

Engineers' News

September 2017

Vol. LXXV No. 1

www.FortWayneEngineersClub.org



Find us on 

September Tour



Vera Bradley

[Vera Bradley Corporate Headquarters](#)
[12420 Stonebridge Road, Roanoke, IN 46783](#)
Thursday September 21st at 5:30 PM

Join the FWEC across the street from the GM Plant at [Vera Bradley Corporate Headquarters, 12420 Stonebridge Rd, Roanoke, IN 46783](#). This tour starts at 5:30 PM so DO NOT be late or you will miss the tour group. Vera Bradley engineers will be leading a tour for the FWEC to show us not only their beautiful and functional products, but also the engineering challenges they face to make customers happy.

October Tour



[Sure-Trac Trailers](#)

[1 Novae Parkway, Markle, IN 46770](#)

Thursday October 26th at 7:00 PM

Sure-Trac Trailers is the fastest growing open trailer product line in the US. A locally owned company with plants in both Markle and Columbia City, they make several different types of trailers including hydraulic dump trailers, landscape/utility trailers, car haulers, heavy equipment haulers, enclosed trailers, and as well as any type of custom trailer you might need. Their degreed engineering staff are highly qualified and motivated individuals equipped with the latest engineering 3-D Solid Modeling software. Our tour will feature their automated assembly line, where they use the latest in lean manufacturing practices.



FY18 FWEC Board Opening

The FWEC is looking for a Secretary trainee for the FY18 (2017-2018) who will then transition into the Secretary role in FY19 (2018-2019). Please contact [Elizabeth Garr](#) if interested in learning more about the position.



Andrews Elementary School Request for Help

Andrews Elementary is now an active Project Lead the Way (PLTW) Launch school. This means all 400+ of our students, kindergarten through fifth grade, will be solving STEM based problems. Our new focus on Science, Technology, Engineering, and Mathematics is meant to provide students with real-world problems in which they must actively engage in ways to solve them using an open-ended approach. PLTW challenges students to develop their own solutions to problems they could see in the future. We are seeking experts in each of these fields to come into our classrooms and share how they work through problems they face on a daily basis. If this is something you are interested in, please contact Teresa Johnson at tjohnson1@hccsc.k12.in.us. Thank you!

Teresa Johnson, 4th Grade Teacher
Andrews Elementary, (260) 786-3021

FY18 Membership Year FWEC Board

President

- [Bharat Rajghatta](#) (260) 615-1869

Vice President

- [John Magsam](#) (260) 482-2843

Treasurer

- [Jon Cook](#) (260) 479-7672

Secretary

- [Elizabeth Garr](#) (260) 486-0158
- **Seeking Secretary trainee!!**

1st Year Board Members

- [Dave Gordon](#) (260) 693-2167
- [Ryan Stark](#) (260) 456-0809

2nd Year Board Members

- [Rod Vargo](#) (260) 416-0986
- [Craig Welch](#) (260) 241-5138

3rd Year Board Members

- [Marna Renteria](#) (260) 744-3407
- [Ellsworth Smith](#) (260) 637-6070

Resident Agent

- [Ryan Stark](#) (260) 456-0809

Membership & Contact Committee Chair

- [Dave Schaller](#) (260) 486-7610

Northeast Indiana DiscoverE Committee Chair

- [Rob Cisz](#) (260) 435-0409

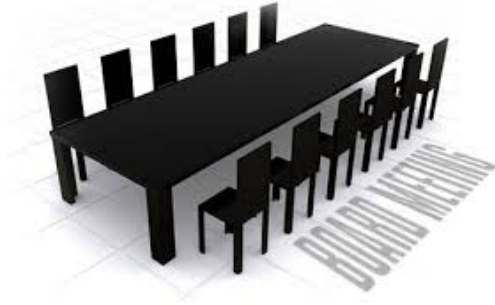
Board positions are crucial to the planning of tours and events for the FWEC. Please consult the [FWEC constitution](#) or contact us at info@fortwayneengineersclub.org for information on specific duties on board positions.

New FWEC Members



Welcome Full Member Travis Weigold, BS MET

FWEC Board Meetings



Fort Wayne Engineers' Club board meetings are open to all FWEC members. The next FWEC board meeting will be Tuesday October 3rd at 7:00 PM. Board meetings are held on the [Indiana Tech campus in the Academic Center](#) in room ACC-201.

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.

Advertise in the Engineers' News

The FWEC provides 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.

Joint Tour History

SAE FORT WAYNE

An SAE International Section



Tour summary provided by Rod Vargo.

About forty people attended a social, tour, and buffet at Sweet Cars which was hosted by the Fort Wayne Chapter of SAE on May 11, 2017. Sweet Cars proved to be a complex business.

It is a frequent venue for formal meetings and other gatherings of businesses, clubs, and informal groups including motorcycle enthusiasts. The staff of Sweet Cars indicated that they wish to avoid sales pressure and have people feel comfortable visiting to enjoy being around the vehicles.

The showroom has shelves of high quality cleaning products, maintenance supplies, and some branded items. Sweet Cars cleans and details many everyday vehicles for people who want more thorough cleaning, and/or detailing without shortcuts such as transient spray-on shines. Hand polishing is also available instead of careful orbital machine buffing. Sweet Cars staff happily related that busy families with sports-team kids regularly use their detailing service. The service costs \$350 each time or \$1,000 for four detailings. One of our participants volunteered that he utilizes the four-visit arrangement for his wife's car, to good effect.

Part of Sweet Cars' business plan is to stock a considerable range of pre-owned vehicles in exceptionally good condition from "below \$35,000" to over \$100,000. Many of the vehicles were decidedly appropriate for our needs.

Sweet Cars is known for antique and exotic cars. They are part of multiple sales and service networks for new, pre-owned, and car collections worldwide including some dealer franchises and Hemmings Motor News. A few of the exotics in their showroom were new. We sat in and examined several Tesla vehicles, which have been undergoing successive changes in features and affordability. (Ed. note: A childhood friend, a free-lance electrical engineer in his late 50's, recently bought an early-model Tesla and reports zero travel fatigue from 200-400 mile drives, much better personal productivity.)

The number of workshop bays at Sweet Cars has steadily increased and appeared fully utilized. Much of it is used for achieving and maintaining like-new quality for their own vehicles and for collectors in our region. Some work is done for individuals elsewhere inside or outside the United States.

Another major segment of business is restoring and then protecting paint, plastic,

and glass. Sweet Cars recruited and maintains specialist craftsmen in vehicle detailing and surface restoration (analogous to the specialists that FWEC encountered in our tour of Sweetwater Sound's music business). These individuals are literally among the international elite in these arts, with links to the Hemmings Motor News organization.

High quality waxes are available, but last for only hours at high speeds or for a few months indoors. The industry has moved to liquids which develop into long-lasting crystal-clear and super-slick polymer films, or into silicon-titanium based "ceramic glass." These require a lot of initial surface smoothing and preparation, then as many as six layers of treatment. Either can endure for as long as decades.

The polymer films are flexible and can resist chipping/scratching from rocks or even mild fender-benders. Sweet Cars has found that these films can be much more cost effective in the long run than trying to match, reapply, or restore exotic paints.

The ceramic glass is somewhat brittle but sheds dirt, moisture, and air resistance. It greatly speeds and enhances the cleaning of off-road vehicles and sports cars. Sweet Cars has treated many Indy racing cars (on site) and some business jets (off site) due to a reputed 3% increase in speed capability. Windshields and other glass look like new. They have treated the entire exterior of many motorcycles to radically reduce cleaning time and effort required for show-quality appearance.

They also have a light room with turntable for photographing vehicles accurately, including close-ups of blemishes and other deficiencies. It is completely enclosed and equipped with a special photographic window to eliminate unwanted reflections. Many exotic cars are sold and shipped before the buyer physically sees the vehicle. Honesty and accuracy are essential to Sweet Cars reputation and ability to remain in business. To their knowledge, all such sales have been positive so far.

Some décor was added to the photography room to add scale and context. Otherwise, the pictures often appeared photoshopped and could have been images of children's toys. With few exceptions, Sweet Cars photographs vehicles solely for their own needs. They also hesitate to do formal appraisals, with exceptions.

They offer inspection, routine maintenance/repair work, and/or advanced levels of customer service. The impressive range of brands, models, and ages of vehicles at Sweet Cars understandably limits the amount of special mechanical knowledge and equipment that is feasible onsite. That is one of the reasons for them to be part of many networks. But, Sweet Cars itself offers combinations of ability and care wanted by a range of customers. These include busy households with fairly ordinary vehicles and routine needs.

Other clients were said to have up to 40 vehicles in their collections. The substantial number of work and holding spaces at Sweet Cars were filled with a range of vintage and modern examples, many in immaculate condition including tires and engine compartments.

While not openly discussed, another function of Sweet Cars is indoor housing of vehicles, mostly elsewhere, all apparently with old-fashioned night watchmen as well as probably the best in electronic security available through Sweetwater Sound.

This is a complex business in itself, but also serves other purposes. The location (2404 West Jefferson Boulevard) is not ideal for selling exotic vehicles but was chosen to help "dress up" an approach to downtown Fort Wayne. The staff are an interesting blend of gifted people helping to enhance and grow Fort Wayne. Their renovated building (subsequently enlarged) is what remains of a venerable Ford dealership which was demolished to free up flood bypass capacity in the Junk Ditch. (The Junk Ditch shunts 30% of water flows to the Mississippi watershed during "100-year" floods on our "three rivers".) Sweet Cars has been evacuated once in its relatively short life (5 years?) and barely avoided being flooded.

Sincere thanks to our incoming FWEC President, Bharat Rajghatta, who is also active with the Fort Wayne chapter of SAE. Good company, good food, and good surroundings made for a meaningful experience.

June Social Commentary



Commentary on the June social is provided by Rod Vargo and Dave Schaller.

Over two dozen people attended our June 8 social at the farm of Kathy and Jim Stark near Poe, IN. This is the farm with a silo decorated as a Minion. A previous social had also been held here in 2015 to view Jim's work on an RV-12 kit airplane. Ryan and Sheri Stark took over assembly of the RV-12 after the death of Jim, Ryan's father, in 2016.

The RV-12 is a sport-category all-aluminum plane designed to be home-built from

a succession of six kits from Van's Aircraft of Aurora, Oregon. The fuselage with tail and landing gear is only 20 feet long and intended to fit on a light trailer if desired. The wings can be pulled out of the fuselage by hand and secured alongside the airplane on the trailer. It can easily be compact enough to store in a single-car garage. This RV-12 should weigh 740 lb. empty and have a payload of 580 lb., enough for two people and full fuel.

This 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 ft. 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. There is a 50 lb baggage area behind the passenger.

The sport plane category is a notch less demanding and bulky than a traditional two-seat light aircraft such as the Cessna 152. Operating an RV-12 would be much less expense and hassle, if and when it is actually completed. Federal Aviation Administration rules specify that 51% of the aircraft must be fabricated by an owner in order to waive professional aircraft mechanic's credentials. Sherri Stark is working daily on the complex riveting process and Ryan shaping aluminum where the canopy and fuselage will meet. About 14,000 rivets are involved, many of them done by Jim (note completed wings near the right-hand wall):



So far the empennage/tail kit, wing kit and fuselage kit are complete. Currently, Team Stark is working on the finish kit to add the cowling, engine mount, canopy, wheels, brakes, nose gear components, wiring harness and fuel tank components. Once that is done, the next steps are the avionics and then the Rotax engine with a composite ground-adjustable propeller.

Many of us felt the aluminum was too pretty and aerodynamically smooth to cover

up. But, the Starks have been flying for two generations and indicate that painting results in far less maintenance, more time for flying.

The amount of details it takes to complete this project is visually obvious in two ways. First is a simple look at the number of rivets and components that were clearly visible in the assembly. Secondly, the instruction manuals are some of the largest and thickest sets of engineering drawings and instructions that you will ever lay hands on.

Our group enjoyed listening to the tales of the hordes who can overwhelm the farm to view and photograph the silo painted as a Minion. It was Jim's idea but Kathy followed through in Jim's memory. Thousands of people have come to this somewhat remote site and literally waited in long lines to take photos. They show up at all hours of day and night. This large bright yellow object has even become a convenient landmark for military and commercial aircraft around Baer Field.

Joan Woerner and husband Rod Vargo also shared their conversion of a 2006 Ford E-150 passenger van into a fiscally conservative RV. Joan retired before they could decide on a proper motor home, so they started traveling in their old kid mover. It quickly turned out that most RVs were prohibited from or physically could not fit where they wanted to go.

A key feature is they cut out the floor between the rear bumper and differential, replacing it with a footwell to stand up in. This opening is about the size of the original VW pop-up roof but radically more versatile. A pump-up garden sprayer powers running water to a faucet and sink mounted on a hand-portable "grey-water" tank. Shower setups proved unnecessary. An original-equipment deep-cell battery system (which can be retrofitted) protects the main battery by providing power for a chest-style Norcold compressor-driven refrigerator, a bidirectional fan in a roof vent above the bed, and an inverter for personal electronics. A platform bed is supported by seat-belt webbing (instead of wood framing) to increase storage space under the bed, provide a somewhat self-leveling bed, and restrain the bed in a crash. Heating and air conditioning proved most effectively and efficiently accomplished with a remote engine starter. (A digital CO monitor is located above the bed's pillows, but CO levels have remained zero so far.)

The spare tire was moved to the front of the vehicle by adding a front towing receiver and slightly canted spare tire rack (Draw-Tite). Neither the footwell nor the tire affected fuel consumption, but both improved handling and stability. The 4.6 liter engine temperature and oil pressure have always remained essentially constant, regardless of the spare tire or other conditions (including record desert heat, 10-12% grades, altitude).

The van was equipped during the June social with a Luggable Loo but the plastic bag "technology" does not work as advertised, so their disposal suggestions seem legally questionable now (August, 2017). As an editorial note, mobile toilet technologies are evolving but the Thetford Curve Porta Potti with liberal use (per instructions) of Camco TST chemical approaches the comfort of home for up to 7 days without "servicing". That combo beats most restrooms, particularly at night, even after considering the "servicing".

A generator and microwave were removed because they were not used during a year of travel. There are too many healthy and inexpensive food/drink options available, and time is valuable when touring. The refrigerator and isolated battery are essential for many purposes including holding prepared food overnight or off-road.

This window van is legally a passenger car and can operate as such. This has included severe weather, high speeds, parking or storage, wildly unpredictable downtown limitations, and road restrictions (extensive, particularly at National Parks). A 6' 10" clearance was maintained in order to use most public and home garages, protecting the vehicle when not in use from the ravages of sun exposure and moisture. Fuel consumption is typically half what most RV users experience, often at much lower speeds. Speed and mobility often matters when managing trips around National Park rules, wildfires, approaching weather, and other realities. If you saw this vehicle in a parking lot or on the road, you would not likely have any idea how many features from home have been retrofitted into this vehicle. That is a key advantage.

Our FWEC socialites enjoyed pizza, drinks and time together. Many thoughts and much chat were about Jim. Our sincere thanks to Kathy for hosting us.

Fort Wayne Astronomical Society



The [Fort Wayne Astronomical Society](#) will have its next general meeting on Tuesday September 19th, 2017 at 7:30 p.m. at the [Allen County Tecumseh Branch Library, 1411 E State Blvd, Fort Wayne, IN 46805](#).

Great American Eclipse Observing Report

Moderator: Laura Ainslie

We know you're dying to tell everyone about what you saw on August 21st. (Or even possibly on August 31st. Astronomy really won't come to a screeching halt when the moon moves away from the sun.) So bring your memories, bring your pictures, bring your thumb drive with your PowerPoint presentation. Did you get clouded out? Your family and friends may not cry with you, but we will. Honest.

Laura Ainslie has been haunting eclipse websites and will tell us about The Next Big Eclipse Event... which may not be what you're expecting.

Northeast Indiana Chapter Project Management

Institute



The Northeast Indiana Chapter of the Project Management Institute will have its next meeting on Wednesday September 27th..

Register now and meet with us at Don Hall's Guest House. 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.

- 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
- [Register Now](#); Pay now with credit card only; pay at door option is no longer available

Multitasking: The myth that is destroying your brain

In modern times, perhaps the most widely held, oft repeated, and potentially destructive self-deception is that human beings can multi-task. This pernicious and dangerous behavior has been raising blood pressure, increasing stress levels, destroying relationships, causing accidents, and damaging the lives and brains of all those that attempt to practice it. In this workshop we will use practical experiments free us from the false belief that multitasking is possible, and demonstrate how it is not only counterproductive but down-right damaging. Based upon a survey of sociological research, medical journal articles, and practical experience ripped from the headlines Ken hopes to share his own experience as a recovering multitasker and help you begin your journey on the path of less-stress, better mental health, focused effort and better relationships with other people.

Speaker Bio: Kenn Petty is a PMP credential holder and has been an IT project manager for more than two decades. Methodologies used and projects delivered have ranged from custom software development using traditional waterfall methodology and both Critical Path and Critical Chain scheduling methods, as well as Agile methodologies like iterative development and delivery, Test-driven development, pair programming, and SCRUM with nightly automated compiles and deploys; Infrastructure upgrades and implementations using Kanban and waterfall; and enterprise system implementations using all of the above. He has been a volunteer and member of PMI for since 2005 and served in various roles in multiple chapters. A voracious reader and life-long learner Ken is always looking for the next

interesting article or book to read or seminar, webinar or meetup to attend and a good clean joke.

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