

HeloSat: Beyond-Line-of-Sight SATCOM System for Rotary-Wing Platforms

Hughes is bringing wideband multi-megabit data to rotary platforms with patented, through-the-rotary-blade Beyond-Line-of-Sight (BLoS) Satellite Communication (SATCOM) technology. Our trailblazing capability equips helicopter to support next-generation, real-time Intelligence Surveillance and Reconnaissance (ISR), border security, law enforcement, emergency medicine, and disaster response.

Wideband Data Delivered without Interruption

For years the helicopter community has been 'disadvantaged' because rotary blades essentially chop up SATCOM signals and act like a signal jammer. This blockage limits rotary platforms from sending and receiving wideband data through the blades without interruption. Now with HeloSat, helicopter platforms can transmit real-time data, such as full-motion video, on or off of the helicopter, becoming the critical link between success or failure.

HeloSat—Proven and Certified Solution

HeloSat's cutting edge, through-the-rotor transmission technology has been proven and demonstrated during numerous flight tests, successfully passing government-led validation and assessment exercises need to obtain airworthiness certifications. This success did not happen overnight. Hughes has been studying and attacking the rotary platform challenge for years and has become your trusted expert. When we began this process, we started by focusing on the waveform so we could determine the most effective way to limit the data loss caused by the rotary blades chopping up the SATCOM signal. The Hughes Advanced Development Group (ADG) used its highly skilled engineers and made significant advances in signal processing technology, which culminated in developing our patented Advanced Microsat Waveform (AMW). AMW is the only waveform in the global satellite industry that has truly addressed the data loss issue, enabling real-time, streaming data through the rotor blades without interruption.

Operational Applications:

- INFIL/EXFIL mission sets (Data to or from the aircraft)
- Airborne ISR gathering
- Search and rescue
- Border security
- Wildfire and disaster response
- MEDEVAC Transport



Lightweight and Adaptable

Rotary platforms have also created additional challenges for SATCOM solutions due to their Size, Weight and Power (SWaP) restrictions. Helicopter SATCOM solutions require lightweight, small-volume, state of the art components. For this reason, the entirety of the HeloSat solution is easily adaptable—designed to be tailored to address specific mission needs, operational constraints or limiting characteristics of the user's rotary platform. By collaborating with a great team of partners, HeloSat has been proven compatible with a variety of satellite bandwidth providers (i.e., Intelsat, Inmarsat, O3B, etc.) and antenna vendors (i.e., GetSat, ThinKom, etc.).

Delivering flexibility and agility for our customers is one of Hughes' top priorities. Contact us at helosat@hughes.com and we will work with you to understand your entire system architecture and adapt your Hughes HeloSat solution to meet even the most rigorous requirements.

Hughes Universal Mount for different rotorcraft

Sikorsky S-92 and S-76, AH-64, UH-60, CH-47, Super Puma, Agusta 139, and others.



Hughes HM400 Airborne Modem



- Using next-generation, software-defined technology
- Leveraging the Hughes Through-the-Rotor Waveform



Hughes Through-the-Rotor BLoS SATCOM solutions are paving the way for global operations in GEO/MEO/LEO orbits, supporting the larger roadmap for next-generation, multi-transport network operations for rotorcraft.

Solution Elements and Specifications

- Hughes HM series modem with proprietary through-the-rotor waveform
- Fuselage-mounted antenna
- Network management capability
- Throughput: Up to 10 Mbps depending on satellite parameters
- X-, Ku-, Ka-, and MIL-Ka-bands
- System hardware designed to DO-160 and MIL-STD-810 standards
- Airworthiness certification available for any civilian or military aircraft
- External components can be removed in 30 minutes or less when not required
- Modular architecture allows the use of many different antennas and networks based on customer requirements
- Tested to helicopter-specific shock and vibration requirements

Visit defense.hughes.com to learn more.