FEATURING:

HESTER 421
UP IN SMOKE!
414 MT PROP PIREP
READERS WRITE AND MUCH MORE...

Supporting Twin Cessna Owners Worldwide since 1988
When you buy an airplane that’s been sitting, you’ve got to be prepared to face one question: Do you feel lucky? Picture Clint Eastwood as Dirty Harry staring you down and pointing his .44 Magnum at your wallet, because that’s what’s going to take the hit if you counted six rounds when only five were fired. While there are virtually unlimited problems that can arise with a pressurized piston twin that’s been sitting, the three biggest areas of concern are corrosion, the propellers, and the engines. Corrosion can be identified during a thorough prebuy inspection, but propeller and engine problems will only become fully known after a period of flying the airplane.

My 414 needed new props and we chose MT Propeller’s composite props. Here the left one is going through dynamic balancing.

As President of the non-profit Cloud Nine Rescue Flights, I tried my luck with just such a plane last April, when we purchased a 1977 414 that had been sitting for six years. After an extensive catch-up annual (which surprisingly turned up less issues than I had anticipated), we immediately put the aircraft into service, flying it for 40 hours in the first month. About 75 hours in, we found that the threaded-hub McCauley on the right engine was going to at least need a reseqe in the near future. We also noted the left propeller had a broken prop de-ice boot. Both propellers had been overhauled at the same time about 20 years prior; meaning that it was possible that the right prop was on the verge of leaking as well. It was clear that we needed to do something with the propellers.

We identified three paths we could take to address our propeller issues:

- Overhaul the stock propellers.
- Upgrade to different Hartzell or McCauley props.
- Upgrade to MT’s 4-bladed propellers.

Option 1 was the most straightforward: send out the old propellers, hopefully nothing would be wrong with the blades or hubs, and slap them back on the plane. No shops I talked to would consider doing a reseqe or IRAN given the length of time since overhaul. This would still be the cheapest option short term, provided that the blades and hubs were reusable.

Option 2 was a little more complicated. While RAM has a number of STCs available for upgraded propellers, most of these STCs are tied to a RAM engine upgrade package. Our 414 has stock TSIO-520-NB engines, and doing an engine upgrade is not in the budget. RAM does offer an STC for stock 414s that installs newer style McCauley C501 propellers, but that is only a newer hub style, not a newer blade style, and is significantly more expensive than overhauling the old threaded-hub propellers.

Option 3 was also straightforward. MT Propeller has had their four-bladed propeller STC available for 340s and 414s for over 10 years. This STC claims all of the goals that I was looking for in a propeller upgrade: weight reduction, noise reduction, vibration reduction, and performance improvements. The MT STC has also received strong praise on the online TTCF forum from those who have made the jump. The STC is currently approved for the RAM IV engine upgrade on the 414, which would allow for a future upgrade (although I currently have no intention of doing so).

Decision and Installation Process

As made clear by this article’s title, we chose the third option. I have worked with MT Propeller in the past and have always had positive experiences with them. Additionally, efficiency, weight reduction, and performance improvements are huge priorities for me.

Our trips are typically 10-16 hours round trip, with legs in the three to four-hour range. Greater efficiency adds up fast on those legs given operation costs of over $500/hour. Plus, many of our trip legs are near or at our range limit. An increase in efficiency would eliminate some costly fuel stops.

PIREPs for the four-bladed MT STC have all reported noticeable noise reductions, and I found the old McCauley propellers to be extremely loud.

Lastly, our missions are almost always at maximum takeoff weight. Anything that reduces weight and may improve engine-out performance gets extra points. From a technical perspective, the MTs were obviously the best pick.

I contacted Martin Albrecht, MT’s Vice President, and we worked out the details for the 4-bladed propellers. We chose the colors for the blades and spinners. There are eight colors you can choose from in any combination. We chose black blades and spinners with red tips.

We elected to have the new propellers installed at MT USA facility in DeLand, FL. The propellers ship from Germany disassembled, and they are assembled and installed on-site. This is true whether the installation is performed directly by MT USA, or by one of the other MT dealers around the country.

Although there are a number of MT dealers around the country, my preference was to have MT USA perform the installation. Although the MT dealers around the country are certainly competent, there is extra assurance that everything will be done correctly when the entire process is handled directly by MT. Plus, DeLand is right near Orlando, making it a nice destination for...
upgrades to this plane for several reasons, installing the MT props still positively affects the airplane’s resale value and provides us with more options.

The End Result

On paper, the MTs were the obvious choice. So how did the experience work out?

We flew the plane to DeLand, FL, and had the installation performed at MT USA. Everyone on the staff was friendly and knowledgeable. It was 30 degrees when we left Kansas and 85 degrees in Florida, so we threw them the keys to the plane and headed to the beach for a few days. Although the installation can typically be done in 1-1.5 days, we allowed some extra time in case there were any issues (and to spend another day on the beach).

Sure enough, they did find some problems with the de-ice brushes, so we had MT replace those as well. MT finished off the work with a dynamic balance of the props before buttoning up the plane. We did a test flight, and headed off.

At this point I’ve flown the new propellers roughly 40 hours. Hands down, this is one of the best upgrades I’ve ever done to an airplane. The propellers meet or exceed expectations in every respect.

- Cruise: We’ve gained 6-10 KTAS at FL190. That makes it a solid 200-205 KTAS airplane
- Climb: There’s a solid 100-200 FPM climb rate increase for the same power setting and weight
- Weight: We saved 27 lbs
- Noise: The cheap dB meter I bought says there is no difference in noise, however the frequency has increased with the 4th blade. The perception is that the propellers are quieter. In the back, my kids are able to listen to shows on their iPads without wearing headsets, whereas previously they needed headsets to hear them. So, there is a difference.

On the first Cloud Nine trip with 48 dogs in back, a standard milk run from Houston to New Hampshire, we were able to make one stop instead of the usual two. This was due solely to the MT props, as the tailwind was insignificant. Previously the poor climb rate with the McCauley propellers, especially in summer, made climbs into the flight levels painfully slow. We used to stop in the mid teens, truing out at roughly 180 KTAS. Since the upgrade, even taking off in 80-degree weather, we were able to quickly march right up to FL 190 on a recent flight, truing out north of 200 KTAS.

The efficiency improvement from the MTs amounts to about 3%. Using the TTCF member survey, which found 414s to cost an average of $650/hr, that rounds out to a savings of $20/hr. For most, this level of savings won’t make the propellers pay for themselves on efficiency alone. However when combined with resale improvement, I expect the MT props to pay for themselves in the long run. The fact that you get to enjoy a quieter, smoother-running airplane is icing on the cake.

MT USA General Manager Peter Marshall (left), and me. MT’s customer service is excellent.

It’s worth noting that we literally went from the worst propellers this plane could have had to the best, so our results may be more extreme than someone upgrading from Hartzell Scimitar propellers or a newer design in better condition. With that said, I think the MT STC offers solid benefits that make it worth considering for anyone looking at a propeller upgrade.