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Exploring Transportation in Wisconsin

Three Lakes Global Science Class Explores Environmental Issues in Transportation

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Back to the Future

Page 8 — As we drove into the parking lot a little early, Mark was outside the new Auto Mechanical Building waiting for us. He wanted to give us a one on one tour before the open house. As we entered the building and viewed the interior, all we said is “WOW!” what a layout! It looked like a Technical College Shop.



See more on Page 3

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Today's Concrete Roads Are Built for Taking the Loads and Long Life

Page 9 — There are nearly 12,000 miles of Interstate Highways, State Trunk Highways and United States Highways across the State. Add in the city streets, county highways and town roads and that is a total of over 115,000 miles of roads in Wisconsin. So, it is important that when the decision is made to reconstruct these roadways they are built to take the load and last as long as possible to keep the citizens of Wisconsin and our businesses moving and operating.



Green Bay Automotive Program Celebrates First Anniversary

Page 10 — The automotive industry in the United States and Wisconsin is forecasted to remain a growing industry. Recognizing the need for a skilled automotive workforce, the Green Bay Area Public School District expanded the automotive technician lab at Green Bay East High School in 2015 to form City Stadium Automotive®. On November 4, 2016, City Stadium Automotive® celebrated its first anniversary.



Kaitlyn Vegter shares her distracted driving story

Page 11 — On Friday, Oct. 28, she got her first chance to speak publicly about her Jan. 7, 2016 accident, one in which she is still recovering from to this day. She was changing music on her phone — a mistake that took two seconds to make — when she plowed into the back end of a loader tractor on Highway 11 west of Delavan.



Tesla Students Place Second in Engineering Competition

Page 11 — Tesla students Cara Kloes, Brooke Hoemke, and Suet Lee spent their 2015–16 school year working on a way to reduce the incidences of texting and driving. Their solution to the problem was a free, downloadable app that illustrated the dangers of texting while driving.

Plymouth auto program benefits from, helps community

Page 12 — “Our goal with the automotive program is to provide students with the skills and tools and experiences of professional auto technicians,” said instructor Beau Biller. “Not all of these students will choose automotive careers, but all will benefit from the applied technical skills.”



Safe Roads & Saving taxpayer money

Page 13 — We believe in building roads that are safe, environmentally friendly and cost-effective. In everything we do, we believe in saving taxpayer money. The way we save money is by making innovatively designed pavements that are smooth to ride and built to last. Asphalt just happens to make up 75% of roads in Wisconsin



Rice Lake Warrior Engineering and Technology Education Center

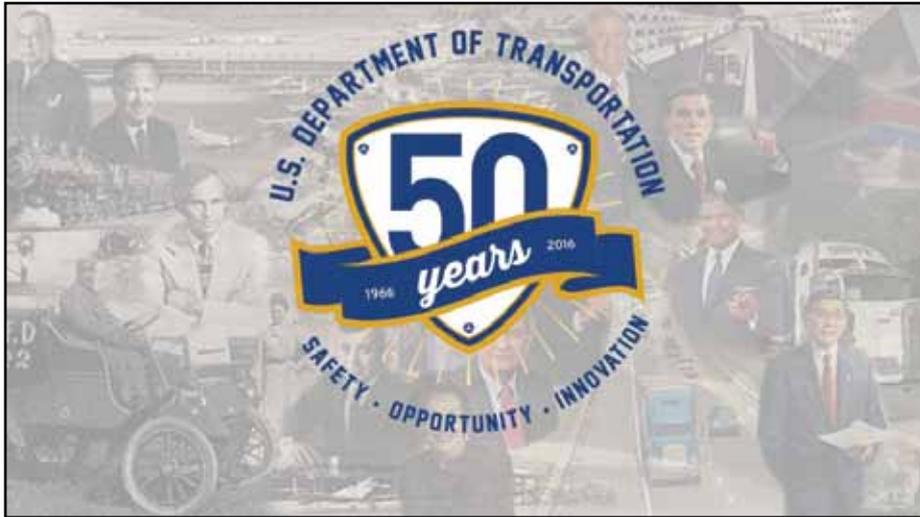
Page 17 — One of the several pathways Rice Lake offers is the transportation pathway. Approximately 50 students each year begin their transportation education with this entry level course. Students explore past, present, and future means of transportation in the areas of land, water, air and space. One of the more enjoyable projects is building Geodesic canoes also known as a skin on canoes.



The Aviation Club

Page 15 — The Westosha Central High Aviation Program — commonly known as the “Aviation Club” — is a program dedicated to teaching students the fundamentals of aviation in a unique way: students are given an opportunity to build an aircraft and fly it! The Falcon 1 had its first flight on November 30, 2015. The construction of the second airplane, F2 (for now), is underway.

U.S. DOT 50th Anniversary Event Focused on Future Transportation Leaders



Pipeline and Hazardous Materials Safety Administrator Marie Therese Dominguez

Many of us were shaped by our school upbringing. Experiences that we have in classrooms or on field trips can spur an interest in a career field. Some students become fascinated in science by mixing chemical compounds. Some are fascinated by the stories of history, and go on to become storytellers themselves in classrooms. But rarely do students get

an opportunity to learn about transportation and pipeline safety. As we celebrate the Department's 50th Anniversary, we are striving to open doors to students at a young age to learn more about our multifaceted transportation industry and inspire them to join us as we work to build a safer, more innovative and inclusive transportation future for all Americans.

To kick-start that process, on December 8, the Pipeline and Hazardous Materials Safety Administration (PHMSA)

collaborated with the Federal Highway Administration (FHWA) and hosted a "Future Leaders in Transportation" event at FAB LAB DC. The FAB LAB is a facility offering the community access to modern tools for invention, and was an idea that began as an outreach project at the Massachusetts Institute of Technology's Center for Bits and Atoms and has now spread to a number of cities around the country.

I had the pleasure of introducing two graduate students – Sepehr Ghader and Milad Salemi – who presented their transportation safety research projects to a group of some 25 Washington, D.C., Dunbar High School students. Sepehr is currently enrolled at the University of Maryland and working at the National University Transportation Center. He recently finished a highway project analyzing the impact of median treatment safety countermeasures on bicycle and pedestrian safety. Milad, who is enrolled at Rutgers University, New Jersey, gave the students an overview of a project he worked on related to pipeline coating rehabilitation and corrosion protection.

Afterwards, Sepehr and Milad helped students to develop a proposal for a national advertising campaign focused either on the 811- Call Before You Dig underground util-

ities safety program or on pedestrian and bicycle safety. At the end of the day, the students presented their proposals to Deputy Secretary Victor Mendez and he selected a winning group. The winners will have their advertising campaign assessed for possible use in either PHMSA's or FHWA's ongoing national safety campaigns.

Overall, the event was a huge success. It was thrilling to see young students learn both about career opportunities in the transportation industry, but also from their peers. It was great to hear about their interest for Science, Technology, Engineering and Math (STEM)-related courses going forward. As we celebrate the Department's first 50 years, it's important we keep an eye towards the next 50 years. Events like this one make me very hopeful for the future and safety of our transportation system, and the next generation of transportation leaders.

www.transportation.gov

Grants & Awards

AIAA Foundation Classroom Grant Program

The AIAA Foundation Classroom Grant program promotes aerospace education activities in classrooms from kindergarten through grade 12. The program encourages development of innovative aerospace activities within the prescribed curriculum. Grants up to \$250 are awarded.

Deadline: Applications are due Feb. 12, 2017

Website: www.aiaa.org/Secondary.aspx?id=4184

Air Force Junior ROTC Grants

The Air Force Association Junior ROTC (AFJROTC) grant program was established to promote aerospace education throughout classrooms and units. Applications are judged by the importance and the impact the selected aerospace activity will have on students. Grants up to \$250 are awarded.

Deadline: Applications are due February 10 and October 10, annually

Website: www.afa.org/afa/informationfor/teachers/k12grants/airforcejuniorrotcgrant

Fluid Power Challenge Grants

NFPA awards grants to schools and educational institutions to facilitate the teaching of hydraulics and pneumatics. Fluid Power Challenge Grants are available to educators planning to teach fluid power in their classroom or through a Fluid Power Challenge event. Grants of \$250.00 are awarded.

Deadline: Applications reviewed year-round

Website: www.nfpa.com/nfpafoundation/actionchallengegrants.aspx

Alan Shepard Technology in Education Award

The Alan Shepard Technology in Education Award rewards excellence in the development and delivery of technology programs. Programs that focus on aerospace or aeronautics are given priority to other programs. Applicants must demonstrate how their programs ultimately benefit the students in a school or organization. The winner receives a cash award of \$1,000.

Deadline: Applications due February 1, 2017

Website: www.astronautsmemorial.org/alan-shepard-award.html



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Three Lakes Global Science Class Explores Environmental Issues in Transportation



*Al Votis
Three Lakes School District*

When you think of transportation, you usually think of moving things or people from place to place, but recently, the Three Lakes Global Science class worked on two projects that focused more on the environment around transportation corridors and how and why people need to realize we need to take care of the area surrounding our transportation corridors as well.

The two projects that the students worked on were planting wild rice, and planting road side native pollinator sites. Each project was a collaborative effort with different groups or agencies.

The first project the students worked on was the pollinator planting project. This was done in conjunction with the Town of Three Lakes, Oneida County Land & Water Conservation, and Wisconsin Headwaters Invasive Partnership (W.H.I.P.), with funding from a grant from the Lumberjack RC&D, worked to plant two of the four pollinator plots in a program being piloted in Three Lakes. The plots serve two purposes

that the students learned about as they were working on helping plant the sites. First, the plots are all using native plants to the area to help the bee population. By providing good habitat alongside roadways, the hope is that we can help increase the pollinator populations that have been hurt by disease and pollution and pesticides. The second purpose is to help fight invasive species. Many people do not know that the major way invasive species spread is by the

seeds being carried along roadways by vehicle traffic. Roadsides are areas that tend to have more disturbed soil, which invasive species take advantage of, get a foothold in, and spread from there. By planting these pollinator sites, the idea is to get native species seeds to spread alongside the roadsides as well, getting more of our native plants and wildflowers to take root alongside the roadways and help keep invasive species from becoming established. The class spent a full day this year working on two sites, and we will be involved more next year as the program expands as well.

The second project was more water based, planting wild rice. As students learned about wild rice, both in classroom research, and through the hands on work with Wisconsin Waterfowl Association biologist Peter Ziegler, the students learned that taking care of our waterways is just as important as taking care of our roadsides. Wild rice populations have dropped significantly in the last one hundred years in northern Wisconsin, and that is a cause for concern. While almost everyone enjoys time on the water, and water transportation is important on our bigger rivers and lakes, we also need to keep the quality of water and habitat around it in good shape too. People sometimes think of wild rice as a plant that clogs up their shoreline or makes it hard to fish or travel in their favorite water bodies, but the students learned first-hand of the important benefits that wild rice has. Not only does it supply food and shelter for waterfowl as they migrate, and other animals, it is also an important factor in preventing shoreline erosion, and in helping clean water. By planting wild rice, the students are working to help traditional rice beds to recover, and how they can work together with nature to both enjoy



our water environment, as well as to protect it. Waterway managers can work to protect rice during its vulnerable floating leaf stage to help keep from damage by keeping water levels steady, and by limiting wake action by boats to keep from damaging the plants. Then we have not only the benefits of water transportation and recreational activities, but also the benefits of a healthy and diverse environment.

The real learning the students gain from these hands on projects goes well beyond what is traditionally measured in classrooms, they help to form ideas and citizens who will work with the environment, not against it to meet the needs of all.

www.threelakesd.k12.wi.us

Presidential Innovation Award for Environmental Educators

The Presidential Innovation Award for Environmental Educators recognizes outstanding K–12 teachers who employ innovative approaches to environmental education and use the environment as a context for learning. Up to two teachers from each of EPA’s 10 regions, from different states, will be chosen.

The White House Council on Environmental Quality, in partnership with the U.S. Environmental Protection Agency administers this award to honor, support and encourage educators who incorporate environmental education in their classrooms and teaching methods.

About the Award

- Each awardee will receive a Presidential award plaque and an award of up to \$2,500 to be used to further the recipient’s professional development in environmental education. They will also receive a congratulatory letter from a senior official from EPA and/or the White House.
- Each winning teacher’s local education agency will receive an award of up to \$2,500 to fund environmental educational activities and programs.
- Teachers who are chosen for honorable

mentions will receive certificates of recognition.

Eligibility Requirements

- Teach K–12 on a full-time basis in a public school operated by a local education agency, including schools funded by the Bureau of Indian Education
- Hold a current teaching license from the state (or valid reciprocity from the state for a license from another state)
- Have a minimum of five years of K–12 teaching experience, including at least three years of teaching environmental education and/or an environment-based curriculum
- Anticipate a classroom teaching assignment involving environmental education for the upcoming school year
- Be a citizen of the U.S., its territories or possessions, or lawfully admitted to the U.S. for permanent residency
- Has not been a recipient of this award in the past five years

Deadline: Apply by March 1, 2017

Website: www.epa.gov/education/presidential-innovation-award-environmental-educators



Logan High School Autonomous Vehicle



School District of La Crosse

The autonomous vehicle was designed and fabricated in the Logan High School Technology & Engineering Department. It can be controlled from a remote transmitter and navigate to a destination using a Live View system with a wireless link to a GoPro mounted on the vehicle. The AV has a GPS system with software that allows the vehicle to be controlled by a computer or Android-

based phone.

Financial support for materials was provided through a \$1,700 grant from the La Crosse Public Education Foundation, underwritten by the Judy and Randy Eddy Sr. Fund.

“This is probably one of the highest level engineering problems we have worked on,” said Steve Johnston LHS Technology Instructor. “It involved metal fabrication,

electrical wiring, digital logic, programming and problem solving.”

From Steve's blog on the project

Logan Autonomous Vehicle Route Research

AVs sense their surroundings with such techniques as radar, lasers, GPS, and computer vision. Advanced control systems interpret sensory information to identify appropriate navigation paths, as well as obstacles and relevant signage.

During the fall of 2015 a series of still photos and a short video was taken of the route. The purpose of this is to allow the students to visualize the route and be able to go back and look at potential obstacles that our software would need to consider as the AV moves along the route.

There was a class discussion with the goal of identifying the parameters of the Autonomous Vehicle challenge for all the students involved. The discussion focused on what our overall objective was and what would be considered a success in the end. We have a lot of variables that have to be considered including the 1/2 mile distance the vehicle has to travel. Students began to brainstorm ideas that could be used.

Work on Guidance and Control Test Bed

By March we had a test bed for our guidance and power systems. To get an idea on how we wanted to scale the actual vehicle, we built a mock up to better understand how much space we needed for all our systems.

The test bed was built out of 3/4" plywood and all our components would be mounted to the board. We could easily move them around and shape the plywood to help us understand how we eventually wanted to form/weld our tube stock.

The test bed was placed on a wheeled cart and taken outside when we wanted to test to see if our programming and electronics pod was working. We were able to see the wheels turn and move and also see if the controls were reacting the way we wanted them to when we had a GPS route entered into the system.

Spring

In April Students started to tack weld the frame of the Autonomous Vehicle. We based the measurements off of the mock up test bed we are using for designing the electronics.

Continued on Page 7

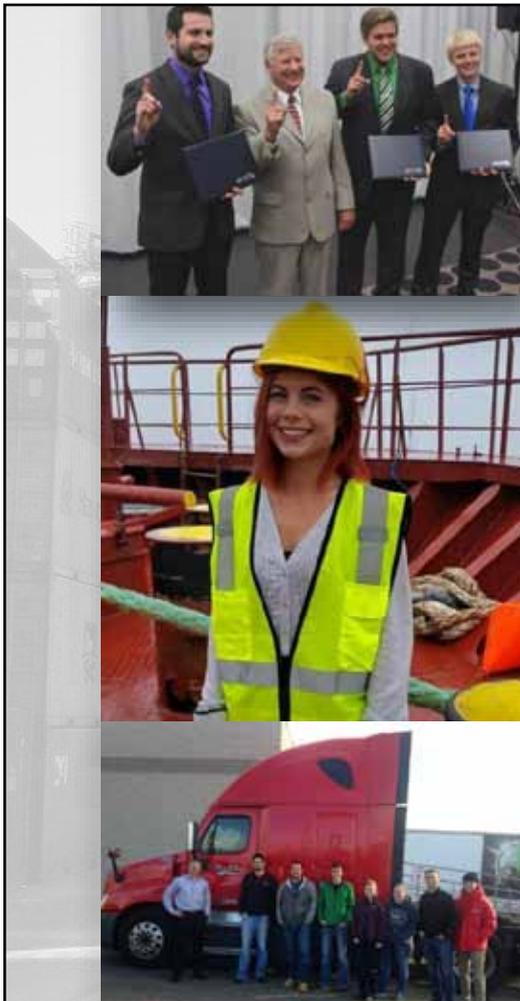
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Logistics and Transportation



The logistics and transportation industry in the United States is highly competitive. By investing in this sector, multinational firms position themselves to better facilitate the flow of goods throughout the world's largest consumer market. International and domestic companies in this industry benefit from a highly skilled workforce and relatively low costs and regulatory burdens.

Spending in the U.S. logistics and transportation industry totaled \$1.48 trillion in 2015, and represented 8 percent of annual gross domestic product (GDP). Analysts expect industry investment to correlate with sector-specific growth in the U.S. economy.

America's highly integrated supply

chain network links producers and consumers through multiple transportation modes, including air and express delivery services, freight rail, maritime transport, and truck transport. To serve customers efficiently, multinational and domestic firms provide tailored logistics and transportation solutions to ensure coordinated goods movement from origin to end user through each supply chain network segment.

Industry Subsectors

Logistics services: This subsector includes inbound and outbound transportation management, fleet management, warehousing, materials handling, order fulfillment, logistics network design, inventory management, supply and demand planning, third-party logistics management, and other support services. Logistics services are involved at all levels in the planning and execution of the movement of goods.

Air and express delivery services (EDS): Firms offer expedited, time-sensitive, and end-to-end services for documents, small parcels, and high-value items. An \$82 billion industry in the United States, EDS firms also provide the export infrastructure for many exporters, particularly small and medium-sized businesses that cannot afford to operate their own supply chain.

Freight rail: High volumes of heavy



cargo and products are transported long distances throughout the U.S. via the U.S. rail network. Each day, this 140,000-mile network delivers an average of 5 million tons of goods and serves almost every industrial, wholesale, retail, and resource-based sector of the economy. Freight rail moves more than 70 percent of the nation's coal (5.2 million carloads), about 58 percent of its raw metal ores, 1.6 million carloads of wheat, corn, and other agricultural products, and 13.7 million intermodal containers and trailers that transport consumer goods.

Maritime: This subsector includes carriers, seaports, terminals, and labor involved in the movement of cargo and passengers

by water. Water transportation moves the predominant share of U.S. international merchandise trade, including 76 percent of U.S. exports by tonnage.

Trucking: Over-the-road transportation of cargo is provided by motor vehicles over short and medium distances. The American Trucking Associations reports that trucks move nearly 10.5 billion tons of freight, 70.1 percent of the modal share of all freight tonnage transported domestically.

www.selectusa.gov

Logan High School Autonomous Vehicle Continued from Page 6



We wanted to make as much of the wiring and connections to various components transparent. This meant we didn't want to cover the frame with a sheet metal body. We wanted students to see how the wires and components are hooked together so they can physically trace current paths. In doing so, even after the project was completed, the AV continues to be an educational tool in the future.

By late April, we had our wiring schematic to the point where we could begin to wire up the motor drivers. Changes still had to be adapted as bench testing progressed. This night we wanted to get brackets machined to

mount the two motor drivers. It was decided to mount them in a vertical manner to maximize cooling.

On a Saturday, three days later, we spent a lot of time at the hardware store looking for various small fasteners to attach motor drivers and fans to mounts. The challenge was to mount a 12 V case fan from a computer to the bracket we made for the main motor driver. It had to be set at an adjustable height because we were unsure what temps the driver would throw off.

We were looking forward to this week because we had two work nights and felt we could wire most of the electronic compo-

nents and then begin bench testing to troubleshoot everything.

At the beginning of May, the main focus was to begin to getting everything wired based on our schematic. We also had to make boxes for relays and our other soldered components to protect them.

As the month went on, main priority was to get the Pixhawk controller output signal programmed in a way that the PWM signal was useful to us.

The wiring was going well and our first real motor test went well. It was good to see a motor actually turn after all the wiring we did.

We wanted to get more of the components onto the vehicle but we were unable to because of the software main drive (MD) problem we were having. Sometimes it seemed like we took two steps forward and one back but that is troubleshooting.

May 25th was a breakthrough day for us. We were able to configure the controller and the motor driver to move the linear actuator for steering. We also tested forward and

reverse on the main drive. It has been about a month and a half of bench testing. Finally being able to take off components we have built and start to mount them on the actual vehicle was a good feeling for the kids.

June 2nd was the day we had been anxiously anticipating for months...our first road test. We finished wiring connections the day before so the AV was technically ready to test at that time but we decided to wait. Our original goal was to have it completed by the end of the year so we managed to accomplish that goal.

The road test went well.

Students successfully demonstrated the vehicle on Thursday, June 16. There is a really nice video of this which you can see at <https://www.youtube.com/watch?v=DfU3teXdsM8>.

You can also see the entire blog along with many photos at:

loganrangerav.blogspot.com

www.lacrosseschools.org

Back to the Future



By Robert Eggleston

Three former Marion High School Industrial Technology teachers, Bob Eggleston, Wally Anton, and Manny Moraleda each received a surprise invitation from former student Mark Poppe, an instructor at Wausau East High School in October. He wanted to invite us to attend and celebrate the opening of his school's new and renovated Career and Technical Education labs and classrooms for automotive/ diesel collision, manufacturing, metals, and graphics at an open house Tuesday, October 25th. He stated he would truly be honored if we would attend.

Mark wrote, "I also want to use this opportunity to thank all three of you for teaching me the skills to think with both my mind and my hands. Outside of my family, you three undoubtedly served as the most influential people in my career and life. It was because of you three that I went to Stout and became a shop teacher. I want you all to know that I've tried to pass on to my students many of the lessons and skills you taught to me years ago."

Mark is the son of Jim and Dorothy Poppe and is a graduate of Marion High School, Class of 1988. This was 28 years after his father, Jim, graduated from Marion High School, Class of 1960. Jim had the honor of being part of the first group of students involved in the new Industrial Tech classes in Marion, 1959-60. Mark was able to be involved in more areas of instruction than his dad because of the expansion of the department. He made good use of what was made available to him. After graduating from Stout, he started his teaching career in Algona, Iowa. His high school automotive program was selected for two awards by the National Automotive Technical Education Foundation. He won a first place at the state level and was runner-up at the national level.

Mark went on to write, "I've been teaching now for 22 years. Currently, I'm the Technology Education Department Chair at Wausau East High School where I have taught for the past 13 years. Over the past several months, we have spent a great deal of time and

over 3 million dollars renovating the Technology Education Department's classrooms and labs. The results of which are truly amazing. If you can attend you might be pleasantly surprised to find that the 'educational pendulum' has finally swung the other way and we are finally teaching 'shop' classes again. I'd like to think that the programs and labs that I've helped design and set-up at East High School are just how you guys would have done them."

As we drove into the parking lot a little early, Mark was outside the new Auto Mechanical Building waiting for us. He wanted to give us a one on one tour before the open house. As we entered the building and viewed the interior, all we said is "WOW!" what a layout! It looked like a Technical College Shop. On our right was a state of the art spray booth with paint mixing room. Next to that was a dust controlled area for sanding automobiles in the collision instruction area. As we continued into the room there were a number of lifts or hoists to be used to work on the auto/trucks, gas or diesel. Even large diesel trucks.

On an outside wall was a long row of cabinets with tools and equipment for the different activities. Some of this was purchased and some was donated by companies. Also in a central area, there were a number of engine stands with donated engines on them. Also in this location, on display was an engine stand that was built by Mark at the Marion High School in 1987 using the different areas of instruction and shops available to him when he was a student.

The tour ended in this area in the classroom where students using computers could bring up any information needed on the car or truck they were working on.

As we left the new attached building to view the renovated labs of manufacturing, metals, woods, and graphic, we were met by Dr. Bradley Peck, Principal of Wausau East High School. He joined us for the rest of the tour. In talking with him it was very evident, that he was very proud of the Career & Technical Education program, Mark and his staff, and

the support of the parents, community, and industry.

As we toured the other areas, it was evident that local industry played a part in the design and equipment. The welding booths have three different types of welding at each station and a robotic welder is in the future. In every area that we toured, we observed the teaching of basic skills on equipment that Mark used at Marion when he was a student. Now, because of the times, there is a marriage with the high tech procedures and equipment to further develop their skills. Thanks to funding and local industry, some of this equipment has been made available.

We later met up with Dan Breitrack, Principal, and Bob Schoen, Tech Ed. Instructor at Marion High School at the open house. Both graduated with Mark in 1988. They were talking with instructors of the different areas on the content and how they were teaching their program. We are sure that they were as impressed as we were on what they saw and heard.



Thanks, Mark, for inviting us to the open house. You will be rewarded many times in the future when you meet your former students and talk about their achievements, just as we were, by your dedication and success in the education of today's youth. Keep up the good work.

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Transportation in their classrooms!

YOUR WISCONSIN TRANSPORTATION CONNECTION

Today's Concrete Roads Are Built for Taking the Loads and Long Life

Kevin W. McMullen, P.E., President
Wisconsin Concrete Pavement Association

The Wisconsin Department of Transportation (DOT) reports that there are nearly 12,000 miles of Interstate Highways, State Trunk Highways and United States Highways across the State. Add in the city streets, county highways and town roads and that is a total of over 115,000 miles of roads in Wisconsin. But, the most important roadways is what the Wisconsin DOT calls the backbone system, that is 1588 miles of roadway that includes the 885 miles of interstate highways and the other multi lane divided highways that connect the major economic and tourism centers of the state. These roadways carry approximately 90 percent of the estimated 318 million freight tons each year and over 50 percent of the vehicle miles traveled in Wisconsin each year. So, it is important that when the decision is made to reconstruct these roadways they are built to take the load and last as long as possible to keep the citizens of Wisconsin and our businesses moving and operating. Concrete pavements are the pavement that traditionally is built because of their load carrying capacity.

The first major hurdle in every roadway project is assessing the traffic and trucks and designing the pavement thickness to accommodate the loads over a lifetime. Historically that time period has been 20 years. But, the

pressure of the business world and the politics of the day are pushing those periods out to 40 and 50 years of design life. The Wisconsin DOT is using a new pavement design tool developed by the American Association of Highway and Transportation Officials (AASHTO) called Pavement ME. This tool simulates the incremental damage of every truck that occurs every minute through all of the climates, temperatures and moisture conditions in Wisconsin through the design period. Think of a pavement as a wire or a paper clip that you can bend multiple times over and over, but eventually it breaks. In warm temperatures you may get more bends than the cold weather. A heavy truck does bend the pavement, we have modeled pavements to know how many times we can bend it.

So, our challenge in the concrete paving industry is to construct pavements to the specified thickness and have the durability to last for 40-50 years. Thickness is the easy part. The concrete pavement slipform paver has evolved to one of the most complex and automated piece of equipment in the construction industry. It is capable of achieving thickness with amazing consistency, automatically inserting all required steel, paving at smoothness levels that the public enjoys and paving over a mile of a two lane roadway each day. **STRONG, SMOOTH AND FAST!**

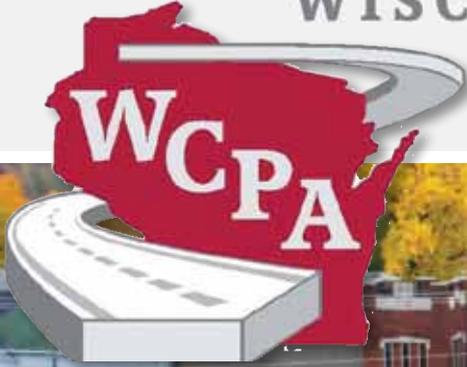
The major challenge in Wisconsin today is durability. Our winters can be tough on all roads. But, the demands of the public to have the roadways clear of ice and snow through the use of deicing salts are producing durability challenges. First, we do extensive testing on the stone and sand that we are going to be using in the concrete. Remember, in concrete we are gluing all of these stones together with cement. Good quality stone makes good concrete. Second, we develop a system of small entrained air voids in the concrete, so that when water does permeate into it and freezes the ice has space in which to expand into rather than breaking the concrete apart. Third, we strive to bring the permeability of the concrete down as far as possible. The main method of doing so is the use of the ash from our electric generating power plants. This high in silica ash has additional cementitious and chemical properties that make our concrete stronger and



reduces permeability by magnitudes. Finally, we use a system of curing compounds that retain moisture while the concrete is gaining strength and penetrating concrete sealers that prevent the deicing salts from entering the concrete and doing damage.

Please be assured that the Wisconsin DOT and the concrete paving industry continue to research concrete, the chemistry and the impacts of environment and the materials used in highway construction. It is a constant goal to produce longer lasting highways for the State of Wisconsin.

www.wisconcrete.org



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City Stadium Automotive



Lori Blakeslee
Director of Communications
Green Bay Area Public School District

The automotive industry in the United States and Wisconsin is forecasted to remain a growing industry. Recognizing the need for a skilled automotive workforce, the Green Bay Area Public School District (GBAPS) expanded the automotive technician lab at Green Bay East High School in

2015 to form City Stadium Automotive®

Students enrolled in City Stadium Automotive® focus on the diagnosis and troubleshooting of faults in automotive systems while receiving high school and college credit through Northeast Wisconsin Technical College (NWTC).

City Stadium Automotive® at East High is one of only 14 high schools in Wisconsin to be certified by the National Automotive Technician Education Founda-

tion (NATEF) for Maintenance and Light Repair Program Standards. NATEF is an organization that examines the structure, resources, and quality of training programs and evaluates them against standards established by the industry. Students who receive NATEF certification are prepared to work in the automotive field, enroll in technical school, or both.

City Stadium Automotive® students have the opportunity to work at major dealerships while still enrolled in high school. The hands-on, real-world experience students receive centers around technical research, automotive workplace skills and practices, and preparation for post-secondary education.

City Stadium Automotive® offers many benefits to students including the opportunity to earn college level credits, receive industry level training, and entry level certification. Apply today!

Students who complete Vehicle Service 1 through 3 taught by Automotive Service Excellence Certified Instructors will receive transcribed credit for "Auto Service Fundamentals" at Northeast Wisconsin Technical College. All GBAPS students are eligible to take these courses, which are offered at East and Preble high schools.

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Small Engines (Semester): Grades 9–12

Topics covered include basic engine operation and maintenance, repair and troubleshooting of single cylinder engine equipment.

Vehicle Service 1 (Full Year): Grades 10–12

Topics covered include every system in the vehicle including maintenance and basic repair.

Vehicle Service 2 & 3 (Full Year): Gr. 11–12

Topics covered include each system of the vehicle including maintenance, repair and basic diagnosis and troubleshooting.

All GBAPS students are eligible to take these courses, which are offered at East and Preble high schools.

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Opening in Fall 2017, the 63,000-sqft NWTC Transportation Center will house the Automotive Technology, Auto Collision/Refinishing, and Diesel Medium and Heavy Truck programs.

Tesla Students Place Second in Engineering Competition



Appleton Area School District

Tesla students Cara Kloes, Brooke Hoernke, and Suet Lee spent their 2015–16 school year working on a way to reduce the incidences of texting and driving.

Their solution to the problem was a free, downloadable app that illustrated the dangers of texting while driving.

They took second place in the 2016 Wisconsin Engineering Competition. Along with this recognition they received a \$2000 award and a feasibility review of their product.

Phill Reisweber, Tesla Technology Education Instructor said that “As a group, they went above and beyond on a consistent basis and were able to implement the engineering process and document every phase of development of their app.”

The Wisconsin Engineering Design Competition is a state-wide competition for Wisconsin students currently enrolled in one of the PLTW Capstone Courses — “Engineering Design and Development” or “Biomedical Innovation.”

Engineering Design and Development is the senior level Tesla class that offers a unique opportunity to exercise the technical skills students have developed not only in their PLTW classes, but in other classes as well, while incorporating their personal experiences, too.

Students work in teams to solve a problem of their choosing. EDD is about the process of seeking a well-justified original solution to a real-world problem. No one will know the solutions outcome at the beginning of the journey, but all groups will move through the problem solving process, and gain skills which they will be able to implement in any profession for the rest of their life. Students use the same design process that they have used in their Tesla classes to develop their product.

Teamwork, scheduling, project management, documentation, and self-assessment are major factors in successful projects. The teams research, document, consult experts, design, build, test, and present their findings during the course.

About Tesla

Tesla Engineering Charter School is a STEM-focused high school within the Appleton Area School District. Housed at Appleton East High School, Tesla provides students with a hands-on, discovery-focused education that introduces students to a variety of engineering and STEM-related careers and skills.

“Fun”, “cool”, “creative”, and “personal” are just a few of the words students at Tesla use to describe their school. They are given ownership in their education through the use of open-ended projects that allow



Tesla Engineering Charter School students created an app to illustrate the dangers of texting while driving.

them to come up with solutions of their own design. Tesla provides an experience that mixes the technical with the creative, and the rigor with the relevance.

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Kaitlyn Vegter Shares Her Distracted Driving Story



Courtesy of Delavan-Darien School District

Delavan-Darien High School Class of 2013 alumna Kaitlyn Vegter knows she's lucky to be alive today.

And she feels got a purpose now because of that luck — share her story of distracted driving to as many people as are willing to listen.

On Friday, Oct. 28, she got her first

chance to speak publicly about her Jan. 7, 2016 accident, one in which she is still recovering from to this day. She was changing music on her phone — a mistake that took two seconds to make — when she plowed into the back end of a loader tractor on Highway 11 west of Delavan.

“If I can share my story and get one person to not do what I was doing, that would mean the world to me,” she said following an all-school assembly at DDHS where she spoke to the student body after

a 6-minute video that explained her situation.

Vegter said she and her family are hoping to take their message to much larger audiences more frequently. They have plans to create a video with the UW Hospital in Madison and speak at next summer's Lifest Christian music concert in Oshkosh, Wis. Her ultimate goal is to get an appearance on “Ellen,” the daytime

Continued on Page 14

Plymouth auto program benefits from, helps community



Thanks to the support of a local auto dealer, the project-based transportation program at Plymouth High School offers an opportunity for students to work on various types of vehicles in an expanded automotive lab.

The auto lab is part of the LTC-Plymouth Science & Technology Center at the school, which also features Haas CNC mills and simulators, a high-tech lathe, high-speed packaging equipment, a metal fabrication training facility, a 3-D printer, and a laser engraver. The facility is used by high school students during the day and by college students in the evening.

The lab was expanded in 2012 and two state-of-the-art hydraulic vehicle hoists were installed. The asymmetric hoists – of the same quality found in professional auto shops – allow for simultaneous student projects.

The hoists were made possible by the first installment of a three-year, \$45,000 pledge from the dealership to upgrade the lab. Subsequent installments provided new tools and diagnostic equipment.

In addition to the funds, the dealer has offered to share its own shop, equipment, vehicles and personnel to enhance the education of

auto tech students. They also have provided professional-looking uniforms for PHS auto students for many years.

“We want students to realize that being an auto technician is a great job,” their spokeswoman said in announcing the donation. “With this donation our company is hoping to help produce future employees. Good technicians are hard to find, and there is nothing better than finding them from our own community.”

As the community has given to the PHS auto program, the students have in turn given back to the community.

Each fall for the past 20 years, students have provided free vehicle winterization inspections, checking fluid levels, wipers, belts, hoses, batteries, tires and lighting system. The program is sponsored by the Plymouth Police Department as way to provide peace of mind for senior citizens and disabled people as winter approaches. In October 2016, students inspected the vehicles of 41 community members.

PHS students also have organized a com-

Continued on Page 14



Students restore a 1967 Camaro



Thanks to a paint job that mushroomed, Plymouth High School now owns a 1967 Chevy Camaro restored by both technical college and PHS students.

The Camaro originally was a drug repossession, which the Sheboygan County Sheriff’s Department turned into a promotional vehicle for the DARE program. The department ini-

tially worked with students from nearby Howards Grove High School to modify the car into a drag-racing vehicle, and raced it for several years in Beat the Heat competitions.

The county eventually stopped participating in Beat the Heat, and the car went into storage in 2008. In 2013, then-PHS liaison officer Todd Kronberg

Continued on Page 14

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Asphalt is the dollar-for-dollar pavement of choice for many reasons. Known for its strength, flexibility and durability, asphalt is the preferred option for highways, local roads, city streets, parking lots, bike paths, and driveways throughout the state. Asphalt pavements have many advantages and deliver what drivers want.

Safety

When you're out driving, safety is your top priority. It should be the top priority in road construction, too. Compared to other pavement types, asphalt is smoother, skid-resistant, and provides better visibility of roadway markings. That makes asphalt roads safe, especially at night and in poor weather. Smooth roads are safer roads because rough, uneven surfaces increase driver fatigue and diminish control.

Noise

Whether you're in the car or in your home, roadway noise is a distraction. Asphalt is known

as the quiet pavement because it helps reduce traffic noise by as much as seven decibels. As a result, asphalt roads reduce the need for costly and unsightly sound barriers, often exceeding \$2 million per mile. Ultimately, asphalt mixtures increase road user safety, because excessive noise can contribute to driver fatigue. That means asphalt pavements not only deliver the quieter roads and rides we appreciate, but the safety drivers demand.

Smoothness

For the driving public, cyclists and runners, surface smoothness is important. Asphalt pavements are known as the smooth ride, delivering user satisfaction and high performance. Smooth roads last 10% longer and require less maintenance while allowing superior contact with vehicle tires, reducing splash and spray. Asphalt's smoothness increases fuel-efficiency by 4.5% and decreases vehicle wear and tear, saving drivers money. Asphalt pavements are a pleasure to ride on and protect travelers, vehicles and bank accounts.

Speed of Construction

Roadway construction and maintenance keep pavements safe and comfortable for road users. Whether you're driving for leisure or work, a safe on-time arrival is vital. Asphalt's speed of construction makes it easier to build and maintain roads, resulting in minimal delays

Fig. 1: Wisconsin roadway miles by network type

| Network | Total Miles | Asphalt Miles* | Percent Asphalt |
|---------|-------------|----------------|-----------------|
| WisDOT | 13,200 | 10,300 | 78% |
| County | 20,800 | 19,600 | 94% |
| City | 13,700 | 11,200 | 82% |
| Town | 62,000 | 40,100 | 65% |
| Village | 6,000 | 5,600 | 93% |

*Includes overlays

for the public. Construction can be done just one lane at a time during off-peak hours, nights and weekend, allowing for quick, cost-effective maintenance leaving routes open for travelers and providing street access for stores and businesses. Fewer delays minimize congestion and save the state economy millions of dollars each year in wasted fuel, time, and productivity.

Sustainability

Asphalt is 100% recyclable and the most recycled product in America. Completely reusable, asphalt is not only environmentally conscious; it's socially and economically responsible too. More than 100 million tons of asphalt are reused each year saving taxpayers over \$2 billion annually. Asphalt's smooth, environmentally sound surfaces reduce roadway noise and pollution, which is good

for neighborhoods, and increase vehicle fuel economy, which is good for wallet.

Now that you understand why the majority of roads are paved with asphalt, we would like to direct you to our updated Asphalt Pavement Design Guide for more information. This publication presents examples of designs, procedures, and applications that have been successful in our state. All asphalt mixtures presented are proven and readily available throughout Wisconsin from companies experienced in producing and constructing quality pavements. This guide is intended for use by architects, engineers, developers, owners, government officials, and the driving public. To receive your copy of the new Asphalt Pavement Design Guide please visit:

wispave.org/designguide

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WISCONSIN RIDES ON US

Plymouth Auto Program

Continued from Page 12

munity Auto Show each May since 2012. The public is invited to enter vehicles as well as to view them during the show. Winners are recognized in 10 categories, from vintage to lawn tractor.

“Our car show is an opportunity for the students and community members to showcase their interest and knowledge about vehicles,” student organizer Alex Schilsky said last spring.

The acquisition of knowledge doesn't end with the school day for PHS auto students. They also can join in PHS Technology Education and Engineering Club, which participates in a variety of activities, including Formula High School and High Mileage Vehicle competitions.

PHS participated in the Wisconsin Formula High School project for the first time in May, placing third of 12 in the stock class. Participants designed and built the car from scratch and gained experience with engineering, marketing, public relations, team work, interpersonal skills, tolerances, deadlines and design constraints. They had to develop a



budget and seek sponsors to cover \$5,385 in materials.

“Our goal with the automotive program is to provide students with the skills and tools and experiences of professional auto technicians,” said instructor Beau Biller. “Not all of these students will choose automotive careers, but all will benefit from the applied technical skills.”

[www.plymouth.k12.wi.us/
Schools/PHS](http://www.plymouth.k12.wi.us/Schools/PHS)

Students restore a 1967 Camaro

Continued from Page 12

approached PHS automotive instructor Beau Biller about receiving the Camaro and reviving the Beat the Heat program.

Mr. Biller accepted, but the car was in pretty rough shape. The college's auto collision instructor Jack Charles noticed the vehicle while visiting the PHS automotive lab to discuss potential collaborations with PHS instructors.

Mr. Charles initially agreed to have his students give the car a paint job, but the project evolved and became a final project for the most talented students in one of his capstone classes. “We had the vehicle in 100 pieces,” he told The Sheboygan Press. “I'm estimating about 1,000 hours of work went into the car.”

PHS junior Nadine Dragan also worked on the project with her father, Bob Dragan, machine tool operations specialist at the college. “I learned problem-solving skills from this experience and a lot of new things about repair, because I didn't know much about body work and mechanics beforehand,” she told The Press. “This also

taught me about the rich backstories that older cars tend to have, as well as how to maintain them and make them look pretty on the outside.”

The restored car was unveiled to more than 60 PHS students in February 2016, when Nadine and her father drove it into the college auto shop.

PHS students then began restoring the Camaro's mechanical systems, including rebuilding the engine.

The Camaro is used for instructional purposes by the Panther Technology Education and Engineering Club. It also serves as a promotional piece at car shows and will be raced in events such as Beat the Heat.

Mr. Biller hopes it also serves to draw students to auto classes. “The car is a cool thing to have to attract students to the program,” he said.

Kaitlyn Vegter

Continued from Page 11

talk show hosted by comedian Ellen DeGeneres.

Kaitlyn survived numerous brain surgeries and other procedures. Her primary surgeon “has said many times that she is a miracle,” Lisa Vegter, Kaitlyn's mother said.

The family has kept the community posted on Kaitlyn's recovery since the day of the accident using Facebook. Thousands in the Delavan-Darien community and beyond have patiently watched for posts and updates, and have prayed for little miracles every day as Kaitlyn worked to get better.

“We had a lot of people praying, and for whatever reason, she has recovered, and we are very thankful for that,” Lisa said.

“I think my reason is to be sharing my story and to be telling these kids (the dangers of distracted driving),” Kaitlyn added. “You know, I thought I was a pro (at driving). I'm trying to get these kids to realize (the dangers). I definitely was at where they're at. We think the same way. And I did think that way. And I had to almost die to learn my lesson.”

School resource officer Brad Schroeder worked with the Vegter family, along with seniors Erin Penniman and Cassidy Dodge and Delavan-Darien School/Community Relations Coordinator Mike Heine to create the video and put on the assembly. The assembly also featured bike races with stu-

dents and staff wearing “fatal vision goggles,” which simulate the effects of drunk driving and comments from emergency room physician Dr. Ken Hanson, MD.

“This event was to springboard and launch her story and make a difference,” with teenage drivers, Schroeder said.

To this day, 10 months after the accident, Kaitlyn is still going to therapy and cannot work, cannot drive and cannot go to college. She has to have someone with her around the clock and she cannot hang out with her friends as she once used to.

The Vegters' story will make an impact. It really shows that kids and adults need to wear their seat belts, pay attention when on the road, keep their hands and eyes off their phones and to stay safe, Schroeder said. One simple mistake, like responding to a text message or changing your favorite tune, can create a lifetime of hardship or even end a life — yours or someone else's.

You can watch Kaitlyn's video here: www.ddschools.org/kaitlyn-vegter-shares-her-distracted-driving-story

www.ddschools.org

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The Aviation Club at Westosha Central High School



Westosha Central High School students Olivia Rasmussen and Nicole Jackson completed their first solo flights in an airplane they helped build.

What makes for an exciting week in the life of two teenage girls?

How about graduating high school with honors and distinctions and completing your First Solo flight in an airplane you helped build. That's exactly what Olivia Rasmussen and Nicole Jackson did early last summer at Central High School-District of Westosha. Nicole completed her 'first solo' flight on Monday, June 13th, and two days later on Wednesday the 15th, Olivia completed her

'first solo' flight.

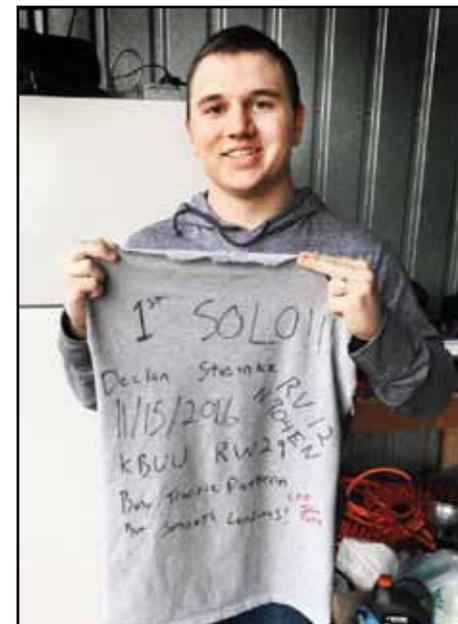
"Both Olivia and Nicole have done a tremendous job in achieving their first solo flight! The weather conditions for both solo flights were sunny skies, temperature in the mid-80s, and light and variable winds. For the dual portion of this lesson, we ran through traffic pattern emergencies, making proper corrections for high and low approaches, bounces, and Balked Landing Procedures. After a grueling hour and a half and at 8 times around



the pattern, I declared them ready, parked the plane, signed their log books, and sent them off for that first half hour of PIC time! They both did three takeoffs and landings that would make any flight instructor proud. They were a pleasure to fly with, they always came prepared to their lessons with all assigned reading and homework complete, and because they helped build the airplane they were able to articulate in areas the average student pilot would likely stumble. I'm looking forward to helping them complete the remainder of their training and being there when they earn their Private Pilot license!"

—John Putra, CFII

Throughout the build of "Falcon One", I was exposed to real life engineering applications that further inspired me to pursue a degree in engineering. I was also introduced, quite unforgettably, to the world of avia-



Declan Steinke proudly displays a t-shirt celebrating his first solo flight in the school's "Falcon One."

tion as I never would have imagined before, both through the build and in training for my license.

—Olivia

Continued on Page 17



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Alternative Fuels

More than a dozen alternative fuels are in production or under development for use in alternative fuel vehicles and advanced technology vehicles. Government and private-sector vehicle fleets are the primary users of these fuels and vehicles, but consumers are increasingly interested in them. Using alternative fuels and advanced vehicles instead of conventional fuels and vehicles helps the United States reduce petroleum use and vehicle emissions.

Biodiesel

Biodiesel is a domestically produced, renewable fuel that can be manufactured from vegetable oils, animal fats, or recycled restaurant grease for use in diesel vehicles. Biodiesel's physical properties are similar to those of petroleum diesel, but it is a cleaner-burning alternative. Using biodiesel in place of petroleum diesel, especially in older vehicles, can reduce emissions.

Federal regulations have gradually reduced allowable fuel sulfur to only 15 parts per million, which has often resulted in lowered aromatics content in diesel fuel. One advantage of biodiesel is that it can impart adequate lubricity to diesel fuels at blend levels as low as 1%.



Electricity

Electricity can be used to power all-electric vehicles and plug-in hybrid electric vehicles. These vehicles can draw electricity directly from the grid and other off-board electrical power sources and store it in batteries. Hybrid electric vehicles use electricity to boost fuel efficiency. Using electricity to power vehicles can have significant energy security and emissions benefits.



Ethanol

Ethanol is a renewable fuel made from corn and other plant materials. The use of ethanol is widespread—almost all gasoline in the U.S. contains some ethanol. Ethanol is available as E85—a high-level ethanol blend containing 51%-83% ethanol depending on season and geography—for use in flexible fuel vehicles. E15 is defined by the Environmental Protection Agency as a blend of 10%-15% ethanol with gasoline. It is an approved ethanol blend for model year vehicles 2001 and newer.



Hydrogen

Hydrogen, when used in a fuel cell, is an emissions-free alternative fuel that can be produced from diverse domestic energy sources. Research and commercial efforts are under way to build the hydrogen fueling infrastructure and produce hydrogen fuel cell vehicles that are practical for widespread use.

Fuel cell electric vehicles (FCEVs) are more efficient than conventional internal combustion engine vehicles and produce no harmful tailpipe exhaust—they emit water vapor and warm air.



Natural Gas

Natural gas is a domestically produced gaseous fuel, readily available through the utility infrastructure. This clean-burning alternative fuel can be used in vehicles as either compressed natural gas (CNG), liquefied natural gas (LNG), renewable natural gas (RNG), or biogas.

Natural gas vehicles (NGVs), which



can run on compressed natural gas (CNG), are good choices for high-mileage, centrally fueled fleets that operate within a limited area. For vehicles needing to travel long distances, liquefied natural gas (LNG) is a good choice.

In general, dedicated NGVs demonstrate better performance and have lower emissions than bi-fuel vehicles.

Propane

Propane, also known as liquefied petroleum gas (LPG) or propane autogas, has been used worldwide as a vehicle fuel for decades. It is stored as a liquid, and propane fueling infrastructure is widespread.

Potentially lower maintenance costs are one reason behind propane's popularity for use in light- and medium-duty vehicles, such as trucks and taxis, and for heavy-duty vehicles, such as school buses. Propane's high octane rating (104 to 112 compared with 87 to 92 for gasoline) combined with its low carbon and low oil contamination characteristics may result in longer engine life. Propane performs well cold weather climates because the fuel's mixture (propane and air) is completely gaseous.



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Rice Lake Warrior Engineering and Technology Education Center

William Cutsforth, Technology Education
Rice Lake High School

Welcome to Rice Lake High School WETEC. One of the several pathways Rice Lake offers is the transportation pathway. It begins with an Intro to Transportation class. Approximately 50 students each year begin their transportation education with this entry level course. Students explore past, present, and future means of transportation in the areas of land, water, air and space. One of the more enjoyable projects is building Geodesic canoes also known as a skin on canoes. The design utilizes geometric engineer principles that provide a



ridged but extremely light canoe. After the main frame is built a heat shrink Dacron fabric is applied. This same fabric is used to cover small aircraft. One of these single person canoes weigh in at 12 lbs. The canoe project also makes for a nice break between classroom and hands on lab time. Each year several canoes are donated to charitable causes. Sean Russell, a 5-year-old who lost his father in Afghanistan, received one of our canoes.

As students' progress up the transportation pathway another popular choice is the Automotive ABC's course. This class has an enjoyable mix of traditional and non-traditional vocational students. The class also draws a nice mix of genders, and is well liked as students perform a variety of labs on their personal vehicles. Students have access to various equipment including lifts, wheel changers, balancers, diagnostics equipment, detailing, and routine maintenance.

Power mechanics would be another class in the transportation pathway. Approximately 30 students each year study the concepts of the 4 and 2 stroke engines, Rotary, diesel, and sterling engines. The second half of the class is project based where students can work with personal engines. Some will advance to Fuel injection and engine modifications of stroking, boring, and CAM grinding.

Advanced and self-motivated students sign up for independent study courses. In these courses students and staff outline a project based course and develop an educational contract. Past students have replaced transmissions, retrofitted engines with electronic fuel injection (EFI), or build single passenger super-mileage vehicles. Currently the Super-mileage team is working with an electrical engineer in the design and fabrication of a fully electric single passenger vehicle. Independent study students are rewarding to work with. I



am always amazed as I watch these students applying apply a variety of disciplines to their project; engineering, welding, machining, 3d printing, along with the core classes of physics and math.

www.ricelake.k12.wi.us

The Aviation Club Continued from Page 15



Students work on the wing of a second airplane, the F2.

Building "Falcon One" gave me more background on the physics of flight so when I started flying it was easier to understand how flight works. I would like to work with the design of airplanes and become an aerospace engineer. My first solo flight was an incredible experience. It really is one of those things where you just smile and think that that really just happened!"

—Nicole

The combination of teamwork, the challenge of learning so many skills, and accomplishing something as unique and outstanding as building a flying aircraft really instills something that's incalculable and invaluable to the students.

—Jim Senft, Program Director

The Westosha Central High Aviation Program —commonly known as the "Aviation Club" — is a program dedicated to

teaching students the fundamentals of aviation in a unique way: students are given an opportunity to build an aircraft and fly it!

The Falcon 1 had its first flight on November 30, 2015. The construction of the second airplane, F2 (for now), is underway.

The club recently invited students from Shoreland Lutheran School to help them with the aircraft members are building. The four students who visited are part of a STEM program at Shoreland Lutheran. They learned about the preparation and process and even got to do some hands-on work on the aircraft.

On November 15th, 2016 Declan Steinke took the controls of "Falcon 1" and piloted the plane Solo around a nearby airport. Just a month earlier, he also completed an intense training course and became the youngest certified independent Rotax Maintenance Technician.

Congratulations to these students, and to Central High School Aviation Program instructor, James Senft, for showing them that the opportunities in aviation are limitless!

www.westosha.k12.wi.us

TRANSPORTATION TODAY WI

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PUBLISHER/EDITOR: Larry Werner

EDITORIAL: Andria Reinke

PAGE COMPOSITION: Andrew Clausen

WEBMASTER: Scott Bayerl

Please direct articles, advertising, questions or comments to:

Transportation Today WI™

PO Box 1704

Eau Claire, WI 54702

Phone/Fax 715-839-7074

www.transportationtodaywi.com

Please direct all inquiries to:
renee@transportationtodaywi.com, or
larry@transportationtodaywi.com

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CAREER CENTER

What would you like to do in Transportation?



- Aircraft Pilot
- Airport Operations Crew Member
- Air Traffic Controllers
- Bus Driver
- Captain
- Chauffeur
- Deckhand
- Deck Officer
- Dispatcher



- Distribution Center Manager
- Distribution Director
- Distribution Manager
- Driver/Sales Representative
- Driver/Sales Workers
- Engineer
- Equipment Director
- Estimating Manager
- Expeditor



- Fleet Manager

- Flight Instructor
- Flight Engineer
- Fork Lift Operator
- Helicopter Pilot
- Import/Export Clerk
- Import/Export Manager
- Import/Export Supervisor
- Industrial Tractor Operator
- Inventory Control Analyst
- Inventory Control Clerk
- Inventory Control Manager
- Inventory Control Supervisor
- Locomotive Engineer



- Logistics Analyst
- Logistics Coordinator Jobs
- Logistics Manager
- Logistics Specialist



- Marine Cargo Inspector
- Marine Oiler
- Materials Control Manager
- Materials Handler
- Materials Handling Supervisor
- Materials Planner
- Merchant Mariners
- Motorboat Operator

- Motor Racer
- Operations Manager



- Packaging Engineer
- Pilot
- Production Scheduler
- Public Transportation Inspector
- Rail Car Repairer
- Railroad Brake Operator
- Railroad Conductor
- Railroad Yard Worker
- Rail Yard Engineer
- Refuse and Recyclable Material Collectors
- Sailor
- Scheduler



- Shipping and Receiving Clerk
- Shipping and Receiving Supervisor
- Shuttle Car Operator
- Streetcar Operator
- Subway Operator
- Taxi Driver

- Top Distribution Executive



- Top Inventory Control Executive
- Traffic/Rate Analyst
- Traffic Clerk
- Traffic Director
- Traffic Manager
- Traffic Supervisor



- Train Crew Member
- Transportation Director
- Transportation Manager
- Transportation Planner
- Transportation Supervisor
- Travel Coordinator
- Travel Manager
- Truck Driver Supervisor
- Van Driver
- Yardmaster

Please note: This represents a broad and not conclusive list of careers within the world of transportation

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