

Hyperloop Dream Team

Students represent at SpaceX Challenge at Texas A&M

[Campus News](#) | Posted on March 11, 2016



A team of students participated in the recent SpaceX Hyperloop Challenge held at Texas A&M. Other participating schools included Harvard, MIT and Virginia Tech.

By: Becky St. Clair

“The Hyperloop is a new, fifth form of transportation using a pod traveling inside a vacuum tube at 700–800 miles per hour. It uses magnetic levitation or air skis, basically allowing the pod to ride on a film of air so there’s never contact between it and the ground.”

This is how junior mechanical engineering major Jonathan Penrod describes the futuristic invention of Elon Musk, CEO of Tesla. This eyebrow-raising idea, however, isn’t as far into the future as we might think.

SpaceX engineers are currently experimenting with test tracks five miles long near their headquarters in California. Hyperloop technology could allow a person to work 1,000 miles from home and commute every day.

“With this technology,” explains Penrod, “some estimates say that \$35 normally spent on gas will result in ten cents of electricity. This is an incredibly economically friendly development. It will also eventually be all solar-powered. The whole idea is really beautiful to picture.”

Musk created the concept for Hyperloop in the early 2000s and generated a lot of interest in the science and technology world. After being told he couldn’t possibly build a prototype for less than \$400 million, Musk said he could do it for 10 percent of that amount.

To accomplish this, Musk issued a challenge to any and all ABET (Accreditation Board for Engineering & Technology) accredited institutions, inviting them to attend a special event at the end of January at Texas A&M University in College Station, Texas. One hundred and fourteen teams from 20 different countries attended the event, including teams from Germany, the Netherlands, Singapore, Australia, Spain and, of course, the U.S., including teams from MIT and Virginia Tech. One of the participating teams was Team Meherah, meaning “haste” and “speed” in Hebrew, made up of six Andrews University students.

When Philip Coleman, sophomore electrical engineering major, heard about the Hyperloop challenge in September, he asked around until he found several other students who were also interested. Smaller groups such as theirs were given the opportunity to build smaller components to be added to a full pod, such as levitation, lighting, an emergency braking system, Wi-Fi, air control or a number of other features. Team Meherah chose to create an emergency propulsion system.

“If the primary power source should fail, the pod would somehow need to get to the next station,” explains Penrod. “Our design incorporated a landing gear style similar to that of an airplane, which retracts into the belly of the pod.”

In the team’s design, in the event of a power failure two high-performance electric motors in the back of the pod would drive it to the next station at 50 miles per hour—slow compared to the pod’s full-speed of 800 mph, but even this is better than decompressing the entire tube to send in a rescue team for the pod, saving time and resources.

The Texas A&M event allowed each team a booth where they displayed their prototypes and shared videos, images and other materials to explain their invention. This gave the teams a chance to see each other’s creativity and ingenuity. Many teams were interested in Team Meherah’s lightweight design.

In addition, each team gave a 20–30-minute presentation to a group of judges from various universities and engineering firms. Team Meherah’s panel of judges included engineers from SpaceX and Hyperloop Technologies, companies currently competing for the privilege of being the first to successfully develop the Hyperloop concept.

“Our presentation went smoothly and we were well-prepared, organized and confident,” says Penrod. “It was a great feeling to be able to answer everything they asked comfortably and accurately.”

Though Meherah didn't win anything, they went home feeling completely satisfied with their work.

"This is the first real engineering project any of us have ever done," says Coleman. "It takes a lot of time and it all has to be deliberate and careful. But now we know we can do it, and we had fun and learned a lot."

Many engineers and technology experts expect the first high-functioning prototype to be completed in approximately five years.

"Before we attended this event, I never would have thought it possible," says Penrod. "But this idea is developing very quickly—even while we sit here learning how to be a part of it all."

The Hyperloop challenge gave the students on the team the opportunity to try their hand at using SolidWorks, the design program nearly every engineering design firm across the country uses.

"I can go into an interview confidently and say I've done this and I know how to use the program," says Penrod. "When they ask for an example of my work I use the Hyperloop competition, and they really like that."

Team Meharah very much appreciates the opportunity to participate in this challenge.

"One of the benefits to a small school like Andrews is that you have more chances to be involved," says Penrod. "More of us can participate because we're a small, focused department. It's helped me realize what types of people I work best with, gain experience working on team projects, and problem-solve creatively by thinking outside the box."

In addition to Coleman and Penrod, the team consisted of Harper Hazen, senior fine arts major; Brian Shockey, senior mechanical engineering major; Jeremy Tiffany, sophomore engineering major and pilot who used his experience with airplanes to help the team create their landing-gear-based system; Nathan Verill, junior electrical engineering major; and George Agoki, professor of engineering and faculty sponsor of the team.

"We had some of the best team members possible," says Coleman. "They're reliable, independent workers, and I'm just waiting for these guys to cure cancer. They're motivated and smart and it was a real pleasure working with them."

"It was a dream team," Penrod adds.

Though the team isn't sure what will happen with their design now, they're confident that if anyone ever contacts them about buying the design their answer will be no. They expect that the SpaceX and Hyperloop engineers will take the ideas they saw at the challenge event and recreate them on their own, and the team is perfectly okay with that.

"We're satisfied with what we did," says Coleman. "It was an awesome experience. And now we have to catch up on homework and sleep."

Contact:

PR

pr@andrews.edu

269-471-3322