

## Awardees 2006-2010

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### 2010 Kalenian Award Winner

Congratulations to Rich Sadowski, BSME Class of 1968, for winning the 2010 Kalenian Award! After graduating from WPI in 1968, Rich had a very rewarding and productive 40+ year professional career in the electricity generation industry. It all started at Riley Stoker Corporation in Worcester, MA, as a research engineer, where he gained significant exposure to all forms of fossil fuel fired electric power generation industrial and utility central stations all over the world. In 1971 the Environmental Protection Agency's New Source Performance Standards set emission limits to several pollutants and he spent most of his time working to reduce the production and release of such pollutants to the atmosphere. He was selected one of four utility boiler air emissions experts for a U.S. State Department sponsored technology exchange with the Soviet Union 18 years before "perestroika & glasnost". He became intimately familiar with all the newest fuel burning methodologies like fluidized bed combustion as well as gasification and reforming technologies working as a contractor to the DOE for many years. He received patents on a gasification apparatus and process and was the recipient of a Small Business Innovation Research (SBIR) DOE award which proved the concept of making inexpensive hydrogen fuel from wood chips or grass.

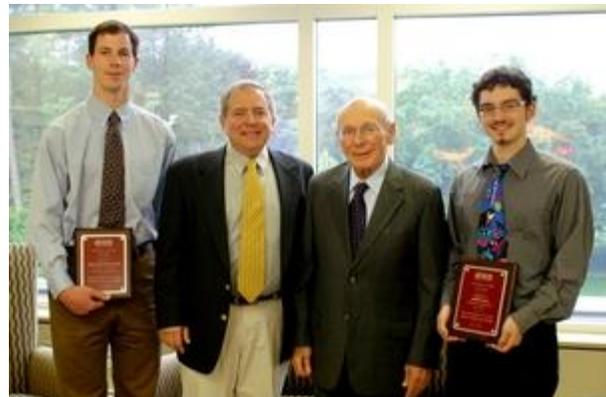


In recent years, he has been developing a patentable method of reflecting solar photons onto commercially available photovoltaic panels while simultaneously taking advantage of their ability to produce much more electricity by tracking the sun and operating at low temperatures with forced cooling. To reduce cost he uses \$1 per sq ft reflector panels which reduces the necessary \$80 per sq ft PV Panels by 75%. He used many resource recovered automobile parts to build his Solar Joules prototypes. Therefore, the use of salvaged sealed wheel no maintenance bearings for dual axis trackers and windshield wiper motors for both actuator drives could be a "low carbon footprint" way to provide new jobs at home that cannot be exported abroad. To date he has succeeded in producing between 4 and 5 times the annual solar electricity as would be produced from the same commercially available roof mounted photovoltaic panel. His Patent Pending technology provides for the production of aesthetic concentrating photovoltaic (CPV) "plug & play" modules. Its benefit to society stems from its ability to produce so much additional electricity that its installed cost would be reduced to less than 9 cents per kWh making it more cost effective than any conventional form of electricity production including nuclear. And it produces solar electricity with NO carbon emissions or nuclear waste.

A WPI MBA program final semester project is currently underway to evaluate and select the most appropriate commercialization route for this technology. There exist many more pathways to profit return than is typical, so the WPI MBA Project Team is likely to provide critically important societal as well as potential internet sales, licensing, franchising, teaming and manufacturing considerations. The Kalenian Award will provide sufficient funding to allow Rich to complete the worldwide patenting process and to build a completely self-contained 3 kWp sized Solar Joule module.

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The winners of the 2009 Kalenian Award were announced at the June 9, 2009 WPI Venture Forum program. Judges Paul Kalenian, McRae Banks and Jerry Schaufeld were present. The winning team was headed by WPI Professor James Van de Ven with Allan Katz 07 (BS), 09 (MS), who are advancing a valve for switch-mode control, a new method for controlling hydraulic systems that use a hydraulic valve to rapidly switch between efficient on-and-off states. This technology gives hydraulic hybrid vehicles a performance and cost advantage over electric hybrid systems. Switch-mode hydraulics is also applicable to alternative energy technologies such as wind turbines, improving efficiency in a smaller, lighter, and more economical package. The award will support the team's technical and entrepreneurial plans, which include further testing of the prototype, designing and building a second-generation prototype, creating



performance specifications, obtaining a full patent, developing a marketing plan, and licensing the technology for further development and production.

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### 2009 Kalenian Award - Honorable Mention

Receiving an honorable mention was the Neuron Robotics team, comprised of Robert Breznak (CS '09), Kevin Harrington (CS '09), Alex Camillo (ECE '09), and contributor Mark Mordarski (RBE '11). Their system of interconnecting modules, software, and parts that work together will allow researchers, hobbyists, and developers to increase their productivity while reducing costs and waste. Breznak's goal is to become the commercial leader in robotic module development and to sell his company's products through an online store and by creating distribution channels through similar vendors. For more information on this year's proposals, please contact the office of the Collaborative for Entrepreneurship & Innovation.



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### 2008 Kalenian Award Winner

Congratulations to Dalin Tang, Professor of Computational Mathematics and Biomedical Engineering at WPI. His research in Image-Based Computational Mechanical Analysis and Indexing for Cardiovascular Diseases led to the invention of a medical software diagnostic tool that will be used by medical doctors to improve their ability to assess a patient's disease stage and make better treatment decisions. A US patent has been filed and an initial market analysis has been performed. The invention improves the prior art that lacks mechanical analysis by providing a 3D MRI-based multi-component model with fluid-structure interactions for mechanical analysis of atherosclerotic plaques, aneurysm, and heart diseases Today, there are 20 surgeries performed simply to prevent one possible rupture, due to the lack of good diagnostic tools.



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Cardiovascular disease (CVD) is the No. 1 killer in the United States and was responsible for forty-percent of all deaths in 2000. Thirty-six percent of 45 year olds and eighty-percent of those 75 and older have CVD (AHA 2005 statistics). More than sixty-percent of all heart attacks are caused by rupture of a vulnerable plaque. A large number of victims of the disease who are apparently healthy die suddenly without prior symptoms. Available screening and diagnostic methods are insufficient to identify the victims before the event occurs. Dalin's team is developing computational methods for non-invasive screening methods for early identification, diagnosis, prevention and optimal treatment of a wide range of cardiovascular diseases.

### 2007 Kalenian Award Winner

The winner of the 2007 Kalenian Award was announced at the June 12, 2007 WPI Venture Forum program. During the ceremony, Paul Kalenian commended the fine work of all of the applicants and acknowledged the addition of the in-kind sponsorship of Wolf Greenfield. Crescent Innovations, a proposal submitted by WPI Alumnus, Albert G. Prescott, received the Award. Prescott's company is inventing products for pain management. Crescent Innovations Inc. was founded in 2000 to develop products to treat TMJ disorders, degenerative joint disease, bone disease, fractures, and more, using proprietary polymer technology.



These state-of-the-art polymers are used to treat both chronic and acute pain as well as controlled release/drug delivery products. The company has received a Phase I SBIR grant from the National Institutes of Health, and has worked with Fortune 500 companies.

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"I cannot emphasize enough how important this award is to us at Crescent Innovations," said Prescott. "The technology we are developing to treat bone defects will ultimately have deep and far reaching benefits to every one of the 50 million people in America who have ever had a bone fracture or defect. We will use the money specifically to develop prototypes, and to push this technology to commercialization."

Mr. Prescott stepped to the stage to receive a giant mock check and have photographs snapped with Paul Kalenian and David Wolf. Mr. Kalenian stated that he is looking forward to next year's competition and thanked everyone that participated this year, including the judges.

### 2006 Kalenian Award Winner

The winner of the 2006 Inaugural Kalenian Award was announced on May 9th at a WPI Venture Forum Monthly Program. Paul Kalenian commended the fine work of all of the applicants and stated that it was very difficult to narrow the field down to one proposal. The 2006 Kalenian Award went to "Powered Arm Orthosis", a proposal submitted by WPI Professor Allen Hoffman and two graduate students, Steven Paul Toddes and Michael Scarsella. The powered arm orthosis is a device that allows its wearers to regain near-normal functionality of an arm when conflicted with muscle dysfunction or

weakness from diseases such as Muscular Dystrophy, Multiple Sclerosis, and Parkinson's Disease. The very surprised team of three stepped to the stage to receive a giant mock check and have photographs snapped with Paul Kalenian. Mr. Kalenian stated that he is looking forward to next year's competition and thanked everyone that participated this year, including Provost Carol Simpson and Department of Management Head Mac Banks for assisting in the judging process.

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