

# *Resume of Gregory W. Davis, Ph.D., P.E.*

## **Education & Credentials**

- ♦ Ph. D. in Mechanical Engineering, The University of Michigan, Ann Arbor, 1991
- ♦ Master of Science in Mechanical Engineering, Oakland University, 1986
- ♦ Bachelor of Science in Mechanical Engineering, The University of Michigan, Ann Arbor, 1982
- ♦ Licensed Professional Engineer in the State of Michigan, License # 35473

## **Professional Experience**

- Fall 1997  
to Present* Professor of Mechanical Engineering & Director-Advanced Engine Research Laboratory (AERL), Kettering University. Responsibilities include leading and coordinating automotive engineering curriculum including faculty and graduate research. Teaching graduate and undergraduate mechanical engineering courses along with directing all research and development activities in the AERL. The AERL specializes in the design, development and testing of automotive systems including both laboratory and on-road data acquisition & control.
- Fall 2009  
to Present* Developer & Instructor, Continuing Professional Development Programs. Develop & Teach continuing education short courses for industrial clients.
- Spring 2003  
to Present* Instructor, SAE Continuing Professional Development Programs. Develop, Teach, and co-teach short courses in continuing professional development directed to automotive powertrain systems and controls, braking, handling, chassis, and exterior body systems for SAE at its headquarters and at company locations.
- Summer 1991  
To Present* Engineering Consultant. As a licensed Professional Engineer in the State of Michigan (35473), I am actively engaged in a variety of engineering consultations with both governmental and industrial clients.
- Winter 1995  
to Fall 1997* Director, Master of Automotive Engineering Program and Associate Professor, Mechanical Engineering Department, Lawrence Technological University. Coordinated and taught graduate and undergraduate mechanical engineering courses. Also served as Laboratory manager for the Vehicle Dynamics Laboratory.
- Fall 1992  
to WI 1995* Lecturer, Whiting School Evening Programs in Engineering & Applied Science, Johns Hopkins University. Taught mechanical engineering courses in the undergraduate program.
- Fall 1986  
to Summer 1991* Ph.D. Candidate & Graduate Asst., College of Engrg., U. of Michigan, Ann Arbor. Successfully defended Ph.D. dissertation (July 1991). Taught courses in Mechanical Engineering and mentored graduate student teaching assistants.
- Winter 1988  
to Fall 1988* Engineering Co-Op., Advanced Engineering, AC-Rochester Div., General Motors Corp. Developed IC engine models used to conduct parametric studies of the influence of EGR on emissions, valve timing effects, etc.
- Spring 1987  
to 1999* Consulting Engineer & Partner, Intellec Systems, Inc. Developed computer software for industrial clients.
- Summers 1986  
to 1987* Summer Intern, Advanced & Plant Engineering, AC-Rochester Div., General Motors Corporation. Developed computer-aided software system for a manufacturing plant.
- Winter 1985* Graduate Research Asst. with Drs. Bhatt and Wedekind, School of Engineering,

*to Spring 1986* Oakland University. Developed & utilized computer-aided data acquisition control and analysis software for heating system research.

*Summer 1982 to Winter 1985* Associate Engineer, Production Dept., St. Clair Power Plant Detroit Edison Co. Responsible for operation and maintenance of turbo-generating units. Promoted to Plant Thermal Performance Engineer; duties included performance testing, analyzing results, and conducting monthly plant & area staff meetings.

*Winter 1979 to WI 1980* Engineering Technician, Testing & Evaluation Section, Motor Vehicle Emissions Lab., EPA. Supervised testing, collected & analyzed data, and drove vehicle tests.

## **Awards and Honors**

### *Patents*

- ♦ ENERGY CONSERVATION SYSTEMS AND METHODS, Jeffrey N. Yu, James W. Hill, Gregory W. Davis, U.S. Patent 8,639,430 B2, Issue date January 28, 2014.
- ♦ ENERGY CONSERVATION SYSTEMS AND METHODS, Jeffrey N. Yu, Gregory W. Davis, Gwynn R. Williams, U.S. Patent 9,063,829 B2, Issue date June 23, 2015.
- ♦ ENERGY CONSERVATION SYSTEMS AND METHODS, Jeffrey N. Yu, James W. Hill, Gregory W. Davis, U.S. Patent 9,527,514 B2, Issue date Dec. 27, 2016.
- ♦ ENERGY CONSERVATION SYSTEMS AND METHODS, Jeffrey N. Yu, Gregory W. Davis, Gwynn R. Williams, James W. Hill, EP 2 769 071 B1, Issue date August 15, 2018.

### *Teaching Awards*

- ♦ 2004 Outstanding Teacher Award-Kettering University,
- ♦ 1995 U. S. Naval Academy Mechanical Engineering Department Teaching Excellence Award,
- ♦ 1994 SAE International Ralph R. Teetor Educational Award in Recognition of Significant Contributions to Teaching, Research and Student Development,

### *Professional Society Honors*

- ♦ 2009 Small Engine Technology Conference, SAE and SAE of Japan, Certificate of Appreciation for significant contributions at the SETC conference,
- ♦ 2006 SAE International Outstanding Section Member Award-Mid-Michigan Section in Recognition of Extraordinary Achievement by a Mid-Michigan Section Member,
- ♦ 2006 American Society of Mechanical Engineers (ASME) recognition of long term membership
- ♦ 2002 SAE International Award for Excellence in Oral Presentation- Powertrain & Fluid Systems Conference,
- ♦ 1994 SAE Baltimore Section Recognition of Service Award for Outstanding Leadership as Section Activities Chair

## **Advisory Boards & Directorships**

- ♦ Invited to Scientific Advisory Board of the SDEWES 2020 Gold Coast Conference, 2019.
- ♦ Scientific Advisory Board Member, 1st Latin American SDEWES Conference on Sustainable Development of Energy, Water and Environment Systems, 2018.
- ♦ Invited Scientific Advisory Board Member, Sustainable Development of Energy, Water and Environment Systems (SDEWES) Conferences, (2016-present).

- ◆ Member of the Advisory Board, National Institute for Advanced Transportation Technology, Center for Clean Vehicle Technology, University of Idaho-Moscow, (2007-Present),
- ◆ Member, SAE International Executive Nominating Committee (ENC), 2016-2018,
- ◆ Elected to the Society of Automotive Engineers (SAE) International Board of Directors (2007-2010),
- ◆ Chair, SAE International Engineering Education Board (2002-2005),
- ◆ Member, SAE International Education Board (2010-2014),
- ◆ Director, SAE International Publications Board (2005-2008)

### **Professional Society Membership & Activities**

Tau Beta Pi, Pi Tau Sigma, American Society of Engineering Educators (Author and Reviewer), American Society of Mechanical Engineers (Author and Reviewer), Triangle Fraternity, Trustee and Vice-President-Triangle Fraternity Education Foundation (2001-2003), Institution of Mechanical Engineers (Reviewer- Journal of Automobile Engineering)

Society of Automotive Engineers:

- ◆ SAE International Board of Directors (Director, 2007-2010);
- ◆ Education Board (Chair, 2002-2005; Member, 1994-2018);
- ◆ Publications Board of Directors (Director, 2005-2008);
- ◆ Collegiate Design Series (formerly University Programs Committee) (Chair, 1998-2004, 2011-2014; member, 1994-2009),
- ◆ SAE Faculty Advisor (1992-95, 1998-present);
- ◆ Ralph Teeter Committee (Chair-2012, 2004-present);
- ◆ Member of Excellence in Engineering Education Award Committee;
- ◆ Technical Paper Reviewer and Session Moderator

### ***Recent Publications***

#### **Technical and Text Books**

- ◆ **Davis**, G. W., Hoff, C. J., Borton, Z., Ratcliff, M. A., “Legacy Vehicle Fuel System Testing with Intermediate Ethanol Blends,” National Renewable Energy Laboratory, Technical Report NREL/TP-5400-53606, March 2012
- ◆ **Davis**, G. W., “Using E85 in Vehicles,” Chapter 9, *Alcoholic Fuels*, CRC Press Taylor & Francis Group, ISBN-10 0-8493-3944-8, ISBN-13 978-0-8493-3944-8, Minter, S. Editor, 2006 (Invited Chapter).
- ◆ Hoff, C. J., and **Davis**, G. W., “Introduction to Automotive Powertrains,” Kettering University, 2000.
- ◆ **Davis**, G. W., Editor for World Book Encyclopedia, Various Automotive Articles, 2012-present.

#### **Refereed and Reviewed Publications**

- ◆ **Davis**, G. W., and Bastiaan, J., “How the SAE Clean Snowmobile Challenge Helps to Educate University Students in Sustainable Development,” Paper No. 0784, 14th Sustainable Development of Energy Water and Environment Systems (SDEWES), 2019.
- ◆ Bastiaan, J., Mazzei, A., and **Davis**, G. W., “Preparing University Students for the Future of Sustainable Transportation Through Formula SAE and the AutoDrive Challenge,” Paper No.

0799, 14th Sustainable Development of Energy Water and Environment Systems (SDEWES), 2019.

- ♦ Mazzei, A., **Davis**, G. W., and Bastiaan, J., “An Approach for Learning about Clean Fuels: Baja SAE Collegiate Competition,” Paper No. 0783, 14th Sustainable Development of Energy Water and Environment Systems (SDEWES), 2019.
- ♦ **Davis**, G. W., “Addressing Concerns Related to the Use of Ethanol-Blended Fuels in Marine Vehicles,” Journal of Sustainable Development of Energy, Water and Environment Systems, Article In Press, International Centre for Sustainable Development of Energy, Water and Environment Systems SDEWESE-ISSN:1848-9257, DOI: <http://dx.doi.org/10.13044/j.sdewes.d5.0175>, 2017.
- ♦ Collins, D., and **Davis**, G. W., “Using Collegiate Competitions to provide an Enhanced Engineering Education: A Case Study,” Paper No. 1475, 2017 IEEE Global Engineering Education Conference (EDUCON), Institute of Electrical and Electronics Engineers (IEEE), 2017.
- ♦ **Davis**, G. W., and DiGiuseppe, G., “Infusing an Entrepreneurial Mindset into Mechanical Engineering Courses: Two Case Studies,” Paper No. 1465, 2017 IEEE Global Engineering Education Conference (EDUCON), Institute of Electrical and Electronics Engineers (IEEE), 2017.
- ♦ **Davis**, G. W., “Motivating Students with Bio-fuel Student Engineering Competition Projects,” Paper 2016.1196, 19th International Conference on Interactive Collaborative Learning and Engineering Pedagogy, also Published in ICL2016 "Advances in Intelligent Systems and Computing," Editor: M. Auer, et al, Springer, ISSN: 2194-5357, 2016.
- ♦ **Davis**, G. W., “Addressing Concerns Related to the Use of Ethanol-Blended Fuels in Marine Vehicles,” Paper 2016.0321, 2<sup>nd</sup> Sustainable Development of Energy Water and Environment Systems (SDEWES), South East Europe (SEE) Conference, 2016.
- ♦ **Davis**, G. W., “What Is The Role For Collegiate Design Competitions In A Multi-Discipline, Diverse World?” Paper No. 1216, 2015 IEEE Global Engineering Education Conference (EDUCON), Institute of Electrical and Electronics Engineers (IEEE), 2015, pp. 676-680. doi: 10.1109/EDUCON.2015.7096042
- ♦ Birt, M., and **Davis**, G. W., “Developing Best Available Technology in a Flex-Fuel Snowmobile by Using a Lean-Burn Miller Cycle,” Paper No. JSAE 20139176 / SAE 2013-32-9176, Society of Automotive Engineers, 2013.
- ♦ Hoff, C. J., Aurandt, J., O’Toole, M. R., and **Davis**, G. W., “Motivating Student Learning Using Biofuel-based Activities,” Paper No. AC 2013-7533, American Society of Engineering Educators, 2013.
- ♦ Hoff, C. J., **Davis**, G. W., and Hoff, K., “A Peer-Tutor’s Perspective On Peer-Tutoring In Thermodynamics,” Paper No. AC 2012-3581, American Society of Engineering Educators, 2012.
- ♦ Hoff, K., **Davis**, G. W., and Hoff, C. J., “A Peer-Tutor’s Perspective On Peer-Tutoring In Thermodynamics,” Paper No. 174, World Engineering Education Forum (WEEF), 2012.
- ♦ **Davis**, G. W., Hoff, C. J., Riffe, W.J., “Incorporating Entrepreneurship into Mechanical Engineering Automotive Courses: Two Case Studies,” Technical Paper No. 279, European Society for Engineering Education (SEFI), 1st World Engineering Education Flash Week, 2011.
- ♦ **Davis**, G. W., Hoff, C. J., Riffe, W.J., “Incorporating Entrepreneurship into Mechanical Engineering Automotive Courses: Two Case Studies,” Paper No. AC2011-2443, American Society of Engineering Educators, 2011.

- ♦ **Davis**, G. W., Lazorcik, G., “Development of a Flexible Fueled Snowmobile Operating on Ethanol Blended Gasoline for the 2010 SAE Clean Snowmobile Challenge,” Technical Paper No. 2010SETC-0157/2010-32-0083, Society of Automotive Engineers, 2010.
- ♦ Hoff, C. J., and **Davis**, G. W., “The Effect of Using Ethanol-blended Gasoline on the Performance and Durability of Fuel Delivery Systems in Classic Automobiles,” Technical Paper No. 2010-01-2135, Society of Automotive Engineers, 2010.
- ♦ Baker, A., and **Davis**, G. W., “Development of the Kettering University Snowmobile for the 2009 SAE Clean Snowmobile Challenge,” Technical Paper No. 2009-32-0177 / 20097177,.
- ♦ **Davis**, G. W., Wilson, F., Schickel, B., Baker, A., “Development of Clean Snowmobile Technology for Operation on High-Blend Ethanol for the 2008 Clean Snowmobile Challenge,” Technical Paper No. 08SETC-0045/2008-32-0053, Society of Automotive Engineers, 2008.
- ♦ **Davis**, G. W., “Demonstrating the Use of High-Blend Ethanol (E85) in Snowmobiles,” ES2008-54189, Proceedings of Energy Sustainability 2008, August 10-14, 2008, Jacksonville, Florida USA.
- ♦ **Davis**, G. W., and Hoff, C., “Promoting Professional Development in Undergraduate Engineering Using Laboratory Team Projects: A Case Study,” Proceedings of the 2008 American Society of Engineering Educators Conference, AC 2008-2369, June, 2008.
- ♦ **Davis**, G. W., Sanger, J., Schickel B., and Muxlow J., “Development of Snowmobile Technology for Operation on High-Blend Ethanol,” 2007-32-0114(SAE), Society of Automotive Engineers, 20076614(JSAE), Japanese SAE, 2007.
- ♦ **Davis**, G. W., and Hoff, C., “Using the SAE Collegiate Design Series to Provide Research Opportunities for Undergraduates,” Proceedings of the 2007 American Society of Engineering Educators Conference, 2007-2879, June, 2007.
- ♦ Swartz, C., et al, **Davis**, G. W.,” Development of Clean Snowmobile Technology for the 2006 SAE Clean Snowmobile Challenge,” Paper No. 2006-32-0051, Society of Automotive Engineers, 2006.
- ♦ **Davis**, G. W., Grobelny, A. E., and Stimpson, J. C., “Testing of a Conventional Two-Stroke Snowmobile Engine using Ethanol-Blended Fuels,” 4<sup>rd</sup> Annual International Energy Conversion Engineering Conference, AIAA-2006-62923, June, 2006.

### **Professional Consulting in Engineering Legal Proceedings:**

The following list summarizes my testimony regarding professional consulting for engineering legal proceedings over the last four years:

- ♦ Consulting Expert, Fish & Richardson P.C., 2018 to 2020, provided *Declaration & Deposition testimony*
  - Hired on behalf of the Arctic Cat, Inc., USA,
    - Ex Parte Reexam of: U.S. Patent No.: 8,827,028 Issue Date: September 9, 2014 Appl. Serial No.: 11/494,890 Filing Date: July 28, 2006 Title: SIDE-BY-SIDE ATV, Sundahl *et al.*
- ♦ Consulting Expert, Steptoe & Johnson LLP, 2018 to 2020, provided *Declaration & Deposition testimony*

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