Dr. Glenn R. Bower

Home Address
5475 Meadowvale Road
Barneveld, WI 53507
(608) 924-3408

Office Address
1550 Engineering Drive
Madison, WI 53706
(608) 576 3979

Academic Experience

2021 – Present	Scientist III	UW-Madison Engine Research Center
2021 – Present	Teaching Faculty III	UW-Madison Mechanical Engineering
2005 - 2021	Senior Scientist	UW-Madison Engine Research Center
2003 - 2021	Faculty Associate	UW-Madison Mechanical Engineering
1995 - 2005	Associate Scientist	UW-Madison Engine Research Center
1997 – 2003	Associate Faculty Associate	UW-Madison Mechanical Engineering
1992 – 1994	Post-Doctoral Researcher	UW-Madison Engine Research Center

Professional Registration

Registered Professional Engineer in Wisconsin #29717

Education

Assoc. of Science	University of Wisconsin-Center Richland	1985
BS ME	University of Wisconsin-Platteville	1987
MS	University of Wisconsin-Madison	1989
PhD	University of Wisconsin-Madison	1992

Instructor

Introduction to Competitive Manufacturing	ME 314
Engineering Design Projects	ME 349
Interdisciplinary Experiential Design Projects I	ME 351
Interdisciplinary Experiential Design Projects II	ME 352
Thermodynamics	ME 361
Fluid Dynamics	ME 363
Internal Combustion Engines	ME 469
Undergraduate Mechanical Engineering Projects	ME 291
Independent Study	ME 299
Mechanical Engineering Projects I	ME 491
Mechanical Engineering Projects II	ME 492
Hybrid Vehicle Powertrains - Characteristics and Models	ME 601
Advanced Independent Study	ME 699

Student Project Advisor

SAE Baja Advisor	1994 – Present
Hybrid/Autonomous Vehicle Advisor	1997 – Present
Society of Automotive Engineer Advisor	1998 – Present
Formula SAE Advisor	2000 – Present
Formula SAE Electric Advisor	2015 - Present
SAE Snowmobile Challenge Advisor	2001 – Present
SAE Formula Hybrid Advisor	2006 - 2011

Patents

Hybrid Braking System – US Pat. Application Number 09/302,766 (with Mike Koplin)

Awards and Distinctions

SAE Clean Snowmobile Rules Committee (2022-present)
SAE Formula Electric Safety Committee (2018 to present)
Collegiate Events Chair/Organizer for the Small Engine Technology Conference (2018)
University of Wisconsin Madison, Best Student Organization Advisor Award (2018)
Hybrid Session Chair/Organizer for the Small Engine Technology Conference (2009-2015)
Polygon Outstanding Instructor Award (2008-2012)
Pi Tau Sigma Outstanding Lecturer Award (2008)
NSF Long Term Outstanding Faculty Advisor (2006)
The Bollinger Academic Staff Distinguished Achievement Award (2005)
NSF Outstanding Faculty Advisor (2000)
SAE Faculty Advisor Award (2001, 2008, 2014)
UWC-Richland Outstanding Alumni Award 2001

Professional Consulting in Engineering Legal Proceedings (last 6 years)

Retained by Hogan Lovells US LLP, 2022 to present

Hired expert witness on behalf of Mercedes-Benz USA, LLC

Mercedes-Benz USA LLC vs. Westport Fuel Systems Canada, Inc.,
Patent Trail and Appeal Board Cases, 2 total

Retained by Kantrowitz Goldhamer & Graifman, P.C. and Thomas P. Sobran, P.C, 2021 to present, *Declaration testimony*.

*Westport Fuel Systems Canada, Inc. v. Mercedes-Benz USA, LLC***,** Case No. 2:21-cv-00454 (E.D. Tx.) and Related Proceedings

Retained by Wisconsin Attorney General Josh Kaul, 2021, *Declaration testimony*.

Hired expert witness on behalf of Attorneys Guy Cardamone and Tracey Lencioni

State of Wisconsin vs. Richardson
Case No: 2018CF 001783

Retained by Foley & Lardner LLP, 2020 to 2021

Hired expert witness on behalf of Cummins Filtration Inc.

Cummins Filtration Inc. vs. Donaldson Company, Inc.,
Patent Trail and Appeal Board Cases, 3 total

Retained by Brown Robert, LLP, 2020, provided *Declaration testimony*.

Hired expert witness on behalf of Kodiak Research LTD.

BRP-Powertrain, et al. vs. Gregory Everett, United States District Court for the Eastern District of Wisconsin, Case No. 14-CIV-1189-LS.

Retained by Merchant Law Group LLP, 2020 to Present, provided *Declaration & Deposition testimony*.

Dane Ashley Bruce Tress vs. FCA Canada Inc., and FCA US LLC, Canada,
Court File Number: QBC 469 of 2018.

Retained by Sterne, Kessler, Goldstein & Fox P.L.L.C., 2019 to 2021, provided *Declaration & Deposition testimony*.

Hired expert witness on behalf of Volkswagen Group of America, Inc.

Volkswagen Group of America, Inc. vs. Michigan Motor Technologies, LLC
Patent Trial and Appeal Board Cases, 6 total.

Retained by Haug Partners, 2019 to 2020, provided *Declaration testimony*.

Hired expert witness on behalf of Bentley Motors

Bentley Motors Limited *and Bentley Motors, Inc. vs. Jaguar Land Rover Limited,* Patent Trial and Appeal Board Case, IPR2019-01502.

Retained by Leland T. Schmidt & Assoc., P.C., 2019 to 2020, provided *Declaration testimony*.

State of Michigan in the Circuit Court for the County of Macomb, Case No: 2018-002831-NO , v Hon: Diane M. Druzinski.
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Retained by Merchant Law Group LLP, 2019 to Present, provided *Declaration testimony*.

Alfred Julius Otto vs. FCA Canada Inc., and FCA US LLC, Canada, Court File Number: QBC 2415 of 2015.

Retained by Lawton & Cates, S.C., 2018 to 2019, *Declaration & Deposition testimony*.

Hired expert witness on behalf of MDS Enterprises, Inc.

MDS Enterprises, Inc., vs. Mid-State Truck Services, Inc, et al, Jefferson County, Wisconsin Circuit Court, Case No. 2017CV000488

Retained by Faegre Baker Daniels, LLP, 2018 to 2019, *Declaration testimony.*

Hired expert witness on behalf of Polaris Industries, Inc.

Ex Parte Reexamination of U.S. Patent No. 8,827,028

Retained by Quinn Emanuel Urquhart & Sullivan, LLP, 2017 to 2018

Hired expert witness on behalf of Hyundai

Michigan Motor Technologies LLC vs. Hyundai Motor Company, Hyundai Motor Group, Hyundai Motor Technical Center, Inc., US District Court, Eastern District of Michigan, Case No. 2:17-cv-12901.

Retained by McGuireWoods LLP , 2017 to 2019.

Hired expert witness on behalf of Stihl Inc.

Electrojet Technologies, Inc., vs. Stihl Inc., US District Court, Eastern District of Virginia Alexandria Division, Case 2:17-cv-00224 (RAJ-DEM).

Retained by Carlson Caspers LLP, 2017 to 2019, provided IPR *Declaration testimony*.

Hired expert witness on behalf of Polaris Industries, Inc.

Arctic Cat Inc. vs. Polaris Industries, Inc., Patent Trial and Appeal Board Case, IPR2017-00199.

Retained by Carlson Caspers LLP, 2017 to 2020, provided *Declaration and Deposition testimony*.

Hired expert witness on behalf of Polaris Industries, Inc.

Polaris Industries, Inc. vs Arctic Cat Inc., US District Court, District of Minnesota, Civ. No. 15-cv-04475 (JRT/LIB). & *Polaris Industries, Inc. vs Arctic Cat Inc.,* US District Court, District of Minnesota, Civ. No. 15-cv-04129 (JRT/LIB).

Retained by Squire Patton Boggs LLP, 2016 to 2018.

Hired as an expert witness on behalf of a truck manufacturer in an international arbitration case (Switzerland).

Retained by Frommer Lawrence & Haug LLP, 2016 to 2017, provided *Declaration testimony*.

Hired expert witness on behalf of Dr. Ing. h.c. F. Porsche AG

Re: Certain Hybrid Electric Vehicles and Components Thereof, Inv. No. 337-TA-998, *Paice LLC vs. Dr. Ing. h.c. F. Porsche AG,* in US International Trade Commission.

Retained by Fasken Martineau DuMoulin S.E.N.C.R.L., s.r.l., 2015, provided *Declarations and Hearing testimony*.

Hired expert witness on behalf of Bombardier Recreational Products Inc.

ARCTIC CAT, INC. and ARCTIC CAT SALES, INC. vs. BOMBARDIER RECREATIONAL PRODUCTS INC., Canadian Federal Court, Court File No. : T-1353-13.

Retained by Quarles & Brady LLP's, 2014 to 2015, provided *Declaration testimony*.

Hired expert witness on behalf of Monroe Truck Company

Monroe Truck Equipment, Inc., vs. Universal Truck Equipment, Inc., US District Court, Wisconsin Western District, Case No. 3:14-cv-00049.

Retained by Frommer Lawrence & Haug LLP, 2014 to 2015, provided *Declaration testimony*.

Hired expert witness on behalf of Porsche Cars of North America, Inc.

Signal IP v. Porsche Cars of North America, Inc., US District Court, Central District of California, Case 2:14-cv-03114-JAK-JEM.

Retained by Locke Lord LLP, 2013 to 2018, provided *Declaration and Deposition Testimony.*

Hired expert witness on behalf of Bombardier Recreational Products Inc.

Re: Certain Snowmobiles with Engines Having Exhaust Temperature-Controlled Engine Technology and Components Thereof, Inv. No. 337-TA-940, *ARCTIC CAT, INC., vs. BOMBARDIER RECREATIONAL PRODUCTS INC. and BRP US Inc.,* in US International Trade Commission.

Publications

2019 "The Effect of Ethanol Fuels on the Power and Emissions of a Small Mass-Produced Utility Engine", (with Saager Paliwal), Novmber 2019, SAE 2019-32-0607.

2014 "Development of a Miller Cycle Powersports Engine", (with Jeffrey Blair), November 2014, SAE 2014-32-0090.

2014 "The Effect of a TiO2 Coating With the Addition of H2 Gas on Emissions of a Small Spark-Ignition Engine", (with Saager Paliwal, Alex S. Bare, Katherine J. Lawrence, Marc Anderson), November 2014, SAE 2014-32-0034.

2011 "Clutchless Shifting of an Automated Manual Transmission in a Hybrid Powertrain", (with Jon L Breen), September 2011, 2011-01-2194.

2009 "Initial Design and Refinement of a High-Efficiency Electric Drivetrain for a Zero-Emissions Snowmobile", (with Ethan K. Brodsky, Nicholas J. Rakovec, Kevin R. King, Daniel J. Bocci, Jared Olsen, Adam R. Schumacher), November 2009, SAE 2009-32-0108 / 20097108

2008 "Design and Construction of a High Efficiency Electric Drivetrain for a Zero-Emissions Snowmobile", (with Ethan Brodsky) October 2008, T2M Annual Conference Proceedings.

2008 "Improving Upon the Best Available Technology: A Clean Flex Fuel Snowmobile", (with Nicholas Rakovec, Michael Maney, Brian Olenski) September 2008, SAE 2008-32-0049.

2007 "Design and Testing of a Prototype Hybrid-Electric Split-Parallel Crossover Sports Utility Vehicle", (with Elizabeth Casson, Daniel Bocci, Daniel Mehr, Rebecca Gunn, Ethan Brodsky) April 2007, SAE 2007-01-1068.

2006 "Integration of Hybrid-Electric Strategy to Enhance Clean Snowmobile Performance", (with Eric Schroeder, Ethan Brodsky, Adam Schumacher), November 2006, 06SETC-10.

2006 "Wisconsin's Hybrid Team Reincarnates its EV1", Electric & Hybrid Vehicle Technology International: 2005 Annual Review, January 2006.

2005 "University Challenge", Electric & Hybrid Vehicle Technology International: 2004 Annual Review, January 2005.

2004 "Design and Testing of a Prototype Midsize Parallel Hybrid-Electric Sport Utility Vehicle", (with Julie G. Marshaus, Nick L. Wolf, Kathryn .M. Orgish), October 2004, SAE 2004-01-3062

2003 "Design and Development of the University of Wisconsin's Parallel Hybrid-Electric Sport Utility Vehicle", (with Jason Helgren, Ethan Brodsky, Julie G. Marshaus), March 2003, SAE 2003-01-1259 & SAE Transactions.

2002 "Clean, Quiet, Environmentally Friendly Snowmobile", (with Julie G. Marshaus, Jake Allen, Anthony Bauer, Chris Martinek, Matt Martinek, Nick Boyarski, Fred Mauerman, Dave Trettin), October 2002, SAE 2002-01-2763.

2002 " Design and Optimization of the University of Wisconsin's Parallel Hybrid-Electric Sport Utility Vehicle", (with Ryan Rowe, Jennifer Topinka, Ethan Brodsky, Julie G. Marshaus), March 2002, SAE 2002-01-1211.

2001 "Safety Aspects Related to the Development of a Full Aluminum Frame for the Year 2000, 1500 Series Chevy Suburban", (with Julie G. Marshaus, Mike Gall, Jennifer Topinka), November 2001, IMECE 2001/ AMD – 25442.

2001 “Development of the University of Wisconsin’s Parallel Hybrid-Electric Sport Utility Vehicle”, (with Julie Marshaus, Asha Ramnarine, Amanda Pertzborn, Ethan Brodsky, Mike Gall, Jennifer A. Topinka), SAE 2001 Special Publications.

2000 “Optimizing the University of Wisconsin’s Parallel Hybrid-Electric Aluminum Intensive Vehicle”, (with Jonathan A. Butcher, Joseph Bayer, Michael Koplin, Neel Vasavada, Herman Wiegmen), SAE Paper 2000-01-0593.

1999 “The Development of the University of Wisconsin’s Parallel Hybrid-Electric Aluminum Intensive Vehicle”, (with Michael Koplin, Matthew P. Thiel, Jonathan A. Butcher, Brian L. Swensen), SAE Paper 1999-01-0613.

1998 “Engine Cycle Analysis”, (with Jim McFarland), Hot Rod Magazine, April 1998.

1998 “Design of a Charge Regulating, Parallel Hybrid Electric FutureCar, (with Patrick D. Maguire, Jed T. Van Heimburg, Daniel J. Nickchen, Aaron Sullivan, Wayne D. Milestone), SAE Paper 980488.

1997 “In-Cylinder Measurement and Modeling of Liquid Fuel Spray Penetration in a Heavy-Duty Diesel Engine”, (with L.M. Ricart, J. Xin, and Rolf Reitz), 1997 SAE Spring Fuel & Lubricants Meeting.

1997 “Effects of Biodiesel Blended Fuels and Multiple Injections on DI Diesel Engine Emissions”, (with C.Y. Choi and R.D. Reitz), SAE Paper 970218.

1994 “Cylinder-Averaged Histories of Nitrogen Oxide In a DI Diesel Engine with Simulated Turbo-Charging”, (with R.J. Donahue and G.L. Borman), SAE Paper 942046.

1994 “Two-Dimensional Flame Temperature Distribution of Diesel Combustion using the Two-Color Method”, (with M. Grunwald and D.E. Foster), Proceedings from the Central States Section of the Combustion Institute.

1993 “Emission Tests of Diesel Fuel with NOx Reduction Additives", (with D. Tree, R. Donahue, D. Shamis, and D. Foster), SAE paper 932736.

1993 "The Effect of Split injection on Soot and NOx Production in an Engine-Fed Combustion Chamber", (with D. E. Foster), *SAE Transactions,* 932655.

1993 "The Effect of Split injection on Fuel Distribution in an Engine-Fed Combustion Chamber", (with D. E. Foster), *SAE Transactions,* 930864.

1992 "The Effect of a Split injection on Early Combustion in an Engine-Fed Combustion Chamber", Ph.D. Thesis, University of Wisconsin-Madison.

1991 "A Comparison of the Bosch and Zuech Rate of injection Meters", (with D. E. Foster), SAE paper 910724.

1990 "Data from a Variable Rate Shape High Pressure Injection System Operating in an Engine Fed Constant Volume Combustion Chamber", (with D. E. Foster), SAE paper 902082.

1990 “Characteristics of a Variable Rate Shape High Pressure Injection System", (with D. Foster), Proceedings from the ILASS National Conference.

1989 “Investigation of the Characteristics of a High Pressure Injector", (with D. E. Foster), SAE paper 892101.

1989 "Interrogation of a High Pressure Injector", (with D. E. Foster), Proceedings from the Central States Section of the Combustion Institute.

1988 “Physical Mechanisms for Atomization of a Jet Spray: A comparison of Models and Experiments”, (with S. Chang, M. Corradini, M. El-Beshbeeshy, J. Martin, and J. Krueger), *SAE Transactions,* 881318.

Invited Presentations

2016 "Automotive Powertrain Trends for Meeting Pending CAFE Standards", University of Wisconsin-Platteville, Renewable Energy Industrial Advisory Board Meeting, April 2016.

2015 "The UW Competitive Car Programs and the Bucky Wagon's Green Makeover", Detroit Alumni Association Founder's Day Meeting, June 2015

2013 "The Bucky Wagon Green Makeover", Wisconsin Alumni Association, September 2013.

2011 "The UW Competitive Car Programs and the Bucky Wagon's Green Makeover", Sacramento Alumni Association Founder's Day Meeting, May 2011

2011 "The UW Competitive Car Programs and the Bucky Wagon's Green Makeover", San Francisco Alumni Association Founder's Day Meeting, May 2011

2010 "The UW Competitive Car Programs and the Bucky Wagon's Green Makeover", Orange County Alumni Association Founder's Day Meeting, March 2010

2010 "The UW Competitive Car Programs and the Bucky Wagon's Green Makeover", Houston Alumni Association Founder's Day Meeting, March 2010

2009 "Hybrid Powertrain Architectures: Components and Controls", Diesel Engine Research Consortium, June 2009

2008 "Design and Construction of a High Efficiency Electric Drivetrain for a Zero-Emissions Snowmobile", October 2008, T2M Annual Conference

2008 "Hybrid Powertrain Architectures: Components and Controls", Master of Engineering in Engine Systems, August 2008

2008 "Energy Use in Transportation Choices, Trade Offs & Decisions", Country Village Retirement Home, February 2008

2007 "Energy Use in Transportation Choices, Trade Offs & Decisions", Walworth Rotary Club, February 2007

2007 "Moovada, Wisconsin's Cross-Over Vehicle" East Madison Rotary Club

2006 "Integration of Hybrid-Electric Strategy to Enhance Clean Snowmobile Performance", SAE Small Engine Technology Conference, November 2006

2006 "Hybrid Technology", Hybrid Fest, July 2006

2006 "Wisconsin's Challenge X Project", Johnson Controls Inc. Press Conference

2006 "Update on Midwest Baja 2006", SAE Milwaukee Section

2006 "Cars of the Future", Madison's Optima Club

2005 "New Lightweight Applications in Transportation", Aluminum Extruders Council Management Conference

2004 "Wisconsin's Challenge Project", Borg-Warner

2003 "Wisconsin's Hybrid Vehicle Program", Delphi Corporation

2003 "Wisconsin's Hybrid Vehicle Program", DANA Corporation

2002 "Developing an Effective Hybrid Team" – FutureTruck Fall Workshop

2001 "UW-Madison's Hybrid Vehicle Program", LandRover - Birmingham, UK

2001 “A Substantive Design Challenge for Students”, NSF Design, Service and Manufacturing Grantees and Research Conference.

2000 “Automobiles of the Future”, Engineer’s Day 2000.

2000 “Cars of the Future”, Madison Rotary Club.

1998-2001 Guest Speaker – Aluminum Associations Automotive Seminar – Livonia, MI.

1999 “UW-Madison Hybrid, Aluminum Intensive Vehicle”, ASME Conference, Cincinnati.

1996 "Introduction to Heat Release and Data Acquisition on internal Combustion Engine", Hi-Techniques, Inc.

1994 "The FTIR as a Diagnostic Tool for internal Combustion Engines", Nicolet Analytical, Inc.

1993 "Emission Tests of Diesel Fuel with NOx ~Reduction Additives", Texaco Additive Research.

1993 "The Effect of a Split Injection on Early Combustion in an Engine-Fed Combustion Chamber", Oak Ridge National Laboratories.

1992 "The Effect of a Split Injection on Early Combustion in an Engine-Fed Combustion Chamber", Ford Motor Research.

1991 "Operating in an Engine Fed Constant Volume Combustion Chamber", Presentation for Army Research Office personnel.

1989 "Preliminary Results from the Engine-Fed Spray Chamber", Army Research Office Review.

1988 "Experimental Techniques for Studying Diesel Sprays", Mercury Marine Engineering Group.

1988 "Experimental Data on Diesel Sprays in a Cold High-Density Atmosphere", (with J. Naber), ARO/ERC Workshop.

1988 "An Overview of the Experimental Study of Diesel Sprays", ASME Student Meeting, UW-Platteville.

Community Service

2006, 2009, 2012	Organizer of Baja SAE International Competition in Wisconsin
2006 – 2014	SAE Milwaukee SAE Nominating Committee Representative
2000 – 2005	EMS Instructor – Southwest Technical College
2000	Imagination Destination Coach – Barneveld Elementary School
1999 – Present	Mentor to Barneveld High School SuperMileage Team
1998 – Present	Intermediate Level Emergency Medical Technician
1995 – 2004	Assistant Chief of Barneveld Area Rescue Squad, Inc.
1992 – 2000	EMT Assistant instructor for MATC and SWTC
1991-93	President of Friends of Deer-Grove EMS
1991-92	Personnel Coordinator for Deer-Grove EMS
1990 – 1998	Emergency Medical Technician-Basic
1983	President of Richland County 4-H Junior Leaders Assoc.