



## **Ansys + Anywaves**

“From the inception of Anywaves in 2017 to the present day, Ansys has consistently delivered the appropriate solutions that help us meet the technological challenges inherent in the development of our space antennas. Today, Ansys is a trusted growth partner — a relationship we expect to continue in view of future challenges. Thanks to Ansys' regularly updated simulation software, we can stay at the forefront of technology in antenna design.”

— **Nicolas Capet, Ph.D.**  
CEO / Anywaves

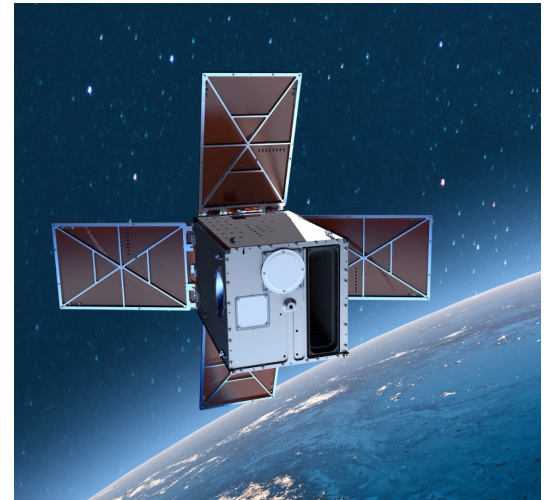
## / Simulation Helps Anywaves Optimize Space Antenna Designs

Anywaves designs, manufactures and delivers commercial off-the-shelf (COTS) or custom antennas worldwide. Building on its expertise in the field and recent commercial success, Anywaves uses simulation to expand its solutions portfolio and address all types of spacecraft.

### / Challenges

High-frequency space antenna design presents numerous engineering challenges and constraints imposed by the extreme conditions space vehicles are subject to in orbit. Whatever the mission, be it telecommunications, global positioning/navigation, or Earth Observation, space antennas must consistently perform essential functions throughout a space vehicle's lifetime. A single malfunction can severely compromise satellite performance or lead to shutdown.

Space antennas must withstand significant thermal and atmospheric variations, as well as intense mechanical bearings such as vibrations and shocks. Their miniature size, plus the design and certification process required to bring them to market, can complicate production. All these factors can negatively impact development times and costs. Therefore, they must be accounted for as early as possible. To do so, the Anywaves team needed a solution to model and simulate their complete antenna designs to reduce the number of time-consuming and costly physical testing phases.



PROBA V-CC (PVCC) satellite image courtesy of Aerospace Lab.

### / Technology Used

- Ansys Mechanical
- Ansys HFSS
- Ansys Workbench

### / Engineering Solutions

To remain agile enough to meet the increasingly complex technical demands of Anywaves' growing portfolio requires continuously updated versions of the most advanced simulation tools and solvers available. Since its inception, Anywaves has been using Ansys multiphysics solutions to help deploy its antenna technology, including:

- **Ansys Mechanical** throughout the design phase to model the mechanical structure of antenna components. Mechanical can analyze component behavior in terms of deformation, vibration, resistance, and lifespan. The software is also used to test dynamic thermal and acoustic effects, as well as the topological parameters of the antenna in its real-world environment.
- **Ansys HFSS** electromagnetic (EM) simulation software to study the electronic operation of the entire antenna. Merging meshes of different scales within HFSS enables engineers to combine all components, from the antenna's electronic circuits to the satellite envelope.
- **Ansys Workbench** platform for connecting Mechanical and HFSS to perform multiphysics simulations on a new range of products.

# ANYWAVES

SPACE ANTENNA MAKERS



Nicolas Capet, Ph.D., CEO of Anywaves.

## / Benefits

- Virtual testing with Mechanical and HFSS via Workbench enables Anywaves to test many design variants that meet space standards, from the digital model to the final antenna prototype on the satellite.
- The team can explore antenna behavior in consideration of numerous concepts and hypothetical scenarios during analysis to reduce errors and improve designs.
- Continuous access to new versions of Ansys software optimizes simulation speed for faster analysis of both the platform and surrounding elements of these increasingly complex devices.
- A variety of available tools and solvers ensures engineers can conduct the appropriate analyses within more efficient, cost-effective time frames and shorten the path to market in the industrialization of their designs.
- Combining these solutions also facilitates testing in new environments for a new range of products, including antennas for reusable launchers where an understanding of launch impact — both thermally and vibrationally — is important.

## / Company Description

Anywaves, a European space antenna equipment manufacturer, aims to become the world leader in space antennas. Based in Toulouse, France, Anywaves designs, manufactures and delivers off-the-shelf (COTS) or custom antennas worldwide. Thanks to the ingenuity and efficiency of its teams, Anywaves, which is EN9100 certified, is taking up the challenge of developing a new generation of antennas with very high added value for its customers. Performance, reliability, and short lead times are the basis of its value proposition.

For more information, visit [www.anywaves.com](http://www.anywaves.com)

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When visionary companies need to know how their world-changing ideas will perform, they close the gap between design and reality with Ansys simulation. For more than 50 years, Ansys software has enabled innovators across industries to push boundaries by using the predictive power of simulation. From sustainable transportation to advanced semiconductors, from satellite systems to life-saving medical devices, the next great leaps in human advancement will be powered by Ansys.

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