

Wood and Wood Core Composite Propellers

Sensenich manufactures all UAV propellers to rigid FAA Certified Aircraft propeller standards, including using kiln dried lumber, glue shear testing, and material certifications. Sensenich puts every individual propeller through a rigid conformity inspection where airfoil and hub dimensions are verified to the propeller drawing, and every propeller is balanced at four separate stages: during assembly the glued blank is rough balanced; static balance is then checked and maintained through the carving, tipping, and painting operations.

All Sensenich wood props are cut on state-of-the-art CNC machines to assure consistent performance: 10 years from now, the same computer file will be used to profile your new prop, assuring you get identical performance from every propeller.

Composite Propellers

Sensenich's line of composite ground adjustable UAV propellers combines the latest airfoil and blade design technology with synthetic fiber manufacturing, allowing optimization of airfoils from hub to tip, increasing performance and allowing some tailoring of the noise profile.

The blade is a sealed hollow shell of carbon and glass, with excellent strength/weight, durability and very low inertia. Adjustable hubs allow individual blade replacement and infinite pitch adjustment; electric variable pitch hubs provide in-flight tailoring of blade angle for maximum climb or loiter performance.

Introduction to APPLICATIONS



Reliable, Efficient Fixed and Variable Pitch UAV Propellers

Wood, Composite, and Metal Propellers
for a Broad Range of Applications



Made in the USA since 1932

Sensenich Propeller Co.

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Lancaster, PA

Plant City, FL

FAA Production Certificate Holder
FAA Approved Repair Station

Design / Engineering

Sensenich propellers are designed using Minimum Induced Loss / Theodorsen method for primary design point, then are mission-profile optimized, using proprietary in-house and commercial codes for off-design point analysis.

Maximum Theoretical Propeller Efficiency

It's important to consider propeller sizing and integration on any new UAV or engine upgrade *before* freezing the design.

Often, the UAV manufacturer approaches the prop designer with final specifications for power rating and maximum prop diameter.

Unfortunately, this limits the prop performance envelope even before the prop designer can consider airfoils, section thickness, planform, etc...

Six key variables define overall propeller efficiency: diameter, number of blades, airspeed, power, rpm, and altitude.

Then the blade shape, airfoils, and section thicknesses are fine-tuned according to inputs like cowling design and necessary inflow and cooling requirements. All this is matched to the mission requirements for diverse parameters like speed vs climb vs. loiter efficiency; the required noise signature (a factor of tip speed, blade shaping, airfoils); pitch setting and options (fixed, single pitch, ground adjustable, in-flight variable pitch); deployment mode (front line or remote); and blade protection options (like leading edge erosion, finish, and damage tolerance).

With these design points determined and prioritized, Sensenich engineers work with you to produce *the* propeller for your UAV.

Designed and Built for Performance

Sensenich produces hundreds of designs for light aircraft and UAVs in wood, composite, and metal; the vast majority of UAV props are made of wood or composite.

UAV Propellers for a Wide Spectrum of Applications

- Horsepower from 5 to 200
- Power: piston, rotary, heavy fuel, electric; direct or redrive
- Aircraft speed: 30 - 300 knots
- Diameter: 15" to 98" (380cm to 2.48m)
- Blade count: 2, 3, 4, 5, or 6
- Many standard flange patterns available
- Custom flange patterns accommodated as needed
- Fixed pitch: wood, composite, or aluminum
- Ground-adjustable composite
- Variable-pitch (electric) composite props for 40-70hp w/ redrive
- Pusher or tractor
- Clockwise or counterclockwise rotation
- Protection: urethane edge; special erosion coating; metal erosion shield
- Hundreds of off-the-shelf propeller configurations

Unmatched Manufacturing Capability, Quality Assurance:

- Prototype and full-rate production quantities
- CNC profiling of wooden and metal propellers
- CNC cut metal molds for composite blades.
- 100% inspection for hub drilling, blade geometry, balance, finish, more...
- FAA / Military approved Quality System and Special Process manual per Mil-I-45208 and Mil-Q-9858A.
- Certificate of Conformance
- Compliance to ASTM design standards

Note:

Sensenich propellers have been used on drones and UAVs since the 1950s. Sensenich is the world's leading manufacturer of propellers for UAVs, light aircraft and airboats.