

Engineers' News

February 2018

Vol. LXXX No. 6

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



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## February Tour



[Tekknowlogic](http://Tekknowlogic)

[6809 Elzey St, Fort Wayne, IN 46809](http://6809 Elzey St, Fort Wayne, IN 46809)

Thursday February 15th at 6:00 PM

FWEC Board Member Marna Renteria has arranged our February tour of [Tekknowlogic](http://Tekknowlogic).

Tekknowlogic is everything Information Technology, from news and education to support and installation. Right now Tekknowlogic is in their starting/growing phase of business but they hope that does not stop anyone from seeing what their company has to offer. Currently Tekknowlogic is working on a E-Waste recycling process that is pollution free, that uses only heat and water to break down electronics to the bare components/materials, to advance the idea of recycling as a whole. Tekknowlogic sees a bright future for this city, and anything Tekknowlogic can do to be a part of its growth would be a wonderful experience.

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## Find the FWEC Easier!



The FWEC has invested in a "feather" sign to alert members where our tour

entrance is. Look for the sign at future tours.

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## March Tour



[The Summit](#)

[1025 W. Rudisill Blvd. Fort Wayne, IN 46807](#)

Thursday, March 22nd at 6:00 PM

FWEC Board Member Marna Renteria has arranged our March tour of [The Summit](#).

**Release (12/22/2017) from [The Summit](#):**

There may be snow in the forecast, but one Fort Wayne neighborhood just got a little greener.

An array of solar panels now graces the roofline of The Summit Athletic Center on West Rudisill Boulevard. One of the city's largest solar installations, the 100-kilowatt unit produces enough electricity to power 10 homes.

“At The Summit, we want to offer great space at a fair price to community-building organizations,” said Melissa Dessaigne, executive director, in a prepared release. “Energy and water account for more than 17 percent of our expenses, and energy prices are outpacing inflation, so this investment in renewable energy is an important step toward keeping our space affordable. We’re trying to build the best space for the best organizations in a way that is economically, socially, and environmentally sustainable.”

The Summit Athletic Center is home to AWP Sports and Parkview Sports Medicine. The building's new solar array is expected to generate approximately 132,000 kilowatt-hours of power each year. That's enough to offset the building's entire energy bill, depending on weather and facility use.

"It's like saving 116 acres of forest," explained Spencer Mize, director of strategic initiatives, in a prepared release. "Each year, the renewable energy from this solar array will offset the equivalent greenhouse-gas emissions of burning 107,407 pounds of coal or 11,047 gallons of gasoline. The idea that we can save money while being good stewards of the environment is what fueled our desire to make this investment a reality."

Sustainable energy is right in line with The Summit's focus on innovation. Five years ago, The Summit debuted a modern collaborative classroom to foster twenty-first-century learning. In 2015, campus opened CookSpring, one of the region's first shared commercial kitchens for culinary entrepreneurs.

"Now in 2018, we're testing the idea that even urban campuses can harness energy produced by the sun," Mize said. "If the project proves successful, there may be additional sustainable energy initiatives in The Summit's future."

The Summit is a shared campus of socially-minded organizations and entrepreneurs working together to create thriving community. Partner organizations work to achieve social impact in the areas of education, economic development, social sustainability, health & wellness, and spiritual vitality. In addition, The Summit offers top-quality space for meetings, conferences, and retreats.

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## **FWEC Treasurer Needed**

Dear Fort Wayne Engineers' Club members:

As of December 2017, our club treasurer Jon Cook resigned. I would personally like to thank Jon for the work he did and wish him luck on the new business he started. As a fellow small business owner, I know how much time and effort that type of endeavor can take. So, starting in January I have resumed my old position as treasurer. If you still owe dues, please send them to the address below. I would also like to let club members know that we are currently looking for a new treasurer for the 2018-2019 club year. I have listed the treasurer duties below. If you have an interest, please contact me. If the treasurer's job isn't your cup of tea, perhaps you'd

like to get involved in the club as a board member or vice president. The club exists thanks to volunteers, and new people and ideas are always welcome.

Summaries of duties for the Fort Wayne Engineers' Club Treasurer

- 1: Balance the checking/savings account.
- 2: Prepare a monthly treasurer's report for the officers meeting (1<sup>st</sup> Tuesday of every month from September to May)
- 3: Prepare a budget draft for discussion at the October board meeting.
- 4: Deposit checks, keep track of petty cash and record/deposit money from PayPal as it comes in.
- 5: Print out new member applications and issue new membership certificates.
- 6: Keep the names, addresses, phone numbers and e-mails up to date for all club members.
- 7: Send out invoices for newsletter adds.
- 8: Send out past dues notices to delinquent club members, first via e-mail, then hard copies.
- 9: Remove delinquent club members from the roster.

The time it takes to perform these duties varies quite a bit from month to month. On average, I estimate I spend about 2 hours per month.

Sincerely,

[Ryan Stark](#)

Fort Wayne Engineers' Club Treasurer

828 W Oakdale Drive

Fort Wayne, IN 46807

260-456-0809

[info@fortwayneengineersclub.org](mailto:info@fortwayneengineersclub.org).

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## **FY18 Membership Year FWEC Board**

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

Vice President: [John Magsam](#) (260) 482-2843

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

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

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

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## Northeast Indiana DiscoverE Engineers Week

### Banquet



The Northeast Indiana DiscoverE Engineers Week banquet will be held on Saturday February 24th, 2018 at [Parkview Field's Lincoln Financial Event Center](#).

6:00 PM – Doors open

6:45 PM – Dinner served

The Northeast Indiana DiscoverE banquet features:

- Keynote speaker – David J. Hockemeyer, President of PERIDOT, Inc
- Academic Award presentations to engineering students
- Citizen Engineer presentation
- [IPFW Bridge Building Contest](#) highlights
- [Future City](#) program highlights
- Student/Engineer visitation program highlights

Dinner Entree Selections

Entrees include a choice of a cup of soup or a salad, vegetable, starch, rolls and butter.

- SLICED ROAST BEEF

- All beef served medium-rare to medium
- TUSCAN CHICKEN BREAST
  - Broiled chicken breast marinated in a red pepper, garlic and herb vinaigrette; served in a light chicken broth reduction
- GRILLED PEPPER WITH MEDITERRANEAN QUINOA
  - Onions and peppers sautéed then slow simmered with quinoa and tomatoes. Served in a broiled red pepper bell on a nest of lemon-basil buckwheat noodles
- BUTTERNUT SQUASH LASAGNA
  - Butternut squash with bechamel sauce

## Purchase Tickets

Banquet tickets are \$30 per person. RSVP deadline is Friday February 16th.

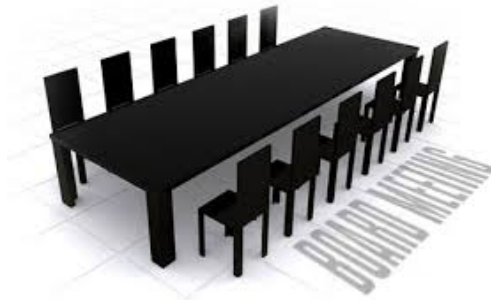
Reservations are made to Nancy Burkey ([nancy@rlguimont.com](mailto:nancy@rlguimont.com) or (260) 422-7081)

Please include:

- Name and organization or company
- Meal entree selection
- Payment method
  - Checks (payable to Northeast Indiana DiscoverE) can be mailed:
  - R.L. Guimont Co., Inc.
  - Attention: Nancy Burkey
  - 923 Spring St.
  - Fort Wayne IN 46808

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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 February 6th at 7:00 PM. Board meetings are held on the [Indiana Tech campus in the Academic Center](#) in room

## **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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## **January Tour**



[Wolf Corporation](http://www.wolfcorp.com)



Twenty-seven FWEC members toured Wolf Corporation in New Haven on January 18, 2018. Founded in 1873, this very large family business designs and produces mattresses, futons, and toppers. They also make batting and basic materials for others. Sales through various brands and retailers include their own true "factory" showroom (low key, comfortable), various online retail channels (including their own), and many chain stores.

CEO Tony Wolf hosted us in their onsite showroom as an auditorium and lounge while sharing his experience since 1966. Half of the change in the industry's history has probably happened in the last ten years. Thriving in this business environment has required a huge increase in global travel for ideas, sourcing, personal contacts, and various counterintuitive concerns. Barriers of entry for competitors include cost, experience, and relentless obsolescence. Much of his time has shifted to conceiving and managing automation, but not for reducing employees.

Internet retailing has been one of the drivers of automation and innovation. Some types of mattresses as large as King-size had to become compressible to a size suitable for routine shipping and/or storage by a variety of conventional vendors. Mantras of online survival across most industries are "one-day" fulfillment of orders and now "free" shipping. Consumer preferences (much of it due to industry marketing) in foams, toppers, and price points had to be accommodated.

Reducing the shipping size of some product lines resulted in a much larger customer base, notably New York City, primarily because mattresses can now physically fit through old stairwells and doorways. Wolf's percentage of complaints or returns is so negligible (<1%) that simple arrangements suffice, such as donation to and pick up by a charity.

Concepts for shrinking shipping size came from knowledge of life in Europe's outdated housing. Translating that to modern American beds and expectations required radically redesigned mattress interiors, greatly improved materials, and successively more capable shrinking machines.

Any machine for compressing mattresses must be custom designed in order to incorporate practical experience compared to their existing equipment, inherently becoming ever more massive and powerful. Their most recent machine has each roller held in place by six Grade 5 bolts (3/4 inch?) versus two Grade 2 (5/8 inch?) in the previous, still fairly new, unit. Much the same concepts are used across industries which ship foam or springs. If folded, foam deteriorates along the fold. Vinyl air bladders tend to chill and cause condensation concerns because people generate huge amounts of humidity. Steel springs provide the best and most durable overall design base.

To allow compression for shipping, designs had to eliminate old-fashioned rims or beads which traditionally provided shape around the outside of a mattress. Shape can be provided by successively more robust coil springs towards a perimeter. Springs had to evolve with more consistent steel, better tempering, and improved assemblies.

Eliminating old-fashioned rims allowed a softer and more pliable mattress surface, less of a "drumhead" effect, and more action from the underlying support layers. Incorporation of Spandex in outer fabrics further improved these features and eliminated severe wrinkling after shipping. Tony pointed out most denim jeans no longer wrinkle severely due to nearly universal use of Spandex or other elastic fibers. Elastic fibers vary greatly in durability.

The springs are assembled into mattress cores by other sophisticated companies, two in the upper Midwest and a third in Asia. Wolf has close contact and high regard for all three. These cores must still have a rim or framework to hold the springs in place, but are well inside the outer mattress or futon padding(s). The companies ship the spring assemblies pressed flat so that 10-12 cores are only 12" high, held down by wire ties. The vicious amount of energy compressed into each "pallet" is legendary in the industry, as are stories of attempts to unpack them without specialized heavy equipment, usually somewhat automated.

Another driver of automation has been to retain employees. In 2007, production costs had to be tightly constrained to avoid lay offs. In 2017, the challenge became retaining production and office staff in a rapidly expanding economy. Competition for workers is fierce across various industries. Wolf Corporation's solution overall has been to steadily improve work satisfaction.

That said, a business review already in 2018 revealed total employees have decreased since 1998 from 113 to 50. Thirty-five work the production floor. Regarding just mattresses and futons, about 500 units are shipped per day during this time of year. Summer volumes range 900-1200 units due to surges in household formation (college students, "new" homes, and other factors).

Another unforgiving driver of automation has been steadily increasing quality expectations by both individual and commercial customers, often with constrained pricing power.

The production day begins at 5 a.m. in order to provide same day shipping for orders across a variety of products. Fort Wayne is within one-day shipping to 60% of the U.S. population. Various online fulfillment centers and retail stores stock Wolf-produced inventory, but not enough because of the enormous amount of space which would be required.

Wolf Corporation's initial production steps reflect its roots. An abundance of 500-pound bales of raw field cotton and other basics are stacked near the start of various

processing lines. A series of traditional steps are utilized to clean and orient cotton fibers on an impressive scale.

Modern cotton batting is produced by misting a minimal amount of natural adhesive(s) into oriented fibers and then briefly drying or curing in a continuous low-temperature oven.

Traditional cotton batting is produced through truck-sized machinery built in the 1940's but reminiscent of the late 1800's. A heavy steel framework supports toothed rollers and a conveyer belt of polished wooden slats, all driven by a marvelous complex of cogs and industrial-grade "bicycle" chains. Closely spaced discs with fine teeth like hack saws align and fluff the cotton fibers into a layer, then overlay them into thicker sheets of batting. Static electricity can be fearsome but controlled with fine water mists if needed.

Lambswool (the first shearing of a young sheep) batting is developed from large bales. Wool comes in many versions, is expensive, and has by far the best moisture and heat management characteristics. Tony sleeps on 2.5 inches of it in a mattress topper.

The batting processes sound simple but require care, knowledge, attention, and cleanliness in addition to updated and powerful equipment. AC motors and programmable controllers significantly reduced the time and hassle to adjust equipment or change production variables, while also readily improving consistency and quality. Just in this area alone, Wolf switched out twenty-eight DC motors with their various shims and cogs. Their maintenance shop produces some machinery and tools.

Many of us remarked on the cleanliness. Wolf Corporation cleans daily for fibers and field dust, and vacuums overhead roof girders and ducts each Friday. Note that our tour was Thursday, before Friday's thorough cleaning. Tony discussed details of the ducts to reduce spinning of airflow, hence spun fibers and rapid clogging. He also invested a lot of attention in easing the cleaning process to improve employee morale and retention.

Fire or explosions are not major concerns. Cotton dust has ample oxygen so any fire would be a lightning-fast flash with little heat. Cotton smoke is surprisingly minimal, light grey in color with good visibility, with none of the classic nasty black inhalation issues associated with synthetics. A precaution has been training employees and outside fire crews to avoid watering in ways that would loft loose fibers airborne. Fire in any plush material is usually difficult to extinguish with certainty, so take care if smoking indoors or out (including near mulch).

Handles were deleted from mattresses because Federal tests showed handles trapped heat which kindled the rest of the unit.

Wolf can overlay or sandwich various fabrics onto battings or rolls of thin foam. Computer controls provide various stitching patterns for a range of quilting. Some details and finishing are done in a loft above the production and office spaces.

Tony did not dispute our questions about memory foam. It seemed hard to get out of, too cold initially and then too hot overnight, and not providing support as needed. He indicated NASA developed it to dampen gauges during launches and never used it in seats or beds. Most foams under a microscope are like soccer balls held together by polymer fibers (i.e., matrix), while memory foam is fine silica sand held together by polymer. Bending or compressing most of the foams can seriously crack or break down the polymer's integrity. He feels modern spring steel wrapped in natural fibers provides by far the best sleep and durability, particularly when prone to moisture or hot flashes, and even makes a futon based on springs.

Box spring sets are intended primarily with historic or reproduction furniture designed for them, perhaps also minimalist metal frames with castors. Modern mattresses are usually meant for solid or slatted platforms which allow considerable storage and/or easy vacuuming underneath. Platforms seldom need castors.

Tony recommends "two-sided" mattresses, where both surfaces are suitable for sleeping. They should be periodically rotated or flipped to offset wear from moisture and compression cycles. "One-sided" mattresses are almost always expensive but with 40% less materials inside. Also beware that some competitors are shaving inches off the width and length of mattresses, especially king and queen sizes.

Impressive automation, work floor design, product adaptability, and constant agility allowed Wolf Corporation to adapt to new eras in retailing, work demands, quality, and materials. Our sincere thanks to Tony and Beth Wolf for a widely appreciated experience.

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