How the electric motor’s start in Vermont is still driving students today

03-08-2022, WCAX, by Cat Viglienzoni

BURLINGTON, Vt. (WCAX) - Electric motors are everywhere around you, from your car to kitchen appliances to cellphones and more. Vermont broke ground in that technology and it’s still inspiring students today.

It may be hard to believe that something that started out so big could eventually become an electric motor that’s small enough to fit in the cellphone that goes in your pocket. Tuesday, students learned the Vermont connection for both.

Students from Otter Valley Union High School in Brandon learned about the ins and outs of electric motors on a field trip to the University of Vermont Tuesday.

Sophomore Matthew Cole said the class focuses on electric motors and their history.

“I think it was the first or second day of class and we walked around our workshop and talked about how many motors there are and we had something like 47 just in our teeny classroom. And it’s crazy because you don’t realize how many of them there are,” Cole said.

What he also didn’t realize was the motor’s history in his own town. Back in 1837, Brandon resident Thomas Davenport got the patent for the first-ever electric motor. There’s a memorial in town for him marking the achievement.

“I didn’t even know that was there and I drive past it every single morning,” Cole said.

Tuesday, students tried their hand at building their own electric motors with batteries, magnets and wire. Freshman Eric Grenier found out it’s harder than it looks.

“It was not as flat as it should be, so it was kind of rickety and didn’t go as well as I thought it would, but it went, at least for the first few seconds,” Grenier said.

That’s something David Hammond can relate to. The UVM scientific equipment technician spent hundreds of hours putting together a working replica of Davenport’s original patent model.

A working replica of Davenport's original patent model.(WCAX)
“It has its challenges for sure,” Hammond said.

With the original in the Smithsonian, he had to use the designs and trial and error. He says it looks simple but it’s not. Especially when you consider there was no electrical grid back then, only primitive batteries to power the motor.

“What they did with what they had was kind of impressive, I think,” Hammond said.

There are three of the replicas that he’s building. One of them is staying at UVM, one is going to Beta Technologies and one is going to the town of Brandon.

At the demo, students also got to see a new high-powered electric plane motor from Beta Technologies. It’s about 5,000 times more powerful than Davenport’s original-- powerful enough to propel a plane.

A new high-powered electric plane motor from Beta Technologies.(WCAX)
“We’re basically taking the ideas that Davenport created and making the world’s most efficient electric motors,” said John Cohn of Beta Technologies.

The Beta Technologies' electric motor only weighs 65 pounds. And the South Burlington company's planes aim to revolutionize air travel and commerce, bringing the industry away from fossil fuels.

But the company says they wouldn't be where they are without nearly two centuries of innovations starting with the first electric motors of the mid-1800s.

"It's so inspiring to see how much has happened in 186 years and through the innovations in magnets and batteries and materials, but still the basic function is the same. And it's amazing how many layers of innovation. So, it's incredibly inspiring to me but also hopefully inspiring to students, especially Vermont students," Cone said. "We hope students will see Vermont is a great place to take their STEM skills and turn it into a workable career."

The hope is that by seeing how far the innovations have come, they will be inspired to take the tech one step further. That's why Grenier says he wants to be an engineer.

"It's the idea of being able to build something new and possibly have it be relevant in the future or improving something that will still be relevant in the future," he said.

This summer in Brandon, they will celebrate Davenport's achievement and life on the 219th anniversary of his birthday, July 9. And, appropriately, on display, they'll have electric cars, bikes, snowmobiles and more.