

Engineers' News

April 2017

Vol. LXXIV No. 7

[www.FortWayneEngineersClub.org](http://www.FortWayneEngineersClub.org)



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## April Tour



[Apollo Design](#) and [Avid Labs](#)

[4130 Fourier Dr, Fort Wayne, IN 46818](#)

Thursday April 27th at 7:00 PM

Fort Wayne is home to an exciting pair of companies that are leaders in lighting development. You have probably seen custom logo or major brand image projected onto an interior or exterior wall at a sporting event and that "gobo" may well have been created by Apollo Design. Their sister company in the same building, Avid Labs, not only designs theatrical lighting systems but is taking their lighting knowledge into new industries such as transportation. Join us at 4130 Fourier Drive,

Fort Wayne, IN 46818 at 7 PM on Thursday April 27th to see the technical capabilities that make sporting events and fine arts come to life.

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## Joint Tour



Sweetcars



2404 W Jefferson Blvd, Fort Wayne, IN 46802

Tuesday May 11th at 6:00 PM

**RSVP Required by April 28th**

SAE Fort Wayne, IN Chapter is happy to announce a tour of Sweet Cars and extend the invitation to the Fort Wayne Engineers Club.

Please RSVP by April 28, 2017 to [Bharat Rajghatta at brajghatta@gmail.com](mailto:brajghatta@gmail.com)

SweetCars is Northeast Indiana's most trusted independent dealer of low-mileage, meticulously maintained luxury, performance, and just plain fun vehicles. Whether you're looking for a 200 MPH head-turner or something stylish to get you from A to B safely and comfortably, chances are they have it or they can get it, with no pressure or hassle.

### AGENDA:

6:00 -6:30PM      Networking

6:30 - 7:30 PM      Dinner/Buffer and presentation by Sweet car personnel

7:30PM-8:00PM      Facility Tour

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## May Tour



Dana Corporation

[2100 W State Blvd, Fort Wayne, IN 46808](#)

Thursday May 18th at 7:00 PM

**RSVP Required by April 30th**

Tour requirements:

1. RSVP by April 30th 2017 to [Bharat Rajghatta at brajghatta@gmail.com](mailto:brajghatta@gmail.com) with who you currently work so we can assure Dana Management that there is nobody from their competition on our tour.
2. No shorts.
3. Close toes shoes required.
4. No children

Dana background:

In 1904, an engineering student named Clarence Spicer left Cornell University to launch a new business in the vacant corner of a New Jersey factory.

While still a student, Spicer had earned a patent for his groundbreaking design of the first practical universal joint to power an automobile. Spicer's innovation would quite literally unchain the automobile, which had previously relied on chain-and-sprocket drives to transmit power. But at its outset, his new venture was a decidedly bold step.

A talented engineer and inventor, Spicer had neither business nor manufacturing experience. And although the automobile was destined to become a global institution, its future was still far from certain at the turn of the 20th century. It was from these uncertain beginnings that Dana Incorporated emerged as one of the world's most influential automotive suppliers. Founded on Spicer's designs, and

fueled by the business acumen of attorney, politician, and financier Charles Dana, the company proceeded to expand its product array, technological expertise, and geographic scope throughout the century. Along the way, Dana Incorporated also fostered a progressive, people-oriented culture that has added a unique dimension to the products and services the company provides.

Building on these strengths, Dana Incorporated products have helped to drive history's greatest vehicles – from the Model T and the World War II-era Jeep®, to London taxicabs, 18-wheel rigs, giant earth-moving machines, and every car on the NASCAR® racing circuit.

As Dana Incorporated embarks on its second century, it continues to build on this proud heritage. Dana people continue their passionate pursuit of innovation. And the company continues to deliver on its commitment to advancing the science of mobility for the benefit of its global customers.

The Fort Wayne facility makes axle and axle components for the light truck market.

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in Fort Wayne at  
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The FWEC would like to remember [William "Bill" Gotschall](#).

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## Request for Help

David Fletter has asked if there is anyone in the Maker community who could rewind a very small motor for a model RR engine. The motor armature is about 2 in. long and is wrapped on a 3/4 in x 1/2-5/8 core.

He has an antique train and would like to have it running again.

Can you help? Please [contact Greg J.](#)

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## FY17 Membership Year FWEC Board

President

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

Vice President

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

Treasurer & Resident Agent

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

Secretary

- [Elizabeth Garr](#) (260) 486-0158

1st Year Board Members

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

#### 2nd Year Board Members

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

#### 3rd Year Board Members

- [John Magsam](#) (260) 482-2843
- [Jack Phlipot](#) (260) 438-0258

#### Northeast Indiana DiscoverE Committee Chair

- [Devin Snowberger](#) (260) 450-1098

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](mailto:info@fortwayneengineersclub.org) for information on specific duties on board positions.



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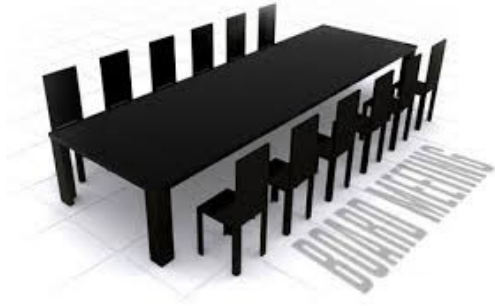
Doug Webster, Vice President, Sidener Engineering  
[dwebster@sidenereng.com](mailto:dwebster@sidenereng.com) (317) 773-8119 Office



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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 May 2nd at 7:00 PM. Board meetings are held on the [Indiana Tech campus in the Academic Center](#) in room ACC-201.

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## **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.

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## **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](mailto:info@fortwayneengineersclub.org).

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## **FWEC LinkedIn Group**





FWEC's [LinkedIn site](#) is gaining critical mass. We have exceeded 200 members, with most being engineers, but also a few HR leaders and recruiters. There are now some jobs posted there, and with your help more engineering related jobs can be posted there. Please let your HR team know it is ready to use. Engineers tend to know other engineers that are seeking new challenges so this could become a great tool for our area. And to celebrate National Engineer's Week, please invite all of our engineering team to connect with us on LinkedIn as well. We do NOT charge membership fees just to be part of our LinkedIn group, but welcome you to join it and always know what FWEC is doing.

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## March Tour History



[Peridot Inc](#)

The tour of Peridot was led by their president David Hockemeyer Jr and their founder, Dave Hockemeyer Sr. at their newly expanded facility in Hoagland, IN. Those of us in industry for years learned about “Rapid Prototyping” or RP, but that gave way to 3D printing and now the popular term is additive manufacturing. If CNC is manufacturing by “removal”, then the new technologies are the exact opposite, although we learned that some parts need CNC touchups afterwards to become true test parts! The display cases in their lobby gave us a great chance to learn about SLA, SLS, LOM, filament and other prototyping technologies. It was interesting to learn that additive manufacturing is usually less accurate than traditional CNC. If you want to stay up on the changes, the Additive Manufacturers Users Group (AMUG) may be for you.

Each of these technologies has advantages and disadvantages that can impact which method to use for a given requirement. For instance, although it is now possible to sinter metal in a SLS machine, the final product is actually a blend of

stainless steel and bronze. While this may be helpful, these prototypes will have different characteristics than an end part since it won't be made out of the same combination of metals in normal manufacturing. Metal sintering is also very difficult and results are not repetitive. Another material that can be utilized is "blue stone" which can stand intense heat. This material is also a prime candidate for creating parts for wind tunnel testing of cars or space shuttles.



While many people can create a 3D printed part, Peridot has significant experience with secondary processes that can take a prototype and create a part for real world testing. For instance they work with low pressure rubber molds, vacuum formed parts, cope/drag/core castings and more. They were the lead development source for a team that developed a casting that recently won the "2017 Casting of the Year" in a category for a lost foam casting created for the ag industry. Although no one can print in EPS foam yet, Peridot knows other paths to get there. In some situations it is advantageous to print a part in wax, then cover it in a ceramic slurry prior to melting the wax out. There are even ways to print in sand for casting parts! On the other end of the spectrum there are other technologies that can print edible parts for cake toppers or print cells to create replacement organs for livers or ears.

Some of the challenges in additive manufacturing can be a disadvantage to some while an advantage to others. The density of an RP part is up to 95% versus 100% for a traditional molded part. Some industries such as airline manufacturing take advantage of this and utilize it to create lightweight parts for weight reduced castings. Lattice work is also an advantage to this application.

Quoting parts can be computerized for machine build time and materials consumed, but the huge challenge is understanding and estimating the clean-up and prep time afterwards. We were shown a large part that had drains to allow the build fluid to escape in a centrifuge after the build. SLA parts need to be UV cured as well to solidify any fluid remaining in the part. Given that SLA liquid can be five to six figures in the build vat, great efforts must be undertaken to preserve the material and keep the vat very clean.

Peridot now owns a 3D scanner that could be used to scan a part and then reproducing it, although it is far more likely that it will be used to validate parts that have been created to learn about the tolerances. Peridot has found a unique niche for their technologies with their agricultural experience, creating specialized seed planting plates for small seeds such as wheat, radishes and more.

While touring their expanded facilities, we were treated to seeing their work in parts such as motorcycle bag covers, agricultural machinery electronic control module enclosures, and turn signals and windshield hinges for Polaris off road vehicles. They also serve area companies like Mullinex packaging creating sandwich packaging or like Ultra USSI with the cool product lines we saw on their tour.

Although it is possible to buy a home system to print parts for \$500, it is not uncommon for DIY enthusiasts to end up at Peridot trying to figure out how to make their vision become a reality. While magazines may talk about a changing world where you print everything you need at home, the reality is that this wonderful technology has a lot of challenges that are far beyond the skill sets of many of these ill intended people. The 17 staff members of Peridot have a wide range of skills and experiences. Even more interesting is that service bureaus such as Peridot keep track of each other's expertise and are not afraid to swap portions of a project or a whole project to a firm that is better equipped to succeed.

Feedback from FWEC members after this tour was that this was a highly educational opportunity on a very interesting subject. Thank you to Peridot for making this tour possible even in some nasty weather. When you have a prototyping challenge the experts are not far away in NE Indiana.

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## Fort Wayne Astronomical Society



Fort Wayne Astronomical Society, Inc.

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

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The [Fort Wayne Astronomical Society](#) will have their next general meeting Tuesday April 18th, 7:30 PM at [Aboite Township Community Room, 11321 Aboite Center Rd. Fort Wayne, IN 46814.](#)

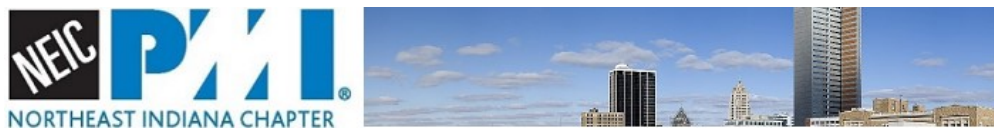
## Star the James Webb Space Telescope

Readiness Update

The James Webb Space Telescope will be a giant leap forward in our quest to understand the Universe and our origins. JWST will examine every phase of cosmic history: from the first luminous glows after the Big Bang to the formation of galaxies, stars, and planets to the evolution of our own solar system.

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## Northeast Indiana Chapter Project Management Institute



The Northeast Indiana Chapter of the Project Management Institute will have its next meeting on Wednesday March 29th.

### **PMBOK V6 and Dave's Excellent PMI Adventure...**

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

Dave Maynard BIO: IUPUI & IPFW, Instructor

Dave is a native New Yorker who after graduation from college, traveled to Houston to work for NASA at the Johnson Spacecraft Center, where he worked for many years.

He participated in the Shuttle avionics architecture design, the "glass cockpit"

development and in crew training. Incrementally David's level of responsibility increased, becoming a Senior Engineer, Project Engineer, Project Manager and Program Manager. David then moved to the Space Operations and Planning Complex (SOPC) where he again participating in overall technical design and management efforts.

After leaving NASA, Mr. Maynard was asked to become the General Manager of Systems Management Inc. (SMI) in Orlando, Fl. whose mission was to turn-around troubled projects, programs or operations.

David teaches Project Management at Purdue University, Fort Wayne (IPFW) and Indiana University, Indianapolis (IUPUI). He is active the PMI-Northeast Indiana Chapter of which he was a founding member. He volunteers for PMI global in various capacities.

For PMI Global:

- Recently concluding a term as the manager of PMI's risk community of practice.
- David is a PMBOK guide version 6 contributor and Risk chapter SME
- A member of the 2016 and 2016 chapter awards review team
- Is reviewing the quality and content of PM Challenge questions on PMI's newest website, ProjectManagement.com
- Was asked to participate in the PMI global Congress in 2015 as one of a group of "experts" who had scheduled meetings with attendees
- Currently participating in an eLearning development effort for PMI.org which forced him to travel to Madrid and drink lots of wine
- Is a member of the team developing PMI's "Implementing Organizational Project Management Practice Guide"

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## 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):

[March1964](#)



# WHAT'S IN THE FUTURE?

At the recent Community Betterment Council Meeting Messrs Harry B. Amstutz, President, Board of County Commissioners, Ivan H. McKathnie, City Controller, and J. Robert Arnold, City Attorney presented their views on the activities and plans for the future.

Mr. Amstutz enumerated the duties of the county commissioners:

1. Caring for county property
2. Account auditing
3. Soliciting bids and authorizing contracts
4. Bond issues
5. Leasing county land
6. Supervising construction and maintenance of roads and bridges
7. Preparation and approval of budgets
8. Personel and payroll
9. Miscellaneous

Mr. McKathnie indicated that the new city administration has spent considerable time recognizing the police force and the City Utilities. Some other projects under study include traffic control construction and repair of streets, financing a city-county building, disannexation of Industrial Park and many others.

Mr. Arnold assured the group that the administration was dedicated to the task of keeping the city free from vice and crime.

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