

Engineers' News

September 2015

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www.FortWayneEngineersClub.org

Open Vice President Officer Position for the 2015-2016 Membership Year

The FWEC is still searching for a volunteer to fulfill the Vice President position for the 2015-2016 membership year. The vice president assumes the role of president the following membership year. Officers and board members are expected to attend monthly board meetings that generally occur on the first Tuesday of the month on the Indiana Tech campus.

Help determine future FWEC tour venues and shape the direction of the club! More information about the board can be found in the [FWEC constitution](#) or by contacting us at info@fortwayneengineersclub.org.

September Tour



Get Fresh Farms

[9823 Ardmore Avene, Fort Wayne, IN 46809](http://9823ArdmoreAveFortWayneIN46809)

Thursday September 24th at 5:00 PM

The first tour of the 2015-2016 membership year will be [Get Fresh Farms](#). Get Fresh Farms is a locally minded aquaponics operation that is focused on sustainable farming that provides fresh produce and fish year round. The tour cost of \$2 will be paid by the FWEC for all current members; however, the tour will be \$2 for any guests.

Get Fresh Farms was started as a project to supply a local restaurant with fresh vegetables and fish year round. They chose aquaponics because it is a low-impact food production system that combines recirculating aquaculture with hydroponics in a symbiotic relationship. At Get Fresh Farms they are developing a sustainable model, mimicking natural processes to sustain a living and healthy food ecosystem. They are committed to harvesting high quality food, in an ecologically conscious mindset. They learn from our system daily and are constantly striving to expand its capabilities.

In a nutshell, this means that they raise fish and plants in a closed-loop system. The fish provide the nutrients for the plants. The plants clean the water for the fish. And since fish don't like pesticides and plants don't like antibiotics, they don't use either.

Membership Dues

Fiscal Year 2016 is now upon us and it is time to ensure that all members dues are current. Dues to the FWEC have remained constant in our ever changing economy at \$10/year for full and associate members and only \$5/year for student members. Review the address label on the mailed newsletter; anything less than FY16 requires payment to be current.

[Dues paid online](#) are subject to an additional fee of \$1 for processing.

Northeast Indiana DiscoverE

Academic Award Donations



[Northeast Indiana DiscoverE](#) is a standing committee of the FWEC. Northeast Indiana DiscoverE is accepting contributions toward its Academic Awards that are given to regional engineering students during the Engineers Week banquet each February. Please consider a donation to this fund in addition to your FWEC membership dues.

2015-2016 Membership Year FWEC Board

President: Rod Vargo

Vice President: Open

Treasurer: Ryan Stark

Secretary: Elizabeth Garr

1st Year Board Members: Marna Renteria & Ellsworth Smith

2nd Year Board Members: Mike Magsam & Jack Philipot

3rd Year Board Members: John Magsam & Rob Cisz

Northeast Indiana DiscoverE Chair: Jake Dinius

Resident Agent: Ryan Stark

Board positions are crucial to the planning of tours and events for the FWEC. Please consult the [FWEC constitution](#) or contact us at info@fortwayneengineersclub.org for information on specific duties on board positions.



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FWEC Board Meetings

Fort Wayne Engineers' Club board meetings are open to all FWEC members. The next FWEC board meeting will be Tuesday October 6th at 7:00 PM. Board meetings are held on the [Indiana Tech campus in the Academic Center](#) in room ACC-201.

Advertise in the Engineers' News

The FWEC will be selling advertising space within the Engineers' News. Advertisements are \$10 per issue and limited to ½ page of content. For submissions please contact info@fortwayneengineersclub.org.

June Tour History - Stark RV12 Plane

FWEC President Rod Vargo provides our May tour history.

The 2014-2015 year was closed out with a tour and social at the home of Jim and Kathy Stark.

The centerpiece of the affair was an [RV12 aluminum and rivet sport plane](#) that Jim has been assembling for about two years from a progressive set of kits. The expanse of unpainted aluminum wings, tail cone, and empennage was engaging. The wings are extremely light for a two-seat aircraft, and easily removed. Wings and fuselage fit on a light trailer, relatively protected from conventional risks on the ground and just compact enough for storage in most home garages. Almost 20' long,

the aircraft weighs 740 lb and grosses at 1320 lb, just enough for full fuel, the couple, and their dog.

The RV12 uses a standard sport plane Rotax 100 hp four-stroke motor made in Europe, sized for a standard climb rate of 900 fpm and ceiling of 13,800' (i.e., the full range of light aviation without oxygen or cabin pressure). It has reduction gears to slow propeller rpm, automatically adjusts the air-fuel mixture, and prefers ordinary unleaded automotive gasoline. Suggested cruise speeds of 116-131 mph (101-114 kt) provide advertised ranges of 614-555 miles from a 20 G tank behind the pilot. A 50 lb baggage area behind the passenger is just enough for their dog. They have been invited to operate from a neighbor's grass runways and hangar.

Traditional zinc chromates have been displaced by zinc phosphate, where needed. Jim plans to paint their aircraft, but warns that minor weight of paint on control surfaces can lead to dynamic instability, such as on the early model V-tail Beech Bonanzas. Over 5% of the V-tails had fatal structural in-flight failures (i.e., broke apart in flight).

Jim started Blackstone Laboratories, which is now run by son Ryan (FWEC Treasurer). Blackstone Laboratories evaluates used engine oils for wear and other factors. They receive oil samples from around the world and are one of the few companies that serve aviation, being pilots themselves for decades. Jim and Ryan feel the hallmark of their success is genuinely individualized evaluations and clear reports. Decades of experience, fast turn-around times, very low fees, and available phone services also help.

Neither feels that there is much difference between engine oils for everyday use other than price.

Jim and Kathy's classic old and well-maintained barn attracted much attention. Folks were aware that keeping a barn standing required a lot of hard work and expense. The hayloft surrounded us with interesting old beams and woodwork. The basement level, originally for livestock, revealed that much had been done to maintain drainage, replace deteriorated wood at ground level, and reinforce an entire wall on the uphill side (originally allowing wagon access to the hayloft).

Sincere thanks to Jim, Kathy, and Ryan for a memorable spring evening in the countryside, concluding our 2014-2015 year.

FWEC Membership

The FWEC exists through funding of its membership. Please forward your copy of the Engineers' News to prospective members and encourage their attendance at tours. Remember, the FWEC is the best deal in town, annual membership is \$10. We offer free monthly tours September through May. Please be sure to recommend FWEC membership to your colleagues and friends.

May Tour History - BAE Systems

FWEC President Rod Vargo provides our May tour history.

On May 21, twenty people toured the new BAE Systems building under construction near the main airport. Our hosts were engineers Scott Swymeler and Mark Maffey. Scott is the lead person representing BAE Systems during design and construction. Mark manages supply chains for a wide range of fasteners used in assemblies, including quality and defects.

This is a "build to suit" project in which the contractor will continue to own the land and building, leasing it to BAE Systems. General Electric owns the current BAE facility on Taylor Street and wishes to sell its aging campus in Fort Wayne. A flood in upstate New York sent insurance costs skyrocketing for BAE's older facilities with substantial amounts of wood in them. Those two primary reasons provided impetus to address inefficiencies inherent in BAE's Taylor Street location, originally built in 1942 for manufacturing P-38 aircraft turbochargers. Currently, brick structural walls limit the width of manufacturing lines. Massively thick wooden floors intended to dampen vibrations now restrict utility upgrades and flexibility.

The new location also provides many advantages for a steady stream of business visitors and for transportation in general. Critical parts needed immediately for grounded airliners in Chicago still seem to move by ground-based couriers rather than through FWA. The new building design also allows for better separation of secure and less restricted spaces, such as brief meetings, access by outsiders to the cafeteria, and even getting to a restroom. The cafeteria hopes to serve surrounding businesses and the public.

The new facility will be 333,000 square feet with provision to easily add another 100,000. Multiple building and parking outlets will allow rapid change of shifts for nearly 1,000 employees. A storage area down one entire length of the building was doubled in size, versus projected need, because old equipment must be stored to service products still in use after as much as 60 years. BAE Systems evolved as a slow conglomeration of smaller companies and still economically relies on "leaning out" cost inefficiencies inherited from its faltering acquisitions. Lean manufacturing is a key reason for employing engineers and featured prominently in the new building design.

This BAE location primarily serves nonmilitary customers, particularly in aviation. A typical product is electronic boxes which monitor and often automatically control jet engines. The units are usually attached to each engine and can range up to 37 layers (essentially circuit boards) deep. Each layer has subunits on it which tend to be miniaturized on average to the size of a pepper grain. Technology is moving towards having those subunits manufactured as an embedded variation in the layer itself.

The new "manufacturing floor" is a vast flexible space around a central core of rooms for quality control. The periphery of the huge flexible space has multiple locker rooms for employees, a fairly small shipping/receiving complex, a utility room, storage, a somewhat large initial prototyping space, an administrative and visitor area, and the cafeteria. The key idea is sufficient room for manufacturing lines to expand and contract as needed, share or separate operations as needed, and integrate prototyping with production on an ongoing basis. Products can be individual items, or runs of many thousands of units sharing any number of identical, related, or unique subunits.

Computerized designs on file allow somewhat rapid reproduction of specific components as the need arises. The sheer range of potential parts (from a conglomeration of previous companies and uses) almost precludes stockpiles, although a few popular items are kept on hand. Markings and even layout of components, such as an aircraft control panel, can vary by nationality. Materials are received as needed and moved rapidly onto the production floor. Even items as seemingly basic as fasteners now come in too many ever-changing variations to keep on hand, and strict quality control of them is delegated to suppliers. BAE Systems products are quality controlled throughout production, subjected to final checks, and shipped out almost immediately.

The manufacturing space has electrically grounded floor tile with extensive copper grounding extending from each structural support post and from the peripheral wall foundations. Unwanted static discharges can readily fry electronic subcomponents.

Building code now requires eyewash stations to provide warm water (+/- a few degrees F) within seconds and maintain it. On-demand water heaters and other factors at 27 stations cost approximately \$2400 each.

Utilities are overhead for flexibility on the manufacturing floor. These include various electrical power supplies, compressed air, gaseous and liquid nitrogen, and chilled water. HVAC is by conventional overhead units in the high ceiling. The utility room was quite complete and spacious, but modern technology has shrunk these rooms and their equipment to a relatively small area. A relatively small cooling tower and low transformer are outside. High-speed digital cables throughout the building were mentioned in passing.

The roof is slightly arched, four feet higher in the center, with multiple ways to shed water. The roof trusses are overlain with traditional steel panels. The panels are crisscrossed by two layers of foam insulating panels, sealed under a thick waterproof membrane. Expansion joints are an edge of roof section over-riding another.

The ceiling is twice as high as needed because the builder-owner wants it usable as a warehouse in case BAE Systems moves on. This introduced a potential problem with poor heat distribution between floor and ceiling, which will be addressed as needed with ceiling fans and/or ducts.

The high ceilings were painted a light color to blend with ever-changing utilities. An open network of supports for ceiling panels (but w/o the panels) provides the false impression of a lower ceiling.

Vertical panels, called smoke shelves, on some roof trusses are required by building code to act as dams to limit the spread of smoke and heat in case of fire. Skylight-like structures would open automatically. Automatic sprinklers were installed after the tour.

Extensive use of glass was intended to offset a 24/7 lack of sunlight inherent in the old building, but already some floor to ceiling wall panels need some kind of covering. LED lighting had a payback time of less than 2 years, except a 43 year ROI calculated for outdoor conditions in the vast parking lot.

This was a most interesting tour which revealed the engineering embedded in our everyday lives, and the extent to which nostalgic buildings become hopelessly outdated. The drive to start anew in fresh "cornfields" really brings home the problems of contamination at former locations from even original building materials such as wood preservatives in the floors, chalking from lead paints, arsenic in tinting, and a host of other heavy metals from routine zinc chromate paints.

Northeast Indiana DiscoverE Committee Meeting



[Northeast Indiana DiscoverE](#) is a standing committee of the FWEC. The committee will meet on Monday September 14th at 12:00 PM at [MSKTD & Associates](#) in the Main conference room. This is a planning meeting to discuss the needs of DiscoverE for the upcoming year.

Northeast Indiana DiscoverE functions include:

- [Middle school bridge competition](#)
- [High school bridge competition](#)
- Academic awards for college students
- Citizen Engineer award for professionals
- Engineers Week banquet
- And more...

Fort Wayne Astronomical Society



Fort Wayne Astronomical Society, Inc.

P.O. BOX 11093 • FORT WAYNE, IN 46855 • USA 1959
FortWayneAstronomicalSociety.com

The [Fort Wayne Astronomical Society](#) will have their next general meeting on Tuesday September 15th at 7:30 pm at the [University of Saint Francis Schouweiler Planetarium](#).

The Society conducts public observing sessions at [Jefferson Township Park](#) every clear Saturday evening, from April through November, conducted by trained and experienced Society members. Public observing starts 1-hour after sunset and continues for two hours.

Fort Wayne Coder Dojo

[Fort Wayne Coder Dojo](#) is technology club for kids of all ages but is now comprised of +/- 10 to 14 year olds who share an interest in Minecraft modifications. The next club meeting will take place on Saturday September 19th at 1:00 on the [Indiana Tech campus in the Zollner Engineering Center](#) room Z103.

Northeast Indiana Chapter Project Management Institute



The [Northeast Indiana Chapter of the Project Management Institute](#) will have its next chapter meeting on Wednesday September 23rd.

Ryan Ripley presents "HELP!!! The Scrum Master 'IS' the Impediment!"

The change in mindset necessary to become a servant leader is incredibly hard for a scrum master who comes from a command and control background. As a newly minted Professional Scrum Master (PSM I), I returned to my team excited and ready to get underway with a scrum adoption. Unfortunately, I had not fully grasped the concept of servant leadership. Instead of being a change agent, I was an impediment.

My own cautionary tale is unfortunately a common one. Well meaning people with 2 day certifications can do a lot of damage to a new scrum team. Attendees will learn about the difficulties of becoming a scrum master, how scrum team members need to embrace the scrum values to promote healthy team practices, and that even certified scrum masters can lose their way. We will tackle questions such as:

- What makes the transition from project manager to scrum master so difficult?
- How should a scrum master approach a transition from project manager to scrum master?
- What are ways that a scrum master can embrace a servant leadership mindset?
- What are the scrum values and how do they guide resolving this type of impediment?
- What steps can a team take to resolve the scrum master impediment?

Attendees will walk away with practical ways they can inspect their own scrum practices to ensure they do not become impediments to their team's success.

[Register now](#) and meet with us at Don Hall's GuestHouse. Networking begins at 5:30 PM, dinner will be served at 6:00 PM, chapter announcements at 6:45 PM and the presentation begins at 7:00 PM. Reservations end 9/20/2015.

- NEIC chapter members: dinner and speaker-\$20, speaker only-free
- PMI Hardship Provision or PMI Student Membership-\$10
- Non-members: Dinner and speaker-\$30, Speaker only-\$10

Maumee Valley Blacksmiths



The Maumee Valley Blacksmiths, part of the [Maumee Valley Antique Steam & Gas Association](#), meet on the 2nd Saturday of each month in the blacksmith building at showgrounds of [Jefferson Township Park](#), New Haven and also meet on the 4th Saturday of each month at the [Solomon Farm](#).

For more information please contact John Schamber via e-mail at: fwheelman@hotmail.com.

Autodesk Design Software – Free to Students and Teachers!

FWEC secretary notes that Autodesk, an engineering and maker software firm, has made their design software available in full versions to students and teachers. For more information and software downloads visit: <http://www.autodesk.com/education/home>.

Students, Are you an aspiring designer, engineer, digital artist, maker, other?

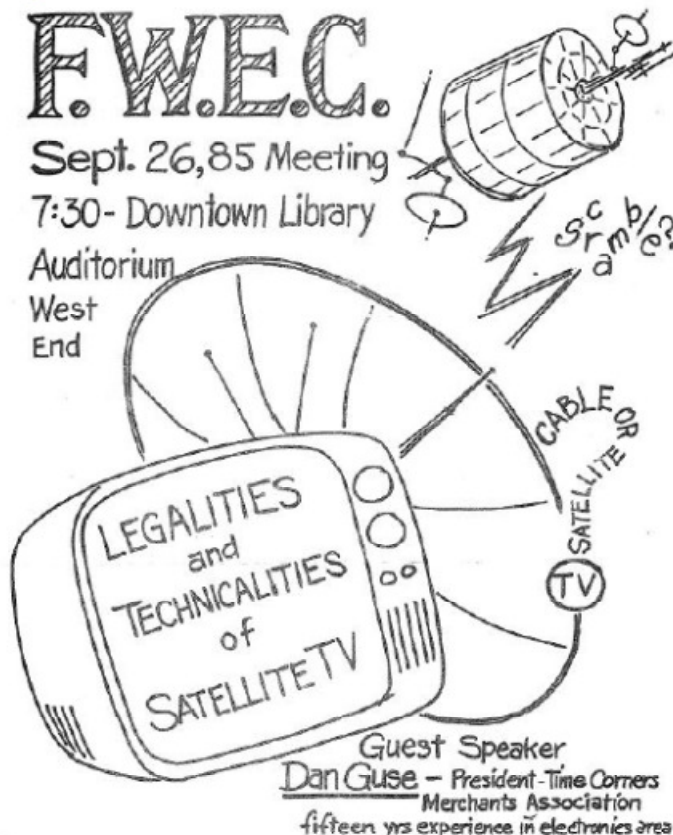
Autodesk believes in you, so we're giving you free access to the tools you need to succeed.

Teachers are eligible for free access to Autodesk software and teaching resources to help students succeed academically and in their future careers.

Engineers' News Past

The FWEC has a significant history; Treasurer Ryan Stark and his wife were able to find past Engineers News documents dating back to 1938! Here is an excerpt of the past newsletter (a scanned copy of the entire newsletter is available through the FWEC website):

September 1985



September regular meeting features: Satellite TV Presentation - September 26th at 7:30 PM Downtown Library 1st Floor Auditorium

Dan Guse, owner and operator of the video shoppe at Time Corners, will be the speaker, and will cover both the legalities and the technicalities of satellite TV, including whether the controversy between satellite TV and cable TV is real or

imagined.

Dan holds an associate's degree in electronics and has been involved in the area for about fifteen years; earlier in coronary care equipment and computers for the last three years he has been with the video shoppe. He is currently President of the Time Corners Merchants' Association.

Dan will have recently returned from a dealers meeting in Nashville, TN with a one day seminar on proposed scrambling of certain movie channels.

[Note that the above artwork was created by current FWEC member Jim Delaney.]

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You are currently subscribed to this Newsletter

Our mailing address is:
Fort Wayne Engineers Club
6316 Kiwanis Drive
Fort Wayne, IN 46835