocates for development of test methodology
- ASTM Committee F08 on Sports Equipment, Playing Surfaces, and Facilities
- Invited speaker: International Product Safety and Liability Prevention Conference (2014, 2016, 2017, 2018)
- UIC Senior Design Judge 2011-Present

**EXPERIENCE**

**ACADEMIC APPOINTMENTS**

- |   |                    |
|---|--------------------|
| • <b>RESEARCH ASSISTANT:</b> <i>UW-Madison's Biomechanics Lab</i>                       | <b>2007 - 2008</b> |
| • <b>TEACHING ASSISTANT:</b> (UW) <i>Introduction to Biomechanics</i>                   | <b>2005 - 2007</b> |
| • <b>LECTURER/SUPERVISOR/COURSE DEVELOPER:</b> (UW) <i>Engineering PEOPLE</i>           | <b>2005 - 2006</b> |
| • <b>TEACHING ASSISTANT &amp; LECTURER:</b> (UW) <i>Introduction to Dynamic Systems</i> | <b>2000 - 2005</b> |
| • <b>TEACHING ASSISTANT:</b> (UIC) <i>Engineering Economy</i>                           | <b>1999</b>        |
| • <b>RESEARCH ASSISTANT:</b> <i>UIC's Biomechanics Lab</i>                              | <b>1999</b>        |
| • <b>TEACHING ASSISTANT AND LECTURER:</b> (Marquette) <i>General Physics (001-004)</i>  | <b>1995 - 1997</b> |

**PUBLICATIONS**

1. Giachetti, R.S., Hardyniec, A. Characterization of the release of heated and pressurized water from a pressure cooker. *Burns* 47, 5 (2021): 1118-1128
2. Giachetti, Robert S., and Grossi, E. "Brief Review of the Self-Tightening, Left-Handed Thread." *International Journal of Mechanical and Mechatronics Engineering* 15, no. 4 (2021): 175-179.
3. Perlmutter, S, Cades DM, Heller, MF, Giachetti, RS, Sala JB, Arndt, SA., Effects of mobile technology use on walking. *Proceedings, 58th Human Factors and Ergonomics Society Annual Meeting*, 2014.
4. Giachetti R, Danek K. Analytical model for estimating knee loads during ladder climbing. *ASME 2013 International Mechanical Engineering Congress & Exposition*, 2013.
5. Giachetti R, Weaver B, Trimble J. Real-time monitoring and analysis of whole body vibration in locomotive engineers. *4th International Conference on Whole-Body Vibration Injuries*, 2009.
6. Gruben KG, Giachetti RS, Lazarus JA. Directional control of foot force in Parkinson disease. *The Movement Disorder Society's 12th International Congress of Parkinson's Disease and Movement Disorders*, 2008.
7. Gruben KG, Giachetti RS, Schmidt MW. Control of force direction depends on center of pressure not limb posture. *Society for Neuroscience 36th Annual Meeting*, 2006.
8. Giachetti RS, Gruben KG. Foot force direction and center of pressure. *Progress in Motor Control V*, State College, PA, 2005.
9. Gruben KG, Hasman CL, Schmidt MW, Giachetti RS, Tan L. Altered directional control of foot force is a primary effect of stroke. *Progress in Motor Control V*, State College, PA, 2005.
10. Gruben KG, Lopez-Ortiz C, Giachetti RS. Muscular and postural components of foot force during quasi-static extension efforts. *JAB* 19(3), 2003.
11. Gonzalez M, Giachetti R, Aram L, Amirouche F. Validation of a finite element contact model for the use in total knee arthroplasty. *Orthopaedic Research Society 47th Annual Meeting*, 2001.
12. Amirouche FM, Giachetti RS, Aram L, Gonzalez M. Induced stress in TKA resulting from malrotation. *Summer Bioengineering Conference*, 2001.
13. Aram L, Amirouche FM, Gonzalez M, Giachetti RS. Characterization of contact pressure in total knee arthroplasty as a function of component position and ligament balance. *XVIIIth Congress of the ISB*, 2001.
14. Amirouche FM, Giachetti RS, Aram L, Gonzalez M. Validation of a finite element contact model for the use in total knee arthroplasty. *XVIIIth Congress of the ISB*, 2001.
15. Amirouche FM, Aram L, Gonzalez M, Giachetti RS, Mahr C. the fitting of the human joint through micro-implanted sensors. *Proceedings, 1st Annual International IEEE-EMBS Special Topic Conference on Microtechnologies in Medicine & Bio*, 2000.
16. Amirouche FM, Gonzalez M, Aram L, Giachetti RS, Mahr C. A contact pressure based prosthetic fitting device for a Total Knee Arthroplasty (TKA). *Proceedings, Engineering of Sport 3rd International Conference and Exhibition*, 2000.
17. Giachetti R, Amirouche F, Aram L, Gonzalez M. Biomechanical problems with contact pressure distribution in the knee joint after total knee arthroplasty. *Proceedings, ASME Winter Conference*, 2000.

END OF CV

**FOUR-YEAR TESTIMONY LIST**

Robert S. Giachetti Ph.D., P.E.  
Director of Mechanical Engineering

*Woodway v. Chapco, Inc. and Samsara Fitness, LLC*, United States District Court for the District of Connecticut.

*Namola, et al. v. DAE-IL USA, INC. et al.*, United States District Court for the Northern District of Ohio Eastern Division.

*Cahill v. Scheck Mechanical*, Illinois Workers' Compensation Commission.

*Siegel v. Blue Giant Equipment Corporation*, United States District Court for the Northern District of Oklahoma.

*Cisneros v. Sheth*, Circuit Court of Cook County, Illinois County Department.

*Samantha Williams v. Tristar Products, INC., v. Zhongshan USATA Electrical Appliance Co., LTD.*, United States District Court for the Middle District of Georgia Valdosta Division.

*DLP v. Tristar Products, INC.*, United States District Court Northern District of Georgia Gainesville Division.

*Kenya Allen and Loren Allen v. Tristar Products, INC.*, United States District Court Northern District of Georgia Atlanta Division.

*Towandra Heath v. Tristar Products, INC.*, United States District Court District of Nevada.

*Shiekeal Edwards v. Tristar Products, INC.*, United States District Court Northern District of Mississippi

*American National Manufacturing Inc., v. Sleep Number Corporation f/k/a Select Comfort Corporation*, IPR2019-00514 (Patent 5,904,172)

*B&P Littleford, LLC v. Prescott Machinery, LLC, and Ray Miller*, United States District Court for the Eastern District of Michigan

*Laura Musso v. Schnuck Markets, Inc.*, Circuit Court of St. Louis County. State of Missouri

*Pulford v. Ridg-U-Rak et al.*, United States District Court Northern District of Illinois Eastern Division.

*Kraslen v. W.E. O'Neil et al.*, Circuit Court of Cook County, Illinois County Department, Law Division.

*Vance v. Norfolk Southern Railway Company et al.*, Circuit Court of the Sixth Judicial Circuit Macon County, Illinois.

*Tripp v. Union Pacific Railroad*, Circuit Court of Cook County, Illinois County Department, Law Division.

