mt propeller

PC-12 Propeller

Fact, Fiction or ?

Fact, Fiction or ?

"Owners of pre-NG Pilatus PC-12's hankering to upgrade their airplane's original P&W PT-6 engine can now add a Hartzell five-blade composite swept tip propeller when the work is completed by Broomfield Colorado-based Finnoff Aviation"

Fiction.

Finnoff Aviation Products does not complete any work anywhere. Its 67P engine upgrade conversions are all done through authorized Pilatus Service Centers. Although the Hartzell five-bladed propeller is compatible with Finnoff's 67P engine upgrade due to Hartzell's STC amendment, Finnoff Aviation Products does not sell or install the Hartzell five-blade propeller either with or without its engine upgrade STC.

Finnoff Aviation Products promotes and distributes the MT five-blade propeller because the company believes the MT Propeller offers superior performance. Finnoff believes that owners of its engine upgrade STC should not be limited in their choice of propellers available for the PC-12.

Fact, Fiction or ?

"Thanks to the five-blade Hartzell propeller, the 2016 PC-12 NG cruises 5 kts faster"

Misleading.

Based on the Pilatus POH Max Cruise performance tables – at low altitudes, where torque settings are the same, the new 2016 NG (with Hartzell 5 blade) cruises slightly SLOWER than the former NG (with Hartzell 4 blade). While it is true that at higher altitudes under hotter conditions cruise speed increases of as much as 5 kts are achieved, it must be remembered that Pilatus made many aerodynamic improvements to the 2016 NG which, no doubt, contribute to this speed increase.

(continued)

Fact, Fiction or ?

"Hartzell's Structural composite utilizes aerospace grade carbon fiber. It is five to 10 times stronger than beech wood and spruce wood core propellers"

Nonsense. What does this mean? What basis is used to make such a statement? 10 times stronger in what test?

The strength of **MT propellers** is based on tests, simulations and calculations per CS-P-330 (EASA Requirement) or FAR 35.24 (FAA Requirement). The **MT propellers** have at least a 10 times safety factor built into the blades which is why there has never been a blade failure in more than 110 million flight hours with more than 60,000 blades flying. If the Hartzell propeller were 10 times stronger that would imply a 100 times safety factor!

MT's blade construction (natural composite) of multiple laminated compreg* (in the blade root) and select fine grain spruce (in the aerodynamic portion of the blade) was invented by Schwarz Propeller Company in Berlin (Germany) in 1928 and used in more than 100,000 propellers during WW II from Germany, Great Britain, Russia, France, and Japan in the best fighter and bomber planes like the FW-190, JU-88, Spitfire up to Mk-22 with 5 blade propeller, Hurricane and more.

The technology is not new. What is new are some materials and the way **MT** designs and makes the propellers today with carbon fiber blade coverings and nickel cobalt erosion sheets to protect them from environmental impacts.

*Compreg: Compressed beech, impregnated with special phenol-formaldehyde resin in alcohol solution.

Fact, Fiction or ?

"...the Hartzell propeller...blades are certified for unlimited life..."

Fact but not the whole story. "Certified for unlimited life" simply means that no life limit has been imposed on the blades. It does not mean that the blades will last forever. Presumably other factors, such as blade profile dimensions falling out of spec. or damage beyond economical repair, will eventually cause a blade to be scrapped.

The life of an **MT** natural composite blade is "unlimited" because of:

- the ability to dress out defects in the blade by adding material, thereby retaining the original blade profile dimensions.
- the likelihood that blade damage can be repaired due to the ability, under many circumstances, to replace damaged portions of the core while maintaining original blade strength.

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Fact, Fiction or ? *"…the five-blade Hartzell propeller…has a 50-foot reduction in total takeoff distance…"*

Fact. (We assume so, since this statement came from Hartzell. Also we assume this statement is referring to take-off ground roll since the statement is then supported by Pilatus POH data.)

However, in controlled testing done in support of a U.S. government application the **MT 5-blade propeller** was shown to offer an approximate 15% reduction in total takeoff distance, which amounts to a lot more than 50 feet (more like 150 feet).

Fact, Fiction or ? *The Hartzell five-blade propeller has a diameter of 105 inches. The **MT five-blade propeller has a diameter of 102.4".***

Fact. Smaller diameter means less chance of a prop strike and better erosion protection. Also, all other things being equal, smaller diameter means lower tip speed which yields lower noise.

Fact, Fiction or ?

*The **MT five-blade propeller has a 2" wide nickel cobalt erosion sheet.** The Hartzell five-blade propeller's erosion sheet is about 1/2" wide.*

Fact. A wider erosion sheet means better protection from F.O.D.

Fact, Fiction or ?

***The natural composite MT prop blade yields lower vibration and higher vibration dampening characteristics** than either the Hartzell aluminum blade or the Hartzell structural composite blade.*

Fact. Vibration, in addition to contributing to pilot fatigue, decreases the life of structures and components. The foam core of the structural composite blade does not materially help dampen vibration due to the stiffness of the carbon fiber structure.

Fact, Fiction or ?

The Aircraft Flight Manual Supplement (AFMS) for the MT five-blade prop is approved to utilize the same performance charts/tables contained in the Pilatus POH, both for the Legacy PC-12 and the new NG.

Fact.

Compare & Weigh Your Choice Carefully.

mt propeller

Where Marketing Is Valued But Engineering Always Comes First

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