SAE Milwaukee Newsletter

February 2013 www.milwaukeesae.com

UPCOMING EVENTS

- Member Innovations
  - February 20
- Clean Snowmobile Challenge
  - March 4 - 9
- Johnson Controls Battery Technology
  - March 14

* Pre-registration is required for this meeting. See newsletter for more information.

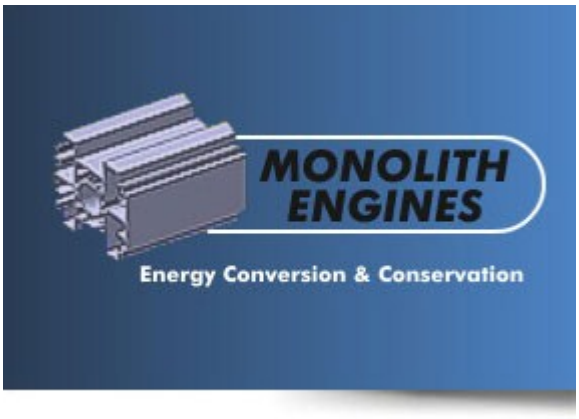
- Chevrolet Volt
  - April

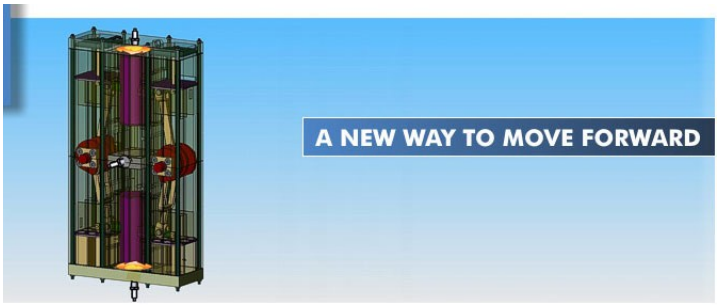
For more details , check out the upcoming events section or our website at:
www.milwaukeesae.com

SAE Member Innovation Commercialization

Wednesday February 20, 2012

Briggs & Stratton Corporation
Milwaukee, WI





Monolith Engines Inc. (MEI) is a multi-faceted energy development company. The company was initially founded in 1994 under the name Micro Monolith, Inc., which assisted other parties in product designs and developments. While we maintain the ability to continue that function, we are also available for contracting associated with all aspects of energy development.

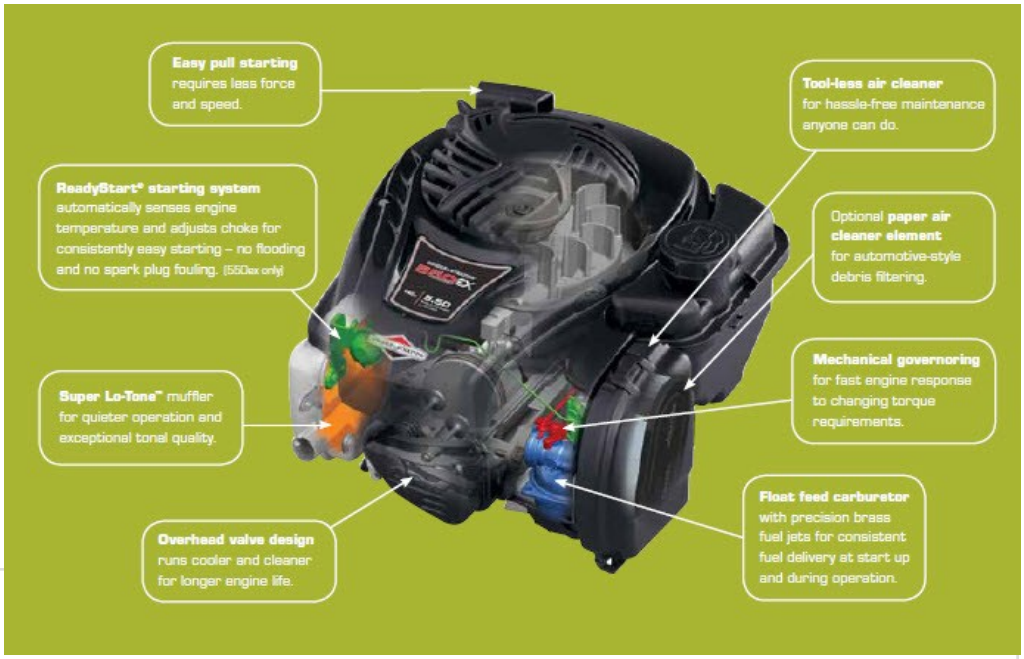
We are currently working on several projects related to energy development. One such project deals with a patented I.C. Engine Design. (# 6,769,384) This is a design for a smaller and higher RPM engine that allows the piston to "float" inside the cylinder. The piston is able to go straight up and down with little friction due to the positioning of the piston rods and crank shafts.

Thomas Dougherty, President/CEO - Monolith Engines Inc.

Tom Dougherty started Monolith Engines Inc. 20 years ago (formally Micro Monolith Inc.) by consulting in the energy and computer fields. During the past 12 years Monolith has been working on a new extremely light weight IC engine that, although works with all fuels, is being developed for natural gas and hydrogen combustion.

Tom was formally Director of Advanced Battery at Johnson Controls Inc. where he worked for 37 years in the development of Lead, Nickel and Lithium batteries (retired from JCI in 2008). He has a BS Degree in chemistry and mathematics with further studies in electronics and computer science, along with 45 patents in the automotive field including: electronics, software, batteries, alternators and IC engines.

Tom will be talking about the development of the Monolith Engine, the objective behind the design and future concepts based on the engines symmetry. He will also talk about his competition. The prototype engine will be on display.



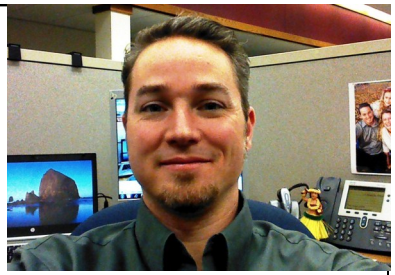
The arrival of the E-Series™ engine, designed at Briggs & Stratton's Milwaukee headquarters using U.S. and global components, represents a major milestone for company. In July 2010, Briggs & Stratton announced an investment of more than $35 million to renovate its Murray, Kentucky facility over three years, including installation of upgraded tooling, new machinery, and workforce training. The Murray facility, opened in 1985, is now manufacturing the new 550e and 550ex Series™ engines.

The new E series has some very specific design hurdles to overcome. The team took a 50 year old tried and true design and needed to improve performance on many levels while still hitting tight cost targets. The team's motto was "Get uncomfortable" as they explored new and innovative ways to satisfy strict performance requirements, while trying to hold cost in check. From the dramatically reduced valve sizes to the liquid gaskets to the brand new carburetor design – every facet of engine design pushed the limits of B&S "norms". Through extensive use of FEA, CFD and Magma flow software, the team was able to match the power output of the previous model and still take out 2+ lbs. of material. What they finished with was a better starting, quieter, lighter, lower vibration, lower emissions, more fuel efficient design. All those things are what our customers told us they wanted and the team delivered.

The E-Series™, which went into production in November 2011, joins a full line of engines manufactured by Briggs & Stratton in its U.S. facilities in Alabama, Georgia, Kentucky and Missouri. In 2011, Briggs & Stratton's U.S. engine plants produced more than 9 million engines and employed over 3,000 people. For more information on the new E Series™ engines, visit briggsandstratton.com.

J.P. Benjamins, Consumer Marketing Manager,

Briggs & Stratton Corporation



J.P. grew up in Waukesha with his father and two sisters. He graduated from Marquette University with a BSME in 1997, followed by an MBA in 2003. He has been working for Briggs & Stratton since he started as an engineering co-op in 1994. Roles held at Briggs & Stratton include finite element analyst, application engineer, program manager and most recently a complete move to the "dark side" as marketing manager. J.P. was the program manager on the company's most recent major engine program, the 550ex Series.

Title: New 6.5L V-8 Diesel for Up-Armored HMMWV Vehicle

Abstract: The U.S. Military is looking to recapitalize a portion of their military HMMWV's. Worldwide there are over 260K of them, some are up-armored, others not. For the up-armored HMMWV's there is a great need to increase power and fuel efficiency to extend the service life of this vehicle to 20+ years.

AED through Small Business Innovation Research (SBIR) contracts has developed a new interchangeable engine, Hawk Maximum Performance Upgrade Kit, that produces 250/270 HP compared to the 190 HP of the original HMMWV engine and improves fuel efficiency.

Our next contract activities include: HMMWV vehicle installation and test; a 400 hour NATO durability test; and other production preparations.

AED will produce and market the military and commercial versions of this new Hawk engine in a joint venture with a major engine manufacturer.

Bio: Nicholas Hirsch is President and founder of Advanced Engines Development Corporation. For over 40 years he has been a leader in creating and managing programs that design, develop, test, and bring to production state-of-the-art internal combustion engines, with a specialty of converting commercially available gasoline engines to new high tech heavy fuel engines. Along with his experience in this industry as an engineer and manager, he has vast knowledge and expertise in running a sustainable business and consulting with companies large and small in creating and developing running prototypes of engines to fit their needs. Prior to founding AED, Nicholas has had 20 years of executive engineering and management experience at Mercury Marine, Harley Davidson, and Teledyne Wisconsin Motors. Nicholas has a degree in Mechanical Engineering from University of Wisconsin and is a retired Colonel from the U.S. Marine Corps; thus having extensive knowledge of the U.S. Military vehicles and combat needs.

Title: Proof-of-Concept 6-cycle engine system.

Abstract: The 6-cycle engine system combusts fuel outside of the piston/cylinder assembly in an insulated chamber integrated into the engine head. The base engine is a Yanmar L70V air cooled engine but with a new 4 valve head, an external belt driven overhead cam shaft and cam system, and an electronic fuel injection system. The 2 year SBIR DoD program is evaluating the potential advantages of a 6-cycle system with regard to multi-fuel capability, low emissions potential, and efficiency; and also evaluating disadvantages and technical challenges. Fuel delivery can be varied from essentially "continuous" injection to timed injection throughout various segments of the 3 revolutions of the crankshaft over the 6 cycles to determine what is optimal for this type of engine system. Many prototype parts were designed to utilize the direct additive metal laser process to save tooling, incorporate unique experimental part capabilities, and permit subsequent rapid design changes Development and testing are underway to study and optimize the combustion with simultaneous pressure measurements in the cylinder and combustion chamber, and to study many other areas.

Bio: Jerry Kashmerick is the Principal Engineer and Owner of Kashmerick Engine Systems focusing on developing the 6-cycle engine system. He retired in 1999 but became interested in pursuing efficient low emissions small engines. He subsequently worked as a Staff engineer at Kohler Engines for 2 years. Before retirement he was Manager of New Product development and Mechanical development and engine test at Dana/Victor Reinz, Director of Engineering and Technical services at Reinz Wisconsin Gasket, Manager of Product engineering at Fel Pro, Senior Product engineer at Outboard Marine, Development engineer at Mercury Marine. Jerry has a Masters Certificate in Business and a Bachelor of Science in Science Engineering from the University of Michigan. He enjoys technology and especially energy related technology.

--- EVENT AGENDA ---

Registration: 5:30 pm

Dinner: 6:00 pm

Presentation: 7:00 – 8:30 pm

Meal: "Make your own Burger", fruit salad, assorted chips and a beverage

--- DINNER ---

DINNER PRICES

SAE Members/Spouses	**$15.00**
Retirees	**$15.00**
Guests/Non-members	**$20.00**
Students	**$5.00**

REGISTRATION

Registration:

Only pre-payments made with a charge card can be completed online via http://www.milwaukeesae.com

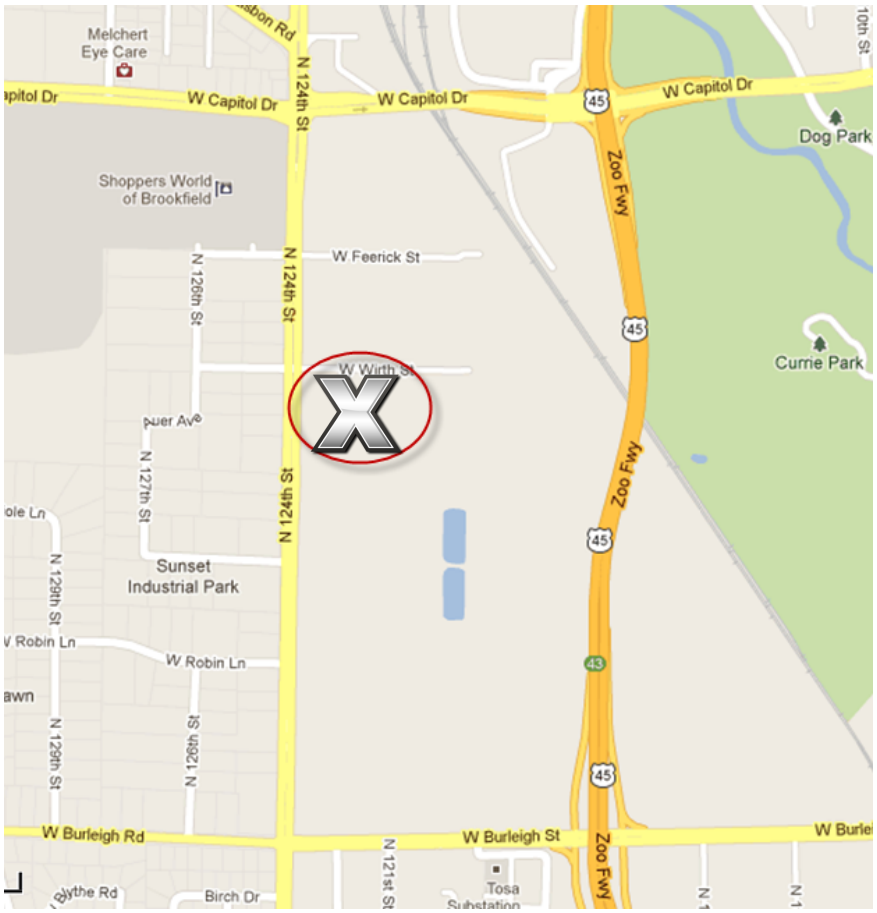
Registration Deadline: Friday February 15, 2013

Maximum Attendance for this event is 150

Registration can be completed online via http://milwaukee.sae.org Or by phone at 414-587-8855 (Josh Rayeske)

Meeting Location: Briggs & Stratton Corporation
12301 W. Wirth Street
Wauwatosa, WI, 53222

Directions: Take US 45 and exit at Capital Drive. Turn south onto 124th street until you arrive at Wirth Street. The corporate entrance is on the corner of 124th and Wirth Street.



Upcoming Meetings and Events…….

Clean Snowmobile Challenge—Houghton Michigan **March 4 - 9**

- Collegiate Design Competition held at Keweenaw Research Facility

March Section Meeting - Johnson Controls Battery Technology **March 14**

- Keynote address: David Howell—United States Department of Energy
- Battery Technology at Johnson Controls – Tom Watson, VP of Vehicle Systems

Clean Snowmobile Challenge

The 11th annual SAE Clean Snowmobile Challenge hosted by the Keweenaw Research Center at Michigan Tech will be the week of March 4-9, 2013. This will be the largest CSC to date with 21 teams registered. In addition to 14 Internal Combustion engine entries, we have seven Zero Emission – Electric sleds entered. The theme this year is to engineer a snowmobile to run on ethanol in the range of E40 to E85. In the electric class, teams will be designing their sled under new consistent rules developed by organizers of other electric SAE competitions such as Formula Electric and Formula Hybrid. Wisconsin's own, Daniel Bocci, organized the rules along with the team of International experts involved in the other competitions. This was a three year effort to harmonize the SAE electric standards so that teams competing in other events had a consistent set rules and standards to follow. Since CSC is the first event of the year, we will be the first to run a competition based on these new rules. A key component of these rules in the submission of the Electric Submission Form (ESF) which outlines the teams design prior to the competition. This will give the organizers a chance to comment and approve the design before errors are made in rules interpretation.

Volunteers from the Milwaukee Section are encouraged to be involved with CSC. You can review technical papers without attending. You can attend and review technical presentations. You can even ride some of the competitions sleds. Contact the organizer, Jay Meldrum at jmeldrum@mtu.edu (906) 487-3178 for details.

On Thursday, March 7th at 5:00, in MTU's Dow rm. 641, SAE Milwaukee Section we will have presentations from the President of Bosch Engineering, Keith Andrews and one of his lead engineers Troy Schilling.
* Bosch Engineering is the "elite group" of Bosch and does special projects for high end customers with lower production numbers.

SAE Milwaukee Chapter – Monthly Meeting

March 14, 2013 5:30 – 8:30 pm

Host: Johnson Controls, Inc.

Advanced Batteries for Sustainable Transportation

Agenda

PRE-REGISTRATION REQUIRED FOR THIS EVENT, *No walk-ins allowed*

DEADLINE IS FEBRUARY 28, 2013 (No exceptions)

Maximum Attendee Limit 155

Location: Johnson Controls – Power Solutions

Corporate Amenities Building: Rooms A & B

5757 North Green Bay Road, Milwaukee WI 53209

Parking: South Parking Lot (Enter at Johnson Controls sign)

Agenda

5:30 – 6:00	**Registration**
6:00	**Welcome: MaryAnn Wright, VP Technology and Innovation**
6:10	**Buffet Dinner**
6:40	**Keynote Address: David Howell - United States Department of Energy**
6:55	**Tour**
7:40	**Chairman's Remarks and Announcements**
7:50	**Battery Technology at Johnson Controls – Tom Watson, VP of Vehicle Systems**
8:10	**Questions and Answers**
8:20	**Raffle Drawing**
8:30	**Closing and Adjourn**

Dinner Prices

SAE Members/Spouses	**$15.00**
Retirees	**$15.00**
Students	**$10.00**
Guests/Non Members	**$20.00**

MENU:
Chicken Marsala
Oven Roasted Potatoes
Vegetable Medley
Garden Salad
Roll & Butter
Beverage
Dessert

Registration Requirements:

Absolute registration deadline date: February 28, 2013

Attendee information required:

- Full Name
- Company Name
- Country of Citizenship

ID required upon arrival at Johnson Controls, Inc.

- Driver's License, or
- Government issued ID, or
- Passport, or
- VISA

David Howell

Team Leader for Hybrid and Electric Systems
Office of Vehicle Technologies
U.S. Department of Energy
Washington DC

Mr. Dave Howell is the Team Lead for the Hybrid Electric Systems for the Office of Vehicle Technologies, U.S. Department of Energy (DOE) Headquarters, in Washington DC. He is responsible for managing the Department's R&D portfolio of projects related to electric drive vehicle batteries, electric drive components, and vehicle systems analysis and testing. Dave is also the Department's Technology Development Manager for the Electric Drive Vehicle Battery Manufacturing Initiative grants awarded through the American Reinvestment and Recovery Act and serves as the Department's representative to the United States Advanced Battery Consortium Management Committee.

Dave was a member of the research staff of the Oak Ridge National Laboratory (ORNL) in Oak Ridge, Tennessee for 12 years prior to joining DOE in 2003. At ORNL, he served as Project Manager for Aerospace Technologies. Dave also served on active duty for 6 years at Wright Patterson AFB, Ohio and was assigned as the Program Manager for Advanced Materials for Space Structures at the Air Force Materials Laboratory. Dave received a Bachelor of Science degree in Aerospace Engineering in 1985 from the University of Tennessee at Knoxville.

Tom Watson
Vice President, Advanced Systems, Technology & Innovation
Johnson Controls Power Solutions

Career: Tom Watson serves as the Vice President of Advanced Systems at Power Solutions. He is responsible for leading the development of new technologies to support the Start-Stop and HEV application segments which will enable further optimization levels for OEM vehicle systems. In his three years at the company, Mr. Watson has held positions in engineering, technical planning, and R&D.
Prior to joining Johnson Controls, Watson spent two years at ArvinMeritor as Vice President of Engineering and Technical Planning for the Light Vehicle Systems business.
Watson also spent 18 years at Ford, eight of which were focused on leading global systems integration of hybrid electric and fuel cell vehicles. He served as Chief Engineer of the 2006MY Ford Focus FCEV and as Hybrid Propulsion System Manager of the 2005MY Ford Escape Hybrid among other positions.

Awards, Recognition and Service: Watson was named "Engineer of the Year" by *Design News* for his efforts in leading the Escape Hybrid team to deliver best-in-class fuel economy and emissions for an SUV. He has served on various committees and boards throughout his career.

Education and Background: Watson holds a Bachelor of Science in Mechanical Engineering from the University of Illinois and a Masters of Business Administration from the University of Michigan.

Milwaukee Section 2012-2013 Governing Board

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jim.ryan@cat.com

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STUDENT REPRESENATIVES:
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MSOE—Charles Scanlon
UWM—Jacob Berman

Dear Members and Section Friends,

I extend a warm greeting to you during these times of frigid temperatures. I hope you had an opportunity to enjoy the holiday season with friends and family while saving a bit of time to relax. As our activity resumes in February, we encourage you to reserve a few dates in the coming months to attend our Section meetings.

There is a lot of chatter in today's mobility industry regarding the migration to electric drivetrains. As a member of the Milwaukee Section, you have the unique opportunity to learn about the forefront development activity in electric vehicles. We begin with vehicle battery technology in March, hosted by Johnson Controls. An automotive focus on the Chevy Volt in April, followed by an electric aircraft meeting with Sonex.

A new board member, Nerissa Hanson, was recently recruited to our Section to focus on transition of SAE students to professional members. We hope the initiative will grow our section membership and increase participation by younger members.

Thanks again for participating in our section. Together, our increased membership and meeting attendance is enabling us to leverage more resources and sponsorship, providing more value back to you. Please continue your active role.

Best regards,

Jim Ryan

Chairman – Milwaukee Section

Section Sponsors

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