

MagNav in GPS-denied environments

Modern operations run on GPS - and adversaries know it. Jamming and spoofing are now routine, and every aircraft that treats satellite positioning as its single source of truth inherits risk to its mission.

The physics behind MagNav

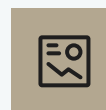
MagNav works by reading that fingerprint in flight and matching it to a georeferenced magnetic anomaly map:



A sensitive magnetometer measures the total magnetic field along the flight path.



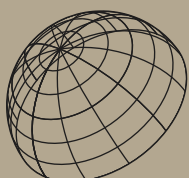
Algorithms subtract the known core field and the aircraft's own magnetic signature to recover the crustal anomaly signal.



A recursive estimator correlates the measured anomaly profile against the reference map to produce an absolute position fix, and then uses that fix to bound the drift of the onboard inertial navigation system.

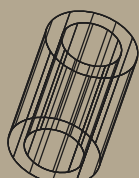
Software-first MagNav

AQNav is a MagNav software solution that provides GPS-independent navigation.



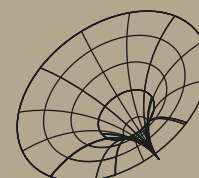
Sensor Agnostic

AQNav runs on the sensors you choose, from the vendors you choose.



Open Architecture

AQNav integrates into the architecture you have, through the interfaces you already use.



Minimal Compute

AQNav gives you MagNav without adding a compute burden.

Why MagNav for alt-PNT

•
**UNJAMMABLE
AND UNSPOOFABLE**

MagNav uses the Earth's magnetic field, so there is no signal to overpower or hack.

•
**ALL-WEATHER,
ALL-TERRAIN**

The magnetic field is present over ocean, desert, ice, and cloud. MagNav needs no view of the sky and no view of the ground, so it keeps working through weather, darkness, and featureless terrain that blind other approaches.

•
**PASSIVE
AND COVERT**

MagNav emits nothing and has no detectable signature, so the technology is silent and undetectable by adversaries.

•
**INFRASTRUCTURE
INDEPENDENT**

No satellites, no ground stations, no datalinks. Nothing off-board has to survive, be in view, or stay on the air for MagNav to deliver.

•
**GLOBALLY PRESENT
AND ENDURING**

The reference field blankets the planet and is stable across geological time.


Secure your positioning
by integrating AQNav
into your stack.

