

## ABOUT THE CONFERENCE



RICHARD J.  
FASENMYER

The Richard J. Fasenmyer Design Conference showcases the results of year-long senior capstone projects conducted by students within the School of Engineering. The projects are conducted by student teams, supervised and managed by the students and guided by faculty advisers. In many cases, the projects address actual applied design problems posed by industrial sponsors. Projects that are sponsored by industry have industrial representatives assigned to the team.

In 2005 the conference was named to honor the legacy of Richard J. Fasenmyer. Mr. Fasenmyer was named an Alumni Fellow and Distinguished Alumnus of the University. He was the first alumnus of Penn State Behrend to donate \$1 million to the college, for which a plastics processing laboratory bears his name.

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## PROJECT SPONSORS

A-Line Acoustics, Corry, Pennsylvania  
American Foundry Society, Erie, Pennsylvania  
Artemis Corporation, New York, New York  
Beaumont Technologies, Inc., Erie, Pennsylvania  
BTC Solutions, Erie, Pennsylvania  
Dresser-Rand, Olean, New York  
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RICHARD J. FASENMYER

# Engineering Design Conference

MAY 5, 2007

## SCHEDULE OF EVENTS

7:30 a.m.	Refreshments (REDC Café)
8:00 a.m.–Noon	Senior Presentations (Half-hour sessions, including five minutes for questions and answers and five minutes for moving to other sessions.)
12:15–1:00 p.m.	Keynote Speaker
1:00–1:15 p.m.	Class Pictures
Following class pictures	Picnic Lunch (REDC Café)

## KEYNOTE SPEAKER



JOHN DINEEN  
PRESIDENT AND  
CEO  
GE RAIL

**John Dineen** is President and CEO of GE's Rail business. The business unit serves the rail, mining and energy industries and generates revenues in excess of \$3 billion. Products and services include freight and passenger locomotives, diesel engines for industrial applications, motorized systems for off-highway vehicles and drills, and gearing systems for wind turbines. Headquartered in Erie, Pennsylvania, the Rail business employs 8,500 workers around the world.

Dineen joined GE in 1986 as a Telecommunications Engineer in Rockville, Maryland. He has held a variety of assignments at GE, including General Manager of the Power Equipment business in Plainville, Connecticut; General Manager of the Meter business in Somersworth, New Hampshire; General Manager of the Microwave and Air-conditioning Businesses in Louisville, Kentucky; Manager of Finance for GE Asia in Hong Kong; President of GE Plastics Pacific and various assignments in Corporate Finance. Most recently, he served as Vice President and General Manager of Plastics-Resins at GE Advanced Materials.

Dineen is a graduate of the University of Vermont where he earned a bachelor's degree in genetics and a bachelor's degree in computer science.

He is married to Gina and has two children, Hannah and Jack.

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# SENIOR PRESENTATIONS

## ELECTRICAL AND COMPUTER ENGINEERING TECHNOLOGY

8:30-9:00 REDC 107	<b>Automatic Mail Box Monitoring and Remote Notification System</b> Kevin Heiderman, Jeffrey Parimuha	10:30-11:00 REDC 107	<b>A Programmable Logic-Controlled Automated Bottle Filling and Capping Machine</b> Francis Kargbo, Timothy Luthringer, Todd Williams
9:00-9:30 REDC 107	<b>A Surgical Light Projection Tester</b> Nuvo Surgical Michael Lukehart, Alexander Winter	11:00-11:30 REDC 107	<b>A Stress Proof Production Tester</b> Daloz Chris McCartney
9:30-10:00 REDC 107	<b>A Printed Circuit Board for Credit Card Game</b> Sam and Irene Black School of Business Randall Prue, Michael Schmitt	11:30-12:00 REDC 107	<b>Lego Robotics Workshop for High School Design Competition</b> Michael Baycura, Jeffrey Painter
10:00-10:30 REDC 107	<b>A Color Ball Sorter Using a Programmable Logic Controller</b> Adam Boettcher, Nathan Steele, Alex Wiczorek		

## ELECTRICAL, COMPUTER, AND SOFTWARE ENGINEERING

8:00-8:30 REDC 208	<b>Respiratory Therapy Charting System</b> Hamot Medical Center Charles Gasdick, Robert Goins, Alexander Mulfinger	10:00-10:30 REDC 207	<b>An Aerial Surveillance System for Emergency Services</b> Mercyhurst College, Institute for Intelligence Studies Gino Lombardo, Brent Manges, Joseph Strom
8:30-9:00 REDC 206	<b>A Portable Reject Valve Timing Device</b> Eriez Magnetics Brian Kayes, Ryan Killian, Brian Rogala	10:00-10:30 REDC 208	<b>A Bayesian Analysis Tool for Intelligence Analysis</b> Mercyhurst College, Institute for Intelligence Studies Andrew Chernauskas, Justin McKenney
8:30-9:00 REDC 207	<b>A High Frequency Signal Generator</b> Artemis Incorporated Brandon Wicks	10:30-11:00 REDC 206	<b>A Speedometer for Snow Skis</b> Morgan Hansen, Benjamin Kachik, Brian Zechmeister
8:30-9:00 REDC 208	<b>Electrical Substation Monitoring and Control</b> Eric Bell, David Lowery, Zachary Stechly	10:30-11:00 REDC 207	<b>A System to Monitor E.coli in Presque Isle Bay</b> James Rafferty, Michael Statkun
9:00-9:30 REDC 206	<b>A Portable Presentation Storage and Video Unit</b> Mark Carrier, Lawrence Glick, Michael Vogt	10:30-11:00 REDC 208	<b>An Automobile Monitoring Device for Parents of Teenage Drivers</b> Justin Beale, James Herlinger
9:00-9:30 REDC 207	<b>A Temperature Controlled Thermal Chamber</b> Darren Brock, Patrick Cornelio	11:00-11:30 REDC 206	<b>An Adjustment Device Plastics Injection Molding IMARC System</b> Beaumont Technologies, Inc. Jimmy Duttry, Clinton Fleming, James Matthews III
9:00-9:30 REDC 208	<b>Audio Optimizer for Public Address Systems</b> Kiel Mapes, Chad Seidler, Caleb Rauscher	11:00-11:30 REDC 207	<b>A Data Acquisition System for MET Program</b> Brian Bitner, Ryan McClimans, Philip Tullai
9:30-10:00 REDC 206	<b>An Aerial Surveillance System for Emergency Service—Team P.A.S.S.</b> Mercyhurst College, Institute for Intelligence Studies Nathan Andre, Joshua Kolb, Justin Thaler	11:00-11:30 REDC 208	<b>A Hydroelectric Generator for Remote Locations</b> Justin Reese, Bradley Ruffo, Brett Ryhal
9:30-10:00 REDC 207	<b>A Baby Monitoring Webcam</b> Jerett Campbell, James Sadusky, Matthew Widdowson	11:30-12:00 REDC 206	<b>The Child Proximity System</b> Richard Hessinger, Nicholas Johnson, Daniel Kubacki, Jonathan Parise
9:30-10:00 REDC 208	<b>RFID Asset Tracking System</b> BTC Solutions, Inc. Steven Grier, Michael Marchini, Jeffrey Zimmerman	11:30-12:00 REDC 207	<b>A Bit Torrent Extension for Firefox</b> Michael Berrier, Michael Barrett, Benjamin Rose
10:00-10:30 REDC 206	<b>A Voice Control Interface for the iPod</b> Lutfi Al-Busaidi, Matthew Bellavia, Eden Roseborough	11:30-12:00 REDC 208	<b>A Smart Showerhead</b> Justin Mason, Steven Miller, Matthew Sigler, Robert Zill

## MECHANICAL ENGINEERING TECHNOLOGY

9:00-9:30 REDC 102	<b>Design of Remote Control Mechanism for the Melt Flipper Mold</b> Beaumont Technologies, Inc. Jordan Main	10:30-11:00 REDC 102	<b>Design and Analysis of High Compression Engine Head</b> Jonathan Semchee, Lucas Steger
9:00-9:30 REDC 103	<b>Design of Low Speed Wind Tunnel Anemometer Positioning Mechanism</b> Charles Gaglione, Andrew Krug	10:30-11:00 REDC 103	<b>Vibration Impact Study of Super-40 Lamp</b> Truck-Lite, Company, Inc. Jason Anderson, Kevin Cehelsky, Ivan Lopez
9:30-10:00 REDC 102	<b>Design of Automated Surgical Light Test Fixture</b> Nuvo Surgical Kristin Macha, Michael Pietsch	11:00-11:30 REDC 102	<b>Design and Implementation of the Behrend Foundry</b> American Foundry Society Andrew Daniels, Richard Hammer
9:30-10:00 REDC 103	<b>Study and Analysis of Air Flow in the Hope Springs Dehydrator</b> Anthony Fajbik, Scott Hodges	11:00-11:30 REDC 103	<b>Study of a Centrifugal Balance Piston</b> Dresser Rand John Campbell
10:00-10:30 REDC 102	<b>Design of Automated Proof Load Testing Machine</b> Daloz Edis Bico, Branden King	11:30-12:00 REDC 102	<b>Engine Mount Design Analysis on Light and Medium Duty Trucks</b> Lord Corporation Tad Blankenberg, Brad Minman
10:00-10:30 REDC 103	<b>Design and Test of Isolation System for Commercial Speakers</b> A-Line Acoustics Jason Benkert, Gary Krugger	11:30-12:00 REDC 103	<b>Design of a Wire Fatigue Test Machine</b> Eriez Magnetics Patrick Bayhurst, Daniel Craven

## MECHANICAL ENGINEERING

8:30-9:00 REDC 105	<b>Vibration Isolation System (closed session)</b> Lord Corporation Dave Greco, Daniel Jageman, Jason Papucci, Shawn Sidelinger	10:30-11:00 REDC 105	<b>Heat Exchanger for Improving the Efficiency of Pellet Stoves</b> Spinworks Thomas Demitras, Chase Sell, Thomas Spinner, Krista Mikula
8:30-9:00 REDC 106	<b>Diesel Engine Exhaust Gas Sampling System</b> General Electric Brent Anderson, Philip Hake, Nicholas Lingler, Kent McKee	10:30-11:00 REDC 106	<b>Test Rig for Fuel Coking in a Bio-Diesel Gas Turbine</b> Ingersoll-Rand Industrial Technologies Kyle Barry, Allison Gabriel, Marc Hoffman, Travis Swiedom
9:00-9:30 REDC 105	<b>Locomotive Base Platform Strengthening</b> Russell Carter, Jason Cecchetti, Joshua Green, Cory Hildebrand	11:00-11:30 REDC 105	<b>Non-mixing IVT-Connector for Medical Imaging Applications</b> Medrad, Inc. Neil Bradley, Francis Goss, Kiera Hinterlang, Victor Sciarrino
9:00-9:30 REDC 106	<b>Stand-Alone Locomotive Engine Block Warming System</b> Power Drives, Inc. John Chromchack, Edward Falk, Bradley Gates, Garrett Grenek	11:00-11:30 REDC 106	<b>Power Plant Combustor Thermal Expansion Joint</b> Scrubgrass Power Plant George Bomboy, John Hobbs, Michael Pitschman, Nathan Russell
9:30-10:00 REDC 105	<b>Gear Lubrication Test System</b> Joy Mining Machinery Kyle Bardsley, Tyler Good, Cory Vogel, Matthew Warner	11:30-12:00 REDC 105	<b>Devise for Bending Plastic/Composite Fence Sections</b> Ventana USA Brian Proie, Andrew Root, Christopher Squires, Kevin Sunealitis
9:30-10:00 REDC 106	<b>Vibration Isolation System for an Electronics Cabinet</b> Lockheed Martin-MS2 Daniel Davies, Mark Jackson, Joel Olczak, Justin Still	11:30-12:00 REDC 106	<b>Design for Manufacturing of a Locomotive Engine Camshaft</b> General Electric John Donovan, Paul Fontecchio, Scott Poeppel
10:00-10:30 REDC 105	<b>Novel Method for Production of Ceramic Ball Bearings</b> Jacob Hayden, David Irvin, Thomas Kronenberger, Chris Suprock		
10:00-10:30 REDC 106	<b>Nozzle Design for Use with Bio-Diesel Gas Turbine</b> Ingersoll-Rand Industrial Technologies Matthew Bollinger, Aaron Mead, Dustin Splitstone		

## PLASTICS ENGINEERING TECHNOLOGY

8:00-8:30 REDC 203	<b>The Position of High Shear Material and Its Effect on the Progressive Weld Line Strength of an Injection Molded Part</b> Kevin Welsh, Jason Willis	10:00-10:30 REDC 204	<b>Evaluating Thermal Uniformity with Pulse Cooling</b> Sean Byrne, John Kremm
8:00-8:30 REDC 204	<b>Investigation of Reversed Shear Induced Melt Imbalances in Injection Molds</b> Alex Beaumont	10:30-11:00 REDC 201	<b>The Impact of Shear Rate of Warpage with a Focus on Shear Imbalances in Neat and Filled Materials</b> Eric Baluh, Mikael Wagner
8:30-9:00 REDC 203	<b>Chemical Resistance at Different Stress Levels of Materials with Active Packaging Additives</b> Justin Courter, Matthew Gill	10:30-11:00 REDC 203	<b>The Effect of Overflow Tabs on Affected Area</b> Jeremy Haibach
8:30-9:00 REDC 204	<b>Comparing Mechanical Properties of MCU and TPE's in Ford Body Mount Applications</b> Travis Belz, Matthew Loeffler	10:30-11:00 REDC 204	<b>Gate Location Feasibility Study</b> Eric Schaefer
9:00-9:30 REDC 203	<b>Predicting Shelf Life of Medical Grade Polymers Using Accelerated Heat Aging</b> Adam Miloser, Eric Nachreiner	11:00-11:30 REDC 203	<b>Drawing Correlations Between Melt Flow Rate, Ultimate Elongation, and Molecular Weight</b> Ashley Kopa
9:00-9:30 REDC 204	<b>The Effect of Flash Pocket Depth on Extrusion Blow Molding Pinch-Off Strength</b> Sriraj Patel, Nicholas Schroeck	11:00-11:30 REDC 204	<b>Tensile Strength of the Frozen Layer in Injection Molded Parts</b> Joel Carr
9:30-10:00 REDC 203	<b>Compressibility of Resin, A New Look at Bulk Density</b> Adam Miloser	11:30-12:00 REDC 203	<b>The Effects of Secondary Angle Length and Thickness on Pinch-Off Strength</b> Clint Badowski, Matthew Loeffler, Michael Vandever
9:30-10:00 REDC 204	<b>The Effects of Shot Size on a Geometrically Balanced Runner System</b> Nehal Kachalia, Thomas Kaveney	11:30-12:00 REDC 204	<b>Shear Sensitivity of PLA in Hot Runner Systems</b> Richard Haibach

## COMPUTER SCIENCE

8:30-9:00 REDC 201	<b>Robotic Mapping and Path Finding</b> G. Dewey Black, Greg Lutz, Zack Marrapese	9:30-10:00 REDC 201	<b>The Electronic Voting System</b> Paul Casillo, Michael Snyder
9:00-9:30 REDC 201	<b>Biometric Identification for Prescription Drug Dispensing Control</b> Jacob Garipey, Paul Miller, Dara Nielsen	10:00-10:30 REDC 201	<b>Behrend Optimized Scheduling System</b> Ryan Buzzanca, Jon Grier, Aaron Thomas