Final Project Presentations
Wednesday, July 30, 2008
187 Science and Engineering Building

9:30AM – 10:00AM: Nanofluids:

Presenters: Joseph Betcher - Lake Superior State University
Kelsey Hulea – Youngstown State University

Advisors: Dr. Chris Kobus and Dr. Brian Sangeorzan

10:00AM – 10:30AM: Investigation of Flow through Intake Valves

Presenters: Michael Capehart - Baylor University
Diana Chicuri - Florida International University
Rachel Howell - Valparaiso University
Michael Tobin - University of Rhode Island

Advisors: Dr. Brian Sangeorzan, Dr. Alex Alkidas and Dr. Laila Guessous

The placement of the valve is crucial for optimal air flow into the cylinder. As the valve diameter increases and the valve-to-cylinder wall distance decreases, a phenomenon, known as the Blocking Effect, begins to interfere with the flow of air. Therefore, through CFD simulations and experimental data from a flowmeter, we investigated the optimal position of the intake valve in relation to the cylinder wall.

10:30AM – 11:00AM: Investigation of Flow Channel Design on Bipolar Plates

Presenters: Jason Kloess - University of Michigan
Joan Liu - Franklin W. Olin College of Engineering

Advisors: Dr. Xia Wang

Fuel cells are a way to convert chemical energy into electrical energy. Flow channel design influences the performance of a fuel cell, each with some advantages and disadvantages. During this research project, new flow channel designs were suggested and investigated using computational and experimental methods. Results and suggestions for future research are discussed in this presentation.

About ARIM: The ARIM Research Experience for Undergraduates (REU) program was setup in the department of mechanical engineering to provide meaningful, hands-on, paid 10-week summer research experiences to eight talented and motivated undergraduate engineering students from across the United States. This program is sponsored by the National Science Foundation and by the Department of Defense.
ASSURE program and was funded for the 2006-2008 summer periods. Students work in teams on automotive research projects involving fluid mechanics, heat transfer, energy and/or tribology. It is hoped that such a program will engage participants in rewarding research experiences that excite and motivate them to pursue careers in scientific and engineering research. In addition to working on research projects, students take part in other activities such as industrial research lab and facilities tours, meetings with working engineers, conferences and seminars. For more information about the program, please visit http://me-reu.secs.oakland.edu
Acknowledgements

A number of professionals from industry kindly volunteered their time to either, assist the students with their projects, meet the students, arrange tours, provide parts or present a seminar in 2008. These include:

Dr. Alex Alkidas, Senior Staff Research Engineer (ret.), GM R&D; Adjunct Professor, Oakland University
Dr. Tom Asmus, Senior Research Executive (ret.), DaimlerChrysler; Adjunct Professor, Univ. of Michigan
Mr. Frank Ewasyshyn, Executive VP – Manufacturing, Chrysler, LLC
Ms. Janice Girling, Chrysler, LLC
Mr. Jim Girling, formerly of Chrysler, LLC
Mr. Mark Gleason, Supervisor of Aerodynamic Wind Tunnels, Chrysler, LLC
Mr. Naser Hineiti, Advanced Engineering/Racing, GM Powertrain
Mr. Thomas Max, Director & CFO, Bertrandt U.S. Inc
Mr. Simo Meskouri, Advanced Manufacturing Engineer, Chrysler, LLC
Mr. Andre Metzner, Manager Strategy & Communications, Hybrid Development Center, Daimler, AG
Ms. Meg Novacek, Director, Powertrain Systems Engineering, Chrysler, LLC
Ms. Tonita Orr, Supervisor, Aerodynamic and Climatic Wind tunnels, Chrysler, LLC
Dr. David Reuss, Senior Staff Research Engineer, GM R&D
Mr. James Reuter, Sterling Heights Assembly Plant, Chrysler, LLC
Mr. Jerry Roach, AME TCF Core Process Manager, Chrysler, LLC
Dr. Ken Singh, Aero & Fluid dynamics manager, Chrysler, LLC

Additional assistance was provided by SECS and Oakland University staff and faculty:

Dr. Gary Barber, ME Dept. Chair, SECS
Mr. Len Brown, Laboratory Manager, SECS
Mr. Matt Bruer, Assistant Laboratory Manager, SECS
Ms. Donna Searight, Administrative Secretary, Dept. of Electrical and Computer Engineering
Mr. Peter Taylor, Project Engineer, SECS

OU Graduate and Undergraduate Students:

John Shi
Elaine Petrach
Zak Ahmad

And many others…