



Engineers' News

February/March 2022

Vol. 84 No. 6

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



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## February Tour

**When:** Anytime you like

**Address:** At your house

**Why:** Due to some scheduling irregularities, no February Tour will take place. Please take this time to get some odd jobs done around your house.

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## March Tour

Advanced Machine and Tool



**When:** Thursday March 10th @ 5:30 PM

**Website:** <http://www.amt-corp.com/>

**Address:** [3706 Transportation Dr, Fort Wayne, IN 46818](#)

**Info:** In business since 1970, Advanced Machine and Tool (AMT) has served the consumer goods, industrial, and automotive industries. They are experts in the design and build of coiling and winding equipment and various other types of automation that make it possible

to manufacture electric motors, generators, automotive alternators, and more.

**Note: This tour requires you to sign up in advance.** You will need to list your name and place of employment. Please email your reservation to [info@FortWayneEngineersClub.org](mailto:info@FortWayneEngineersClub.org), or call Ryan Stark at 260-456-0809. The tour was moved up to early March for scheduling reasons. **Also note the early start time of 5:30 PM.**

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## April Tour



**When:** Thursday, April 28 @ 3:00 PM

Please be prompt. We will view a brief safety video at 3:15 PM, with the tour following. Rain or shine, dress appropriately.

**Where:** Meeting place to be announced, but might be same as last time, the gymnasium

**Website:** <https://fortwayneelectricworks.com/>

**Info:** John Becker of Weigand Construction will be our tour guide for the tour of the Electric Works campus, formerly the GE plant on Broadway.

### Tour Requirements:

- Steel toed shoes preferred, solid closed toe shoes accepted, no tennis shoe, sandals, etc
- Hard hat required - they have some extra
- Safety glasses required
- Safety vest required - they have some extra
- Must be physically able to climb multiple flights of stairs, as elevators may not be available
- Must be 18 or older

**Note: This tour requires you to sign up in advance.** Please email your reservation to [info@FortWayneEngineersClub.org](mailto:info@FortWayneEngineersClub.org), or call Ryan Stark at 260-456-0809. **Tour limited to 30 people. Sign up early!**

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## January Tour Summary



### Tour of Blackstone Laboratories

[www.blackstone-labs.com](http://www.blackstone-labs.com)

Written by Rod Vargo

January 27, 2022

A full crowd of 23 participants attended this tour hosted by long-time FWEC Treasurer Ryan Stark. Ryan's father, laid off from DANA during the 1982 recession, tried doing sales for a manufacturer of diesel fuel additives, which was a big business at the time. He was very disappointed with availability and lack of clarity of the reports that analysis companies were producing, so began developing methods for his own information. After an unexpected departure from his former employer, Blackstone Laboratories Inc. was born in 1985.

Blackstone's campus has gradually expanded to five buildings and processes 500-600 samples a day, with 35 full-time employees. Growth is improving further thanks to satisfied word of mouth on the internet. There is a decent sized building that receives the samples, logs them into a computer tracking system, and starts their journey along highly organized paths. Another large section of that building is taken up with assembling and sending out the kits used for collecting and mailing back samples of oil.

The cost for a standard set of tests is only \$30 and Blackstone pays the postage in both directions.

A sincere thanks to Ryan for a widely enjoyable evening on short notice due to a Pandemic-related tour cancellation.

See more tour details [here](#)



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## **Volunteer Positions within the Club**

**Vice President: Pending**  
**Membership and Contact Chair: Open**  
**Northeast Indiana DiscoverE Chair: Open**

Let us know if you're interested!

**Volunteer**

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## **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](mailto:Info@FortWayneEngineersClub.org)

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## **Items of Note**

FWEC member Rod Vargo is Chair of the 27 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](mailto:rodvargo@comcast.net)

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## Local Opportunities

### Experimental Aircraft Association Chapter 2

The Experimental Aircraft Association's Chapter 2 is very active. Check the [EAA-2 website](#) for current information!

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## 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.

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## Interested in hosting a tour?

Contact us today!

[Host a Tour](#)

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## FWEC Board Meetings

The FWEC board meets eight times a year to plan and organize tours for our members. These meetings are open for anyone to attend. We are always looking for new members to join our team! If you are interested in being a board member please attend our next board meeting or contact us at [info@fortwayneengineersclub.org](mailto:info@fortwayneengineersclub.org).

## **Next Meeting**

Date: Tuesday March 1st, 2022

Time: 7:00 pm

Location: Blackstone Laboratories 502 E Pettit Ave, Fort Wayne, IN 46806

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## **FWEC Roster for FY2021-2022**

President: Nate Berndt

Vice President: Pending

Secretary: Marna Renteria

Treasurer: Ryan Stark

Treasurer-Trainee: John Magsam

First-year Board Members: John Magsam, Mike Magsam

Second-year Board Member: Dave Gordon, Bert Spellman

Third-year Board Member: Craig Welch, John Renie

Editor of Engineer News: Melissa Kurten

**Membership and Contact Chair: Open**

**Northeast Indiana DiscoverE Chair: Open**

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## **Advertise in the Engineers' News**

The FWEC provides advertising space within the Engineers' News. Advertisements are only \$10 per issue and limited to ½ page of content.

**Advertise Your Business**

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## **January Summary Continued**

Aviation gasoline still has substantial amounts of lead in it because legacy engine designs are still in widespread use. So, aviation and non-aviation samples are analyzed in separate facilities to ease routine cleaning between each sample.

Oil samples may be from engines, transmissions, hydraulics, or other sources. All types are analyzed for metals by incinerating part of each sample in an argon gas plasma (temperature roughly equal to the surface of the sun) and measuring the

spectra given off by metals in the sample. Blackstone has three of these Inductive Coupled Plasma spectrometers and considered the data they provide to be the heart of what they do. The spectral results will be compared to databases for specific engines or other applications which Blackstone compiles from various sources including its three decades of analyses. The presence, amounts, and various ratios of metals matter, as indicators of normal versus abnormal operation, wear, contamination, and commercial additives. For instance, a weakening engine intake gasket might leak tiny amounts of antifreeze into the oil and effectively evaporate out of the oil, but will leave behind telltale amounts of sodium and potassium. (Ed.: This was detected in my vehicle before the coolant contamination induced engine wear, and long before a pair of highly capable mechanics would have become suspicious.)

Oil viscosity is measured using relatively standard equipment with oil baths at 100 degrees C, which reflects normal engine operating temperatures. Viscosity is inferred from the time needed for an oil sample to drain below a line on specialized glass tubes. Results provide clues to factors ranging from remaining oil lifetime to fuel contaminating the oil.

Flashpoint involves heating a small sample until vapors suddenly ignite. This is a clue about fuel contamination in the oil and if it is excessive.

Testing for insolubles involves a heated centrifuge, tapered volumetric centrifuge tubes, and a flocculent/solvent. This measures the volume of particulates or anything else that is not soluble in an oil sample, and especially targets the remaining useful life of filter(s) and/or oil.

Blackstone has a cadre of individuals who interpret the data and send reports to customers. They also offer free email newsletters, the ability to ask questions via email, and articles/old newsletters on the website.

Fuels are also commonly analyzed for accidental mixtures, unknowns in underground tanks, water or particulate contamination, and more.

Part of the fun and ongoing intellectual engagement is offering specialty work and pursuing customer conundrums. A separate lab is under development to assess the contents of filters. Visual interpretation under magnification of disassembled filter material is followed by treatment with lab chemicals. Pictures are available on the Blackstone website. Customers include race cars, exotic imports, big tractors, and yachts.

There is also a very respectable wood and general workshop developed over time to support the overall operation.

Modern lubrication fluids tend to have useful lifetimes unimaginable even a few decades ago. Four participants discussed their preferred oils relative to cost, but those economics paled compared to testing. Oil sampling easily allowed much longer intervals between routine oil (and/or filter) changes, especially for equipment that is seldom used, or primarily operated continuously for long time periods or distances. Testing also warns of incipient problems. Seldom used items should be operated at least every 2-3 months so a fresh film of oil can protect metal surfaces from air and oxidation.

Our host stated that most mainstream oil products perform similarly, so brand name is largely unimportant. Differences between synthetic (often synthesized stepwise from natural gas) and conventional oils have also blurred over the last twenty years, including any additives.

Hydraulic fluids per se tend to last "forever" unless grit or traces of water contaminate them. Contamination may reflect the condition of filter(s), vents, and/or storage.

Modern additives tend to keep most everything suspended and uniform, so sampling is relatively easy with no need for old-fashioned heating or circulation of the oil beforehand. For \$35, Blackstone offers a vacuum hand-pump with dipstick-sized reusable/disposable tubing, which mates with Blackstone's sample vials for minimal cleanup, hassle, or risk of contamination.

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