

TERRY L. HENDRICKS

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SUMMARY

- Enthusiastic and experienced graduate student seeking an entry-level mechanical engineering position. Interested in all aspects of automotive design. Passionate about thermal-fluidic design, analysis, and testing.
- Experienced in 3 experimental laboratories in the span of 3 years; each position concentrated on measuring heat transfer and/or aerodynamic performance metrics. Primary research centers on developing a model to simulate the fuel flow response of the main and secondary circuits found in modern small engine carburetors

EDUCATION

University of Wisconsin – Madison

MS Mechanical Engineering, expected December 2006

- **GPA:** 3.75/4.0 cumulative
- **Selected Coursework:** Applied Combustion, Chemical Kinetics of Combustion Systems, Advanced Heat Transfer, Gas Dynamics, Thermal Systems Modeling with ANSYS
- **Thesis:** Numerical and Experimental Study of Idle and Transition Circuits in Small Engine Carburetors

University of Wisconsin – Madison

BS Mechanical Engineering, May 2005

- **GPA:** 3.85/4.0 major, 3.5/4.0 cumulative, Dean's Honor List
- **Selected Coursework:** Thermal Systems Modeling, Ind. Study: Power train Cooling System Design, Internal Combustion Engine Fundamentals
- **Senior Design Project:** Designed, analyzed, and fabricated an exhaust dilution tunnel used to simulate over the road chemical speciation of emissions constituents
- **Extra Curricular Activities:** Power train leader and member of the UW-Madison Formula SAE team. Captured 1st place in the **Visteon Power Train Cooling System Design and Analysis Competition** utilizing a custom designed parallel core cooling system designed to operate without electric fans (2005), Helped achieve 1st place in the **Ricardo Power Train Competition** (2004)
- **Computer Skills:** Fluent, ANSYS, Ricardo WAVE, Engineering Equation Solver, CosmosWoks, SolidWorks, FloWorks, Unigraphics, GT Power, MatLab, Maple

EXPERIENCE

Engine Research Center, Madison, WI

Research Assistant, 2005 - present

- Developed an unsteady 1-D model of the idle and transition circuits of a small engine carburetor in MatLab capturing the effects of multiple air bleeds and metering elements
- Working to integrate the carburetor model into GT-Power as a stand alone module
- Performed experimental two-phase flow testing to quantify pressure drop in carburetor metering elements and orifice plates

Multi-Phase Flow Variable Analysis Lab, Madison, WI

Undergraduate Research Assistant, 2004 - 2005

- Designed and constructed various nozzle designs for spray cooling applications

General Electric Energy Systems (formerly GE Power Systems), Greenville, SC
Intern Engineer, Summer 2004

- Fleet Support Team for Combustion Design: Worked to help determine failure modes for turbines operating in the field. Focused on the cracking of transition pieces in combustion liners.
 - Used Six Sigma analysis tools to determine the root cause of combustion liner cracking
 - Developed correlations and analyzed data from sites to provide evidence for proposed failure mode.
 - Instrumented and tested a transition piece for thermal failure modes in combustion stand testing and validated failure theory.

General Electric Energy Systems (formerly GE Power Systems), Schenectady, NY
Co-op/Intern Engineer, January 2003 – August 2003

- Steam Turbine Test Laboratory: Gained valuable experience in lab testing. Worked with diverse group of people on starting up the new experimental steam turbine installed in the lab.
 - Used Unigraphics, ANSYS, and LabView to design and automate a 5 hole probe calibration stand for use with high Mach number air flows
 - Conducted pressure recovery tests and validated design codes on prototype diffusers recently put into production
 - Performed 2-D CFD analysis, using StarCD, to quantify gas turbine inlet flow resistance
 - Designed a high temperature flexible seal for a probe traversing setup to measure pressure forces on the experimental steam turbine test rig

UW Madison Formula SAE Racing Team, Madison, WI

Power Train Design, Development, Data Acquisition, and Testing, 2000- 2005

- Design, Analysis, Manufacturing, and Leadership: UW–Madison has placed 2nd place twice in the last 6 years and won the **Ricardo Power Train Competition** during my tenure as power train leader in 2004. That year the team also took 3rd place in the **Visteon PTCS Design and Analysis Competition**, and in 2005 the team took 3rd Place overall and won 1st Place in the **Visteon PTCS Design and Analysis Competition** with my system design.
 - Designed experiment to determine engine heat rejection using a custom built thermopile
 - Sized cooling system inlet and exhaust ducting for maximum performance, and optimized the geometry using a 3-D FloWorks analysis. Created a custom data acquisition program to validate CFD results to within 3% error.
 - Optimized centrifugal water pump and header tank design using Fluent, and validated design improvements with a custom radiator characterization rig

INTERESTS

Completely restored and raced a 1981 Z28 Camaro in a bracket racing class. Achieved a time slip of 12.95 seconds at 110 MPH. Performed every aspect of the restoration including the engine and transmission rebuild, suspension tuning, and fuel system design. Used knowledge gained from Master's research to tune fuel delivery system using a wide band O₂ sensor.

REFERENCES

Glenn R. Bower Ph.D.

- Director - UW Madison Formula SAE Automotive Program
- Phone: (608) 263-7252
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Jaal Ghandhi Ph.D.

- Director – Engine Research Center
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Timothy A. Shedd Ph.D.

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