



Hyperloop pod
unveiling event,
May 29, 2019

The future of high speed transportation

Billionaire industrialist, Elon Musk, the CEO of aerospace firm SpaceX and founder of Tesla hypothesized the concept of a Hyperloop transportation system over 5 years ago where he mused on the need for an additional form of transport between pairs of high traffic cities around 1500 km (900 miles) apart. The idea was to create a transportation system safer, faster, more convenient and lower cost to transportation options available today. The idea was coined the Hyperloop and consists of a pod moving at a very high speed through an enclosed tube. The first documented thoughts of transportation in a vacuum tube go back to 1812 by George Medhurst. And since the 1970s various concept studies were drafted, such as the Swissmetro, but all abandoned for cost reasons or unresolved technological issues.

The Hyperloop idea is an “open source” concept still in development phase with a number of organisations working to develop a safe and reliable model. To support the development of functional prototypes and encourage innovation the Hyperloop Pod Competition was created in 2015 where teams are challenged to design and build the ultimate high-speed ground transport pods.

Student teams from around the world come together to share their pod designs. Designs are then judged by SpaceX and *The Boring Company* with top teams selected to progress onto the build phase where students turn their designs into functional pods. The competition then culminates at the SpaceX Hyperloop Test Track in California where the completed pods are raced and judged solely on one criteria: maximum speed with successful deceleration.

In order to achieve maximum speed and safe deceleration, minimising weight is crucial to the pod's success. Gurit is pleased to sponsor the EPFLoop team of the Swiss Federal Institute of Technology in Lausanne, Switzerland, providing them with engineering support and advanced composite materials for the 2019 Hyperloop Pod Competition.

The team has successfully submitted a design and along with 20 others has been selected to progress onto the build phase.

Lorenzo Benedetti, team Leader of EPFLoop states: *“Since the first contact back in October 2018, Gurit has been a strategic partner of the EPFLoop team. In a constant research of performance, our engineering students strived to create a structure for the prototype which is capable of resisting extreme accelerations and intense vibrations and, still, being the lightest possible. We had a very fruitful exchange with Gurit engineers, in particular Luke McEwen. Together, we analyzed step by step our structure and optimized the use of the prepreg carbon fiber material. The products identified as suitable for our case were the biaxial prepreps XC411 and RC200, whereas for the sandwich construction the M80 and M200 Corecell™ foams. After the design review, the final prototype structure reduced substantially its weight, down to one third from the EPFLoop prototype of 2018, while maintaining the safety level required by SpaceX.”*

The EPFLoop team has been ranked as one of the top three teams in last year's competition. This team of enthusiastic and motivated engineers strives to push the boundaries in terms of innovative pod design and construction and gives a glimpse of what the future of transportation may look like. Gurit is delighted to be part of this effort.

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THE HYPERLOOP CONCEPT

A Hyperloop is a sealed tube or system of tubes through which a pod transporting passengers or freight may travel free of air resistance or friction, allowing people or objects to travel at high speed while being very efficient.

In current concepts pods would be propelled at a speed of 760 mph (1,200 km/h), allowing passengers to travel a 560 km route in only 35 minutes – considerably faster than current rail or air travel times.

