



CASE STUDY /

## **Revolutionizing the Antenna Industry with Polymers and X-rays — Polytenna Technologies Inc.**

“The use of Ansys HFSS enabled our company to effectively realize complicated EM structures that very accurately predicted measured behavior, cutting down on the amount of iteration required and reducing fabrication costs.”

**Matt Tayfeh**

CEO / Polytenna Technologies Inc.

Emerging consumer applications at mm-wave frequencies demand accurate and reliable simulation to predict performance, which can be degraded significantly at these high frequencies if not optimized carefully. Timelines to market are short, and reliable modeling is essential to remain competitive. Accurate simulation results that match well with the measurements at mm-waves are essential for novel 5G and 60 GHz system design.

### / Company Description

Polytenna develops revolutionary polymer antennas for the exponentially growing mm-wave frequency markets, including 5G, WiFi and high frequency IoT. Our “Polymer Antennas” crafted with X-rays have fantastic performance at these extremely high frequencies and are ideal for next-generation devices.

### / Challenges

High frequency mm-wave antennas are the core of our business, including the antennas used for new 5G systems at 20 to 40 GHz and the unlicensed 60 GHz band. To remain competitive in our business requires a powerful, fast, scalable and accurate 3D EM solver — at an affordable price.

### / Technology Used

- Ansys HFSS

### / Engineering Solution

Powerful electromagnetic simulation tools are essential to Polytenna. The most important features for us are:

- High-performance computing (HPC platform). We have large wideband EM solutions that need HPC to deliver results quickly.
- Scalability in processing and resources (i.e., cores, RAM, etc.) The package should scale well with more hardware resources to reduce the simulation time.
- Integration with third party cloud services. We are using Rescale as a cloud service, which itself uses Amazon AWS credits. Amazon gives tens of thousands of dollars worth of AWS credits to selected startups that we could use, substantially reducing our cost of HPC hardware.
- Industry standard tool, with widespread acceptance. The industry recognises HFSS as a reliable tool, and customers readily accept the simulation results.
- Encrypted 3D models/components. This is a very important feature of HFSS, which enables us to share our designed components with the customers to integrate in their systems while keeping our IP protected.

### / Benefits

The most important benefit to us from an engineering standpoint is simulation speed and accuracy. From a business standpoint, this saves us both time and money, in terms of personnel resources but also in cost savings due to less rework.



Polytenna at the USask Tech Venture Challenge.

**ANSYS, Inc.**  
Southpointe  
2600 Ansys Drive  
Canonsburg, PA 15317  
U.S.A.  
724.746.3304  
ansysinfo@ansys.com

If you've ever seen a rocket launch, flown on an airplane, driven a car, used a computer, touched a mobile device, crossed a bridge or put on wearable technology, chances are you've used a product where Ansys software played a critical role in its creation. Ansys is the global leader in engineering simulation. We help the world's most innovative companies deliver radically better products to their customers. By offering the best and broadest portfolio of engineering simulation software, we help them solve the most complex design challenges and engineer products limited only by imagination.

**Visit [www.ansys.com](http://www.ansys.com) for more information.**

Any and all ANSYS, Inc. brand, product, service and feature names, logos and slogans are registered trademarks or trademarks of ANSYS, Inc. or its subsidiaries in the United States or other countries. All other brand, product, service and feature names or trademarks are the property of their respective owners.

© 2021 ANSYS, Inc. All Rights Reserved.