



Milwaukee Section Newsletter

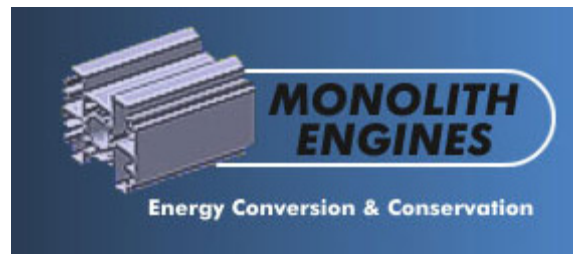
February 2010

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&

Marinette Marine Corporation
Manitowoc Marine Group



Waukesha, WI
Tuesday February 16, 2010

Friction Stir Welding (FSW) & Processing
in Naval Combatant Construction -
John Hinrichs and Bruce Halverson

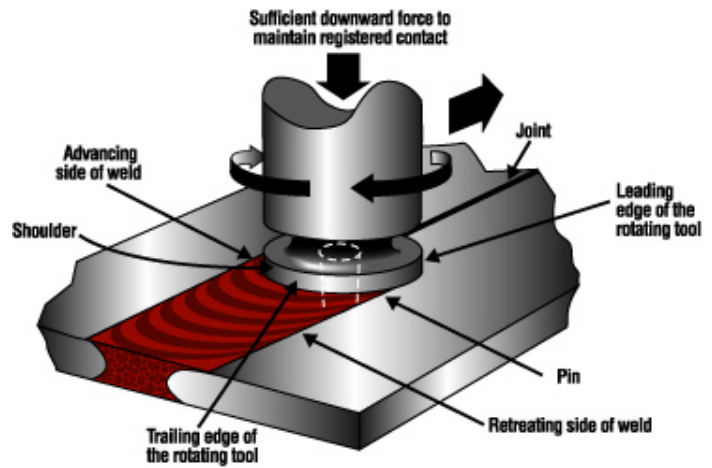
Monolith Engines - Tom Dougherty

Friction Stir Welding (FSW) & Processing in Naval Combatant Construction

Presenters Names: Bruce Halverson, Marinette Marine Corporation & John Hinrichs, Friction Stir Link, Inc.

ABSTRACT

The United States Navy's Littoral Combat Ships (LCS's) represents a new direction in military capabilities and ship design. The lessons learned in friction stir welding of the deckhouse and superstructure extruded aluminum 5XXX series aluminum panels of the USS Freedom LCS #1 and USS Fort Worth LCS#3 will be discussed. Cost reduction ideas such as friction stir weld classifications, proposed inspection of friction stir welds classes to produce lower cost panels and friction stir processing to produce lower cost stiffeners will be presented. The actual experiences with friction stir welding of LCS#1 and LCS#3 deckhouse and superstructure panels have resulted in ideas and concepts to improve the affordability of future LCS and other aluminum ship structures. Discussions of NDT methods as applied to Friction Stir Welding will also be covered.



Biography:

John F. Hinrichs PE, CMfgE, FAWS

John is a founder of the Friction Stir Link, Inc. (FSL) started in April of 2001 and is the principle consultant and owner of The Welding Link beginning in 1995. Prior to forming the Friction Stir Link, Inc., and The Welding Link, Hinrichs was affiliated with A.O. Smith Corporation for more than 40 years. Hinrichs holds fifteen (15) U.S. and three (3) foreign patents related to welding processes. In 1989, he was the first American to be presented the Golden Robot Award at the International Symposium of Industrial Robots held in Tokyo. He received the American Welding Society (AWS) Safety and Health Award in 1998 and was the first recipient of the AWS Robotic and Automatic Arc Welding Award in 2004. His professional activities are extensive and include serving as Director At Large of the American Welding Society, and Chair of both AWS Safety and Health and Technical Papers Committees. His current affiliations include ASME, AWS, ASM International, RIA-SME, and IIW.

Hinrichs received his degree in Mechanical Engineering from Marquette University in 1956 and his master's in Metallurgical Engineering from the University of Wisconsin in 1964. He is a registered Professional Engineer in Wisconsin, a Certified Manufacturing Engineer, and a Fellow of the American Welding Society.

Bruce Halverson

Bruce is the Quality Assurance Manager of Marinette Marine Corporation. He is responsible for all hull structure including welding, machinery, electrical and outfitting. He is also the Corporate ASNT Level III Examiner in four Nondestructive testing methods. Bruce has been an AWS Certified Welding Inspector since May 1978. He attained Level III status as an American Society of Nondestructive Testing Examiner in 1979 for Radiographic, Ultrasonic, Penetrant and Magnetic Particle methods. He has 34 years of shipbuilding and general fabrication experience including AWS, ASME, and DoD standards. He was the first to pioneer Ultrasonic testing with a real time record on VHS tape. He has served as the Welding/NDT Engineer for 41 major vessels totaling over 1.75 million tons of steel and aluminum. He has also run his own company in NDT and Weld Consulting. He is known for pushing the technology in both welding and nondestructive testing to lower costs while providing quality improvements during the process. He is currently pioneering a pulsed Radiographic Computed Digital Imaging System to lower worker exposure during the process of volumetric inspection on thin structures where Ultrasonic acceptance standards currently do not exist.

Bruce received his A.S. Degree from Madison Area Technical College – Industrial Welding Technology 1974.

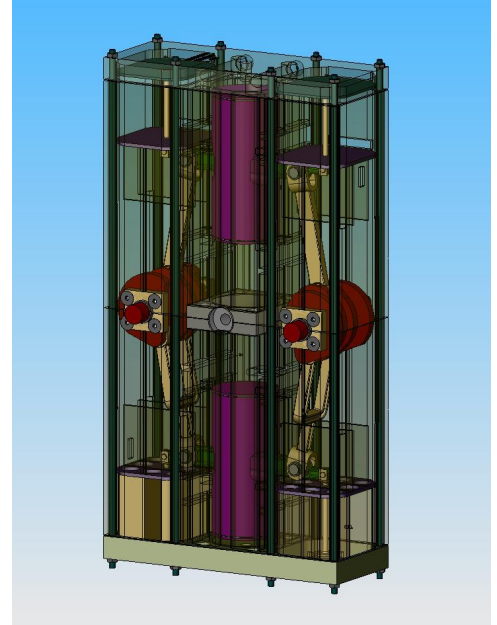
Monolith Engines Inc.

Presenters Names: Tom Dougherty

ABSTRACT

MEI is an energy conservation and conversion consulting company presently assisting 6 major companies in their product development concentrating in the battery, capacitor and energy generation field. The presentation will be on the design and development of new patented method of energy transfer in engines, pumps and compressors. The Monolith Engine is unique in the way it transfers power from the newly designed piston heads through the piston rods to the dual crankshafts. With this type of transfer, the pistons travel straight up and down, significantly reducing friction. Thinking "outside the cylinder" was the way to accomplish these goals. This design should be able to reduce larger engines dramatically in both is size and weight.

The presentation will cover the 18 year history of the engines development from the Gen I design to the present Gen II design. Tom will also talk about the present oil-less gas two-cycle to the proposed four cycle while also discussing the remaining challenges, or Tom's puts it, opportunities of this new construction. The presentation includes an actual computer building of the entire engine in Solid Works and the first two prototypes build of the Gen I design.



Biography:

Tom Dougherty

Tom is the President of Monolith Engines Inc. in Waukesha Wisconsin. Prior to MEI Tom was Director of Advance Battery and Hybrid Systems at Johnson Controls Inc. Many of you may remember about 5 years ago when Tom hosted the tour and presented at JCI.

Tom presently has 45 patents in 6 different fields of technology including: software, electronics, battery design, chargers and test equipment, system and equipment development, alternators and engine design.

--- EVENT AGENDA ---

| | |
|----------------------------|--------------------------|
| Tour: | 4:30 pm |
| Registration: | 5:45 pm |
| Dinner: | 6:00 pm |
| Friction Stir Link: | 6:30 pm |
| Monolith Engine: | 7:30 pm – 8:00 pm |

--- DINNER ---

DINNER PRICES:

| | |
|-------------------------------|----------------|
| SAE Members / spouses: | \$20.00 |
| Retirees: | \$15.00 |
| Guests / Non-members: | \$25.00 |
| SAE Students w/ID | \$10.00 |

--- MENU ---

Buffet: Chicken Marsala, Beef Bourguignonne, Garlic Mashed Potatoes, Green Bean Casserole, Salad
Desert: Fruit & Berry Parfait
Beverage Table: Coffee – Decaff Coffee, Hot Tea

Registration:

Only pre-payments made with a **charge card** can be completed online via www.milwaukeeesae.com

Retirees, students and members without web access may register by phone on the SAE Registration Coordinator – Jim Ryan (262) 636-1634.

[Registration deadline: Sunday, February 14, 12:00 p.m.](#)

Directions to: *Friction Stir Link - Tour*

**19775 Sommers Dr
Brookfield, WI 53045**

Take exit 297 off I94 toward US-18/WI-164. Take a slight right from the exit ramp onto N Barker Road. Take the first right onto W Bluemound Road/US-18E and go about 1/4 mile to intersection with Janacek Road and turn right. Go about 2 blocks to the intersection with Sommers Drive and turn Right. Go to the **far end** of Sommers Drive (2 blocks) to the long building with the letters BFG on it. Turn left at the **end** of Sommers Drive. Enter the Friction Stir Link building at the southeast corner of the building.

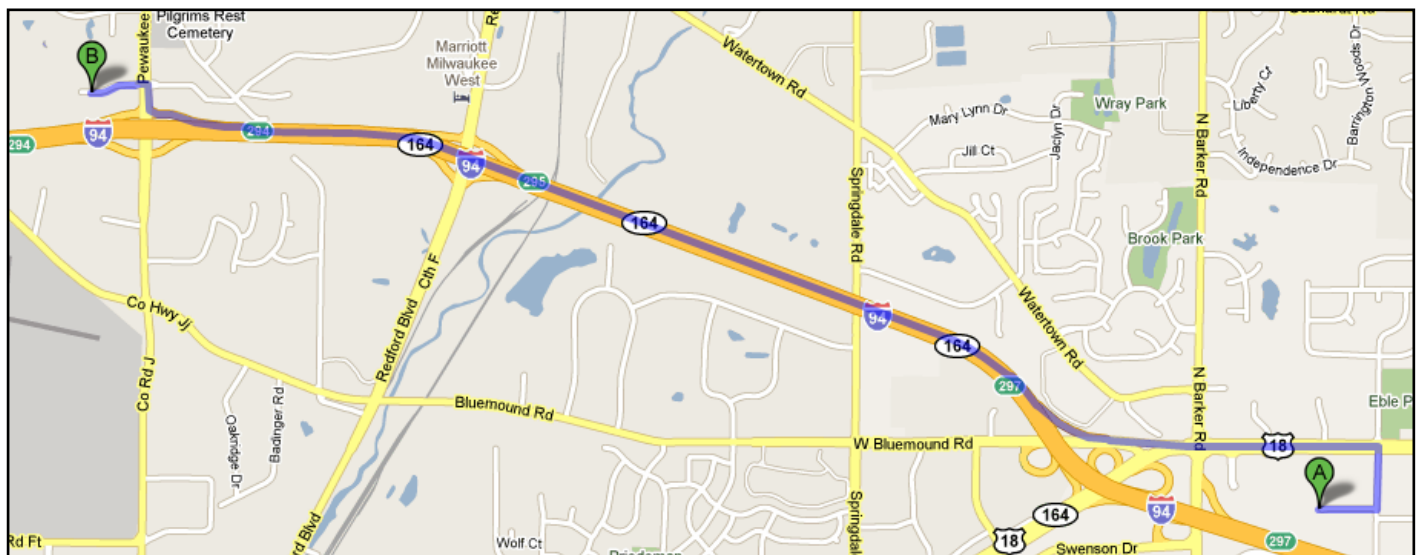
Directions to: *Radisson - Presentation*

**N14 W2414 Tower Place
Waukesha, WI 53188**

Leave Friction Stir Link by heading east on Sommers Drive towards Janacek Road. Take a left at Janacek Road. Take the first left onto W Bluemound Road/US-18W. Take the ramp onto I-94W. Take exit 294 for WI-164 North. Turn right at Pewaukee Road/164 north. Take the first left onto Stonridge Drive. Continue onto Tower Place.

Once inside the Radisson hotel, the SAE meeting will be held in the Lake Nagawicks and Lake Okauchee rooms.

B: Radisson Hotel



A: Friction Stir Link

Future SAE-Milwaukee Programs:

March 15th-20th Clean Snowmobile Challenge (Houghton, MI)



The SAE International Clean Snowmobile Challenge (CSC) is an engineering design competition for college and university student members that challenge engineering students to reengineer an existing snowmobile to reduce emissions and noise. Their modified snowmobiles will compete in a variety of events including: emissions, noise, fuel economy/endurance, acceleration, handling, static display, cold start and design.

March 24th Midwest Composite Technologies (Hartland, WI)

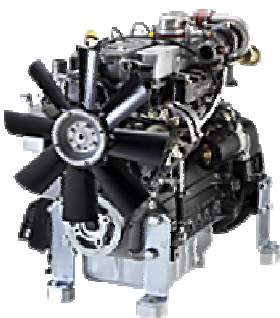
Over the past 25 years Midwest Composite Technologies, Inc. is home to some of the latest manufacturing technology available including: Rapid Prototyping, CNC Machining Centers, Injection Molding Machinery, RIM Presses and Design Software. Their customer base includes leaders in the medical, automotive, agricultural, marine, electrical and recreational industries.



Their in-house tool design, molding, manufacturing capabilities, can offer internal control of a project's requirements from beginning to end or anywhere in between. They can streamline a manufacturing process and deliver high quality, cost competitive, finished products with minimal lead times. They offer custom solutions varying from rapid prototyping, trade show or concept models, tooling or low to mid-volume production.

Our spirit of innovation and commitment to elevating our standards of quality and service has contributed to our progressive growth.

April (date TBD) Kohler Engine



Developments are underway to bring the SAE Milwaukee Section to Kohler Engine for a presentation and tour of their facility. This is a great opportunity to learn about one of Wisconsin's engine manufacturers. More details will be shared in the March newsletter.

Milwaukee Section 2010-2011 Governing Board

CHAIRMAN:

James Ryan
Modine Manufacturing Company
email: j.w.ryan@na.modine.com
Work: (262) 636-1634

VICE CHAIRMAN:

Josh Rayeske
Strattec Security Corporation
email: jrayeske@strattec.com

SECRETARY:

Wayne Richter
Heraeus GmbH – Exhaust Catalysts
email: richterway@sbcglobal.net
Phone: (262).377.8145

TREASURER:

Bernard Krauska
DRS Technologies
email: Krauska@execpc.com
Phone: (262) 442-7754

PAST CHAIRMAN:

Joe Sagat
Modine Manufacturing Company
email: j.g.saga@na.modine.com
Work: (262) 636-1362

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MEMBERSHIP/ COMPANY REP:

Tony Grant
Hamlin
email: tony.grant@hamlin.com
Work: (920) 988-6895

A WORLD IN MOTION (AWIM): Education

Patrick Murray
Muskego High School
email: pmurray@mnsd.k12.wi.us
Work: (262)971-1790 x4168

CAREER DEVELOPMENT

Dale Wiza
Professional Engineering Placements, Inc.
email: dale@engineeringplacements.com
Work: 414-807-9663

STUDENT REPRESENTATIVE

Cody Kreuger
UW-Milwaukee
email: cjk4@uwm.edu

AT-LARGE

Ken Traub
Bosch
email: ken.traub@boschrexroth-us.com
Work: 262-939-4332

COLLEGIATE ADVISORS:

Glenn Bower, PhD.
UW-Madison
email: grbower@facstaff.wisc.edu
Work: (608) 263-7252

Chris Damm, PhD.

Milwaukee School of Engineering
email: damm@msoe.edu
Work: (414) 277-7543

Jim Rice, PhD.

Marquette University
email: james.rice@marquette.edu
Work: (414) 288-5405

Dear Members and Section Friends,

Many thanks to HB Performance Systems for delivering a fantastic January Section meeting. The interest in HB was overwhelming as the meeting attendance grew to over 90 attendees. Ironically, nothing could stop the brake supplier from providing an outstanding tour of their manufacturing line, test lab, and showroom.

The Milwaukee Section website is up and running again thanks to collaboration from Cara Kazda and support from Ken Cook Company. Please visit the new website at www.milwaukeeesae.com to easily download monthly newsletters and register for section meetings. We welcome your feedback as we continue to improve the website's format and content.

Note the March 15th-20th dates for the Clean Snowmobile challenge held at Michigan Tech University in Houghton, MI. There will also be a Milwaukee Section meeting during the event. Don't miss this opportunity to interact with the student teams, in addition to riding the snowmobile trails through scenic Copper Harbor. Find out more information on the CSC by visiting <http://students.sae.org/competitions/snowmobile/>.

We hope to see you there!

In addition to the Family Night meeting in May, the section will be hosting an Open House board meeting. This is your opportunity to engage with the section in a roundtable discussion so that we can better serve our membership. We will also give recognition to the company representatives who help communicate the section's activities within their respective companies.

Regards,

Jim Ryan
Chairman – Milwaukee Section



Meeting Sponsorship

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