



Fort Wayne ENGINEERS', Club

Engineers' News

April 2024

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Volunteer Positions within the Club

Vice President:

Club Vice President needed! The Vice President is generally in charge of arranging club tours, though this has traditionally been a team effort so it's not really all that much work. You would be expected to attend the monthly officers meeting (from the end of August until the end of May).

The typical monthly time involved would be roughly 2 hours (including attending the officers meeting). If you enjoy the club and would like to see it continue to function, please consider volunteering for this spot.

Let us know if you're interested in this position or if you are interested in volunteering in any capacity!

April Tour



When: April 25, 2024 @ 6:30 p.m.

Where: The former St. Joe Township Fire Station, 6033 Maplecrest Rd., Fort Wayne, 46835. Park in the North lot between the main building and the baseball diamonds. Enter door 23, which is behind the building, and meet in the training room.

Special Requirements: None. All ages welcome (accompanied by a responsible adult if appropriate). Ample space.

Details: This FWEC gathering is specifically arranged with The Fort Wayne Police Department regarding police drones and management of data from drones for crash scene investigation. Crime scenes would be similar. Some info may be shared regarding their variety of drones for crime prevention. (Crash scene data was chosen because FWEC hopes to follow up with a tour regarding what happens inside vehicles during crashes, and because crime techniques are somewhat more proprietary.)

May Tour Preview

EDP Renewables

Timber Road Wind Farm and Timber Road Solar Farm



When: May 23, 2024 @ 5:00 p.m.

Where: 9630 State Road 49, Payne OH 45880

[Timber Road Wind Farm | EDPR North America](#)

Solar Farm Fact Sheet

Special Requirements: All ages welcome (accompanied by a responsible adult if appropriate).

Career Building: Adults and students are highly welcomed on this tour who may find a career in this field. A few months back the FWEC toured Ivy Tech's Aviation Maintenance School where they highlighted their aviation airframe certificate that can also be applied to solar and wind turbine fields.

Details: The Timber Road Solar Park is located in Paulding County, northeast of the town of Payne. The solar park will complement the area's agricultural resources.

Modern wind turbine generators are sophisticated, high-tech machines designed to capture the kinetic energy of the wind and convert it into electricity. A turbine's blades capture the wind and rotate an internal shaft connected to a gearbox spinning a generator to produce electricity.

Timber Road II Wind Farm consists of 55 Vestas V100 1.815 MW wind turbines, and Timber Road IV Wind Farm consists of 24 Vestas V150 4.2 MW wind turbines and 7 Vestas V136 3.6 MW. Timber Road III Wind Farm consists of 48 Gamesa G114 wind turbines. The Timber Road office also operates the 30 Vestas V110 turbines generating 66 MW out of Ada, OH.

The tour begins with a lecture in the conference room at the office of EDP Renewables, located north of Payne, Ohio. The lecture will cover both wind turbines and the solar field located south of the office. After the lecture we will be allowed to inspect the windmill turbine blades stored behind the office building, and if we get permission, we may be allowed to visit one of the wind turbines nearby. Anyone visiting the turbine must wear a hardhat, closed toe shoes preferably steel or composite toe, and clothing appropriate for the weather and outdoor environment. If you do not have a hard hat, loaners will be available, you may be asked to wait in your vehicle until a loaner is available.

March Tour Summary



Freedom Firearms in Fort Wayne (the name is used independently elsewhere) has a lineage derived from Fort Wayne Police Department SWAT backgrounds. They are interested in straight forward sober public understanding of what weaponry in general can and can't do. Group or

one-on-one sessions or courses (freedomfortwayne.com) for any level or topic are easily available, explicitly including women (who lead the nation in gun ownership rates). Our tour condensed lessons on AR-15 concepts because of the technical revolution they represent.

This 2024 tour and our 2015 tour reflected different technological eras. The AR-15 concept has evolved into essentially Lego systems that can adapt to a wide range of purposes. It effectively eliminates problems with excessive recoil, weight, and other aspects that human bodies have difficulty with. It is decidedly not an assault rifle and very different from the AK concept.

We were shown a stunning array of outdated and recent pieces and parts that make traditional guns seem heavy, bulky, awkward, and blatantly inaccurate. Barrel lengths of 16 inches or over are considered rifles by law, and 20 inches tends to be AR-standard for accuracy and range.

Fifty or five hundred yards were discussed for various purposes. Extremely light "plastic" shoulder stocks are designed to adjust for smaller or larger people at the touch of a button.

Fore-stocks have been outright superseded by various composite mesh tubes or frames that enclose the barrel and serve as universal racks for a host of gadgets and grips. Very reliable and sturdy synthetic parts including magazines have substantially reduced overall weight.

Weight has been and still is being reduced over time as features become superfluous or optional.

A revolutionary change among the gadgets is aiming systems. Traditional fixed sights are still standard equipment by Federal law, but likely to be discontinued within a few years. The system that caught us by surprise, dumbfounded perhaps, are "red dot" devices that look like short compact aiming scopes or cameras. These are not the outdated laser pointers that place a red dot on the target. Instead, a red dot is seen only inside the scope's view port and always rests 2-3 inches above the point where the gun is aimed. A gun owner's focus remains on what a potential target is doing and not on aligning an aiming system. Although actual shooting was not planned (due to expense), Freedom generously had any of us use the indoor firing range with an AR and individual paper targets. Everyone who chose to shoot, despite widely varied ages and ability, each fired all their rounds in a tight grouping uniformly 2-3 inches below their "bulls-eye" at 25 yards. This was easily an order of magnitude improvement from expectations and from our 2015 tour experience (using a variety of traditional weapons including an AK). Red dot devices are now available for almost any gun, new or old. In addition to the device, recoil was rated essentially nonexistent and did not affect accuracy of subsequent shots. (Most who chose not to shoot were concerned about conserving their hearing.)

Another newsworthy gadget was a so-called silencer. A downside of the AR combination of short barrel, supersonic bullet speed, and other factors is horrendous muzzle blast (noise and flash). The blast increased when the reloading mechanism (after each shot), which is driven by exhaust gases, evolved from "direct" (gas exiting near the breech) to "piston driven" (exiting near the muzzle). The purpose of the silencer is to direct noise and flash away from the shooter, plus baffle the sound by perhaps two-thirds. Silence it is not. The sound alone would likely shock

everyone in a real life confrontation, especially inside a building or vehicle.

There are four basic projectile designs. A Full Metal Jacket can enclose a lead bullet. A partial jacket may expose a lead Hollow Cone tip. A partial metal jacket may expose a Soft (lead) Tip. Or, bare lead may have longitudinal incisions making it Frangible upon impact. A full jacket will keep going through most everything it hits until the projectile runs out of momentum. The frangible is the most likely to break up on impact, so unlikely to penetrate beyond a tempered or laminated glass window. The other two types are intermediate and most common.

“AR” refers to an ArmaLite company founded in the 1950s which focused on reducing weight for specialized security or military applications such as paratroops and air force crews. The “15” indicates its fifteenth model-line (Ed.: which gained favor replacing the W.W. II era administrative-staff folding M2 carbine). That evolved into the U.S. military M-16, with major upgrades in quality due to combat failures (Ed.: in both gun and ammo). War and technology had been evolving from relatively open battlefields to more constricted scenarios, such as urban or jungle areas with noncombatants, and to evermore mobile warfare. Weapons had to become less brutal and cumbersome for a soldier to fire or carry. A version of rifle was needed to retain accuracy and stopping power but be more nimble in close quarters. Long distance power could be a threat to friendly forces and noncombatants in urban settings. There needed to be less dependence on logistics and ability to carry far more ammunition.

Ammunition of choice for AR type rifles turned out to be either an 0.223 inch (diameter of intended gun barrel bore) Remington design or an almost identical 5.56 mm NATO development (see Wikipedia's "5.56x45mm NATO" for details). In 2024, virtually all AR-style products can fire either design but are best machined for the NATO variant. The basic idea is a relatively small diameter and light (3.56 g) projectile moving at nearly 3,300 feet/second (threshold of Mach 3.0).

Impact force is weight x the velocity squared, so speed may eclipse the importance of weight within the short intended maximum range of 500 yards. Recoil is much less than traditional designs of weapons and ammunition, such as .30-06 or similar “7.62x51mm NATO” rounds.

That ammunition had evolved for heavy infantry rifles such as the M1 & M14 which launch perhaps a 10 g bullet at 2,800 f/s with intended range of 1,000 yards. (Ed.: A table at ammunition.com lists a 22 pound ammunition-in-magazine load/soldier at 280 rounds for M14, 660 rounds for M16, and 240 rounds for AK-47. Clearly, the AR-style's 5.56 NATO is NOT an AK assault rifle.)

Barrels under 7 inches are legally pistols and potentially fertile ground for AR concepts if laws are clarified. Guns with barrels 7-16 inches long were felony-illegal “sawed off” rifles until Alcohol, Tobacco, and Firearms unintentionally legalized them for a short time. The legitimate utility of such barrels (higher velocity, range, and accuracy) resulted in 7 million such AR-type guns sold in a very short time. Their ultimate fate is under litigation.

Combatants, companies, and countries worldwide competed for over a half century to improve

the concepts of light, nimble, and adaptable. The AR-15 style became a commonly used “platform” across various companies for various purposes and users. Gadgets that can be attached or interchanged include, but are not limited to, a huge variety of lights, cameras, data devices, aiming techniques, supports (tripods, etc.), grips, and slings. With rare exceptions, civilian versions fire once per pull of the trigger. Automatic fire in these light weapons is of limited use even militarily because blast and other factors make them nearly impossible to aim, useful perhaps to deter enemy fire or make dramatic movie sequences. (Ed.: By all independent accounts, “bump stocks” are almost equally difficult to control.) Military weapons may be tactical versions with optional three shots per trigger pull (Ed.: reflecting artillery science of “bracketing” a target).

In other discussions, an interesting variant of revolver pistol had the barrel located low, in the middle of the gun. The low chamber in the revolving cylinder would fire, instead of the top chamber in traditional revolvers. The recoil force is centered into the hand and forearm, making it much easier to maintain aim through successive shots. The downside is nearly twice the number of moving parts.

We deeply appreciate the welcome received at Freedom Firearms and easily recommend it for education, firing range practice, and likely a very honest shopping experience.

Participation in club tours has been on a downward trend. The FWEC cannot sustain facilitating tours without active participation. We encourage any participation by attending tours or volunteering to help plan events surrounding the FWEC. We welcome feedback as well that may help improve the current situation. Send that feedback to Info@FortWayneEngineersClub.Org

Work at a great place? Make an interesting product? Want to share your business with a local group? Host a tour! It's a great opportunity to show your unique workplace! The FWEC board will help facilitate any requirements for attendance, safety gear, advance sign ups or clearances, date planning, newsletter announcements, etc..

Volunteer

Interested in hosting a tour?

Contact us today!

Host a Tour

Items of Note

FWEC member Rod Vargo is Chair of the 28 year-old and all-volunteer [Utility Advisory Group](#), which formally advises Fort Wayne City Utilities and often City Council. Your comments are welcome at rodvargo@comcast.net

General Club Info

Fort Wayne Engineers Club dues are \$0. Donations are welcome but strictly voluntary. In recent years, club funds have helped support Discover-E, the Regional Science and Engineering Fair, annual bridge building contests in schools, academic awards, networking events, mentoring, our website, and facilitating free tours.

Please see FortWayneEngineersClub.org, [LinkedIn](#), or [Facebook](#) for updates on current Club activities, other news, and past newsletters.

Those participating in activities or hosting tours through FWEC do so strictly at their own risk, including disease exposures. Participation in club events is voluntary, free, nonprofit, and solely for the benefit of participants and the community at large. Anyone with an interest may participate unless restrictions are specified for specific events, such as minimum age or minimum safety attire.

FWEC Roster for FY2023-2024

President: Nathaniel Wisel

Vice President: *Open*

Secretary: Rod Vargo

Treasurer: John Magsam

First-year Board Members: Dave Gordon, Bert Spellman

Second-year Board Member: Ryan Stark, Ed Woodward

Third-year Board Member: Marna Renteria, Mike Magsam

Editor of Engineer News: Nathaniel Wisel

Membership and Contact Chair: Open

Northeast Indiana DiscoverE Chair: Open

Vice President: Open for FY2023-2024

Job posting and resumes listed

The club accepts both job openings from around the area, as well as resumes from those seeking employment. Please submit these to the following email address:

Info@FortWayneEngineersClub.org

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