

Recap of the April 2024 ELECTRI Cross Border Meeting Roatan, Honduras

Wayne State Students Collaborate with ELECTRI International

The **NECA Student Chapter at Wayne State University** was selected as the **2024 ELECTRI Student Passport collaborator** to work with volunteer electrical contractors and industry partners from across the US on ELECTRI's annual Cross-Border initiative. The students' assignment was to design and install 36 solar panels for the Flowers Bay community center and new elementary school in Roatán, Honduras.

Flower Bay, one of the oldest communities in Roatán, serves a population of more than 3,000. With international tourism as the area's primary industry and economic driver, all Flowers Bay students receive a bilingual English-Spanish education experience. Its tuition-free elementary school, founded in 1922, has been rebuilt several times because of storm damage. As the school's new construction gets underway, Flower Bay students attend classes at the community's library and activity center.

Two months ahead of the solar panel installation, the four Wayne State students (Ivan Alvarado, Uriel Barraza, Claudia Rea, and Traci Rogala) worked with Roatán electrical contracting firm, **Vegas Electric**, to determine the details of this sustainable infrastructure initiative. The construction management students had access to the site's civil engineering drawings plus the load evaluation form. This enabled them to evaluate the weight capacity load for the roof, determine what would be hooked up to the electrical system at the school, and estimate how much power would be needed. They then developed the site plan for the solar panels using Google maps and Revit to estimate the sun's position.

Three electrical construction industry partners contributed all the materials required for the Student Passport initiative. ELECTRI extends its thanks to **Sonepar** for providing more than 45 needed items including the solar panels and off-grid batteries, **Schneider Electric** for furnishing the circuit breakers, smart switches and load center, and **Buckingham** for keeping the students safe with fall protection harnesses.

Students had extensive, valuable learning experiences - thanks to the generous time commitment from the electrical contracting professionals who worked side by side with them to complete the project. These volunteers are fully committed to providing students with first-hand opportunities that highlight careers open to them in electrical construction. This year's volunteer group included: Bob Davies, Davies Electric; Paul Gocan, 77 Electrical Services; Kellie Holland, Empire Electric; James MacDonald, Miller Electric; Ted Robertson, Fisk Electric; and Dale Strothman, Sonepar.

Working together with the student team, they developed a schedule for the project duration, based upon local labor availability. Originally, the student team estimated one week for the installation. With close coordination, determined students, and good weather, the project was completed in two days.

The Student Chapter's faculty advisor is Dr. Joseph Vaglica PhD., P.E, Program Director, Engineering Technology (Construction Management) at Wayne State University. He recently noted the valuable relationship between construction management and the ELECTRI International Cross-Border initiative: *"Participating offered Wayne State University students a hands-on experience. This practical involvement not only enriched their academic understanding but also provided valuable insights into sustainable engineering practices, potentially shaping their future career paths in renewable energy, electrical contracting and construction management."*

Claudia Rea, Student Chapter President, is a Construction Management major, graduating in May 2024. She shared her enthusiasm for the entire project. *"This experience was incredibly important to us. It was an opportunity to not only provide hands-on learning in renewable energy technologies and also inspired us to think about pursuing a career in the electrical contracting industry. We met so many incredible people, made valuable connections, and were able to showcase the exceptional work ethic and talent of the Wayne State Construction Management students."*

The entire Wayne State student team thanked ELECTRI International, Vegas Electric, the volunteer EC industry leaders, industry sponsors for the project materials, and their faculty advisor, Dr. Joseph Vaglica.

Augmented Reality for Training - Maddie Eerhardt, Siemens

Maddie Everhardt focuses on Digital Services and Technology in her position at Siemens. She is using technology and 3D modeling to relate what electrical contractors offer apprentices, new electricians, and students at the JATCs and ELECTRI's Industry Connect events. Educating the younger generations on our EC industry is key to recruiting into our workforce.

Maddie explained how Apple Vision Pro's augmented reality (AR) differs from virtual reality (VR). Using Siemens step-by-step instructions with 3D models that overlay the real world, you can click to see individual components in front of you in the real world in real time. This facilitates communications and increases education for the next generation of electricians without depleting resources.

AR gives electricians access to this realistic form at little to no cost. There are 17 instruction sets available today plus additional sets for actions like bending conduit. Currently, there is a total of 32 instruction sets for electrical. By 2025, Siemens hopes to have 50 instruction sets. The application called BILT is free on Apple or Android. It is not web enabled, so it has to be used on a tablet or smart phone. This technology allows you to expand on your BIM model with augmented reality.

The History of Vegas Electric- Edy Zelaya (Operations Director), Shelli Heil (CEO), Frances Dixon (HR Manager) and Alexi Funez (Purchasing and Logistics Director)

When Charles George formed Vegas Electric in 1987, Roatán looked very different. In 1989, the first scuba diving ship came. The Roatan Electric Company (RECO) was established in 1992 when there was no reliable power. However, there was also no tourism or need for expansive power.

In 2008, Royal Caribbean built a port in Roatán, and in 2020 a second port opened. Now, there are 1.2 million people coming annually on cruise ships. The customer demographic changed to retirees and residential developments. This meant a growing demand for people wanting to live here as they do in the United States, leading to an increased demand for power. Just thirty years ago, all of the island's resort areas were jungle, showing how the island has changed dramatically over a few decades.

Construction projects on the island have changed as the customer demographic has changed over the years. Prior to 2000, seafood processing plants, grocery stores, generators, and off-grid solar were the primary projects. In 1997, Vegas Electric had its first off-grid solar project.

From 2000 and onward, big resorts and hotels were the main projects. New residential homes were being built plus travel agencies were coming in and requesting underground power. At that time, Vegas Electric and Green Hill Energy were the only qualified contractors on the island to perform the work. New communities wanted underground installations, similar to those in the U.S., so a lot of work was done to move systems underground.

RECO, the utility, realized it needed to grow to accommodate the increased power demand. Solar farms and wind farms were built to create new power sources.

Vegas Electric diversified into data/communications, alarm systems, and plumbing because there were no other qualified contractors to do the work. Electric bills were too high (\$2,000/month), so now Vegas Electric conducts energy audits to help reduce use or increase efficiency. Renewable energy makes good economic sense for Roatán residents. Solar pool

pump systems and solar water heaters are top sellers now. Pumping houses run six hours per day to keep a pool clean, so using solar helps reduce a lot of those costs. Electric backup elements are used for a cloudy day or in the rainy season.

Because Vegas Electric was so busy with work, it did not see the competition coming. Vegas had to adjust markups and bids to stay competitive. Vegas provides the service and long-term solutions, and offers a service maintenance program to stay in contact with their customers. Annual service provides a good income for Vegas Electric and builds trust with its customers. Their customers help with advertising for them as well and generate more business.

In terms of materials, there were limited suppliers and long lead times before 2000. Vegas kept stock of everything needed because shipping took 2-4 months. Broken materials were also kept to use for parts. This made a large warehouse necessary and led to high carry costs. The material and Workmanship Warranty that Vegas provided cost \$800-\$1,500 because of the high cost of return equipment. Overall, this led to much higher material costs compared to the U.S.

Post-2000, with increased demand in materials, a more standard product line was developed. Vegas Electric was able to reduce the number of stocked items and build relationships with higher quality manufacturers, so there were less costs associated with the warranty. Lead time was shortened to 2-4 weeks, but that still makes it difficult to compete with customers who are used to same-day delivery. For example, for the Flowers Bay school project, Vegas was able to bypass the taxes and duties since the items were donated for a government project. It still took a substantial amount of time for the materials to arrive and be processed through customs, barely making it in time for the project.

In terms of labor, it was easy to find people to fill positions up to the year 2000. Many were not skilled initially, so Vegas Electric joined NECA to access the education resources to offer their employees to upskill their labor force. Vegas Electric was one of the first Roatán contractors to use codes and standards on its projects.

Today, companies can use social media to post jobs, but there is a lower volume of applicants. Many are not looking for long-term work, so it is not worth a company's time to train them. Since 2020, Vegas has lost 70% of its field to local competitors. Many of its employees have become local competitors, or left the country for work, or are working for the cruise lines.

Temporary visas offered by the U.S. are also causing employees to leave Vegas Electric. The firm cannot compete with U.S. compensation. Because of the salary differential, Vegas has been looking for grants to help offset the cost of paying employee wages competitive with the U.S., to see if earning more will make workers want to stay on Roatan to work. At Vegas Electric, workers are paid \$800-\$1,200/month. In the U.S., they earn \$5,000/month. A helper in Roatán makes \$25-\$30/day. Vegas Electric provides medical care from private doctors,

education for employees' children, and additional benefits that other companies do not offer. However, even with these additional benefits, it is a challenge to compete because customers do not see the benefits offered to employees.

Vegas Electric made the decision it will no longer take on projects just to fix other contractors' poorly-done work. If Vegas cannot offer its warranties on the work, the liability is higher and it is not worth taking that work. The company hopes this situation will encourage customers to get the work done by a qualified contractor the first time. New regulations come through each week, so contractors have to stay up to speed on the rules and the demographics of the market and customer expectations.

[View the presentation here.](#)

Challenges and Opportunities on a Fast-Developing Island- Matthew Harper, Greenhill Energy Solutions

Matthew Harper has been involved in the energy sector since 1992. Roatán had a development boom in 1995 with dips in 1998 due to Hurricane Mitch and in 2011 due to a delayed reaction to the 2008 recession. Roatán rebounded in 2016 with 11% growth. Power production in Roatán is currently 19% renewable and 81% thermal. The wind farm is not as effective as they hoped, with maybe 10% power. Solar is more effective in Roatán and is installed more often. Greenhill Energy Solutions specializes in commercial, residential and underground subdivisions. The company is diversifying - based on how the market is changing.

In Roatán, building permits are issued with no inspections, so customers have to trust the electricians to do the work correctly since there is no oversight. RECO, the utility, does not adhere to the National Electric Code, so there is no standard. Roatán contractors would like quality standards with the utility so that there is a standardized process that would create more qualified contractors on the island.

As in the U.S., cash flow is a concern for Roatán contractors, with delays in getting paid on projects and keeping their employees paid each month. Greenhill Energy also invests in benefits and education for its employees, and also offers other benefits, such as helping workers get loans from the bank.

The distribution system on the island creates voltage drops at the end of each feeder. They have installed voltage regulators and capacity banks but these are not high quality and not effective. Roatán power quality is poor currently and contractors expect it to get worse. That is why some are specializing in analyzing and testing problems for their customers to continue to be a resource for this issue. For example, Greenhill Energy is currently performing a power

quality study for the hotel at which ELECTRI's meeting took place to see how to reduce the property's electric bill and look for solutions through testing.

Matthew also expressed concern about the rising sea levels that are washing away beaches and small islands. Right now, contractors have a lot of work, but they emphasize the importance of being good stewards of the earth to preserve their future on the island.

Q&A with Local Contractors

1. Are injuries common in Roatán since there are no regulations?

Yes, accidents happen because there is unskilled labor and not enough safety equipment. Vegas Electric wants to create a union of sorts to implement education and safety procedures to reduce risk across the island.

2. Can you get the government to start doing inspections?

There are no funds to do this and no desire from the government. Corruption is an issue. Companies do self-inspections of their work on big projects. Good companies offer guarantees of material and labor. Civil engineers draw up the plans and conduct periodic oversight throughout the project, but that is provided by the customer and insurance.

3. Is stealing power still an issue on the island since power is expensive?

Yes, mostly in disadvantaged neighborhoods. Some communities do not even use power because it is so expensive.

4. Is there an opportunity to talk with the new U.S owners of the utility RECO about implementing safety codes? What worked in Mexico that could possibly work here?

In Mexico, companies banded together, forced the government into regulation, and forced inspections to make sure installations met a minimum standard. They wanted to differentiate themselves from other companies. It has taken them 20 years to get there.

The attitude at RECO is that they are distancing themselves from contractors. Currently, each contractor just complains individually. If they join together, they can hopefully bring RECO to the negotiating table.

5. How many reputable contractors are there in Roatán?

Just Vegas Electric and Greenhill Energy Solutions.

6. Would certifications help an independent contractor?

Yes. There is an open mind to be safer and be recognized internationally as a safe contractor. Some reputable independent contractors follow the U.S. code.

7. Will increasing pay to your workforce prevent them from leaving to work in the U.S.?

Vegas Electric received a grant from USAID to increase wages in hopes of decreasing the number of workers leaving Roatán to work in the United States.

Roatán contractors teach their employees about money management and living within their means because the more they are paid, the more they want to get, especially if they do not know how to manage their money.

8. Did COVID impact productivity?

No, there was no social support in Roatán. People had to work to survive and many who relied on tourism struggled to provide for their families.

9. Would having a NECA brand help to show customers that qualified contractors here uphold a U.S. standard?

Possibly, if the customers know what that means. The majority of Vegas Electric's work is done for Americans and Canadians, and the company tries to communicate that it employs U.S. qualified workers and follows U.S. standards.

10. How large is the labor pool in Roatan?

2,500-3,000 people, but not specialty-trained.