LOFT Training Expansion / Insurance Considerations / Owner's Corner: Matt Waits

TWIN & TURBINE

FOR THE PILOTS OF OWNER-FLOWN, CABIN-CLASS AIRCRAFT

MAY 2026 $3.95 US
VOLUME 30 NUMBER 5

A PROFILE IN POWER:
TURBINE MOTOR CONVERSIONS, LLC

TWIN & TURBINE

EDITOR
Lance Phillips
lance@twinandturbine.com

EDITORIAL OFFICE
2779 Aero Park Drive
Traverse City, MI 49686
Phone: (231) 946-7770

PUBLISHER
Dave Moore

PRESIDENT
Matt Kenny

DIRECTOR OF OPERATIONS
Kurt Bainbridge

PUBLICATIONS DIRECTOR
Jake Smith

GRAPHIC DESIGNER
Marci Moon

TWIN & TURBINE WEBSITE
www.twinandturbine.com

ADVERTISING
Jenna Reid
816-699-8634
Jenna.Reid@VPDCS.com

ADVERTISING OPERATIONS AND ACCOUNT MANAGER
Betsy Beaudoin
1-800-773-7798
betsybeaudoin@villagepress.com

GENERAL AVIATION ADVERTISING INFORMATION
Aviation.Publications@VPDCS.com

SUBSCRIBER SERVICES
Rhonda Kelly
Jessica Meek
Leah Backus
P.O. Box 968
Traverse City, MI 49685
1-800-447-7367

To change mailing address, email *rhonda.kelly@vpdcs.com*

Twin & Turbine (ISSN 1092-6402), USPS 24432 is published monthly by Village Press, Inc. with advertising offices located at 2779 Aero Park Drive, Traverse City, Michigan 49686. Telephone (231) 946-3712. Printed in the United States of America. All rights reserved. Copyright 2016, Village Press, Inc. Periodical Postage Paid at Traverse City, MI.

SUBSCRIPTIONS: *Twin & Turbine* is distributed at no charge to all registered owners of cabin-class aircraft. The mailing list is updated monthly. All others may subscribe by writing to: *Twin & Turbine,* P.O. Box 968, Traverse City, MI 49685, or by calling 1-800-447-7367. Rates for the United States and its possessions follow: one year $15.00; two years $29.00. Canadian subscriptions are one year $24.00; two years $46.00, including GST tax. Overseas subscriptions are one year $52.00; two years $99.00, U.S. funds. Single copies $6.50.

ADVERTISING: Advertising in *Twin & Turbine* does not necessarily imply endorsement. Queries, questions, and requests for media kits should be directed to the Advertising Director, *Twin & Turbine,* P.O. Box 968, Traverse City, Michigan 49685. Telephone 1-800-773-7798. Website: *www.twinandturbine.com*.

MANUSCRIPTS: *Twin & Turbine* assumes no responsibility for unsolicited manuscripts, photographs, or artwork. While unsolicited submissions are welcome, it is best to query first and ask for our Writer's Guidelines. All unassigned submissions must be accompanied by return postage. Address queries and requests for Writer's guidelines to the editor.

POSTMASTER: Send address changes and inquiries to Twin & Turbine, Village Press, Inc., P.O. Box 968, Traverse City, MI 49685.

Contents

MAY 2026 • VOL. 30, NO. 5

Editor's Briefing

2 **Just a Non-Stop Away**
by Lance Phillips

4 **LOFT Expands Training with the Citation CJ3**
by Rich Pickett

8 Editor's Pics
by Lance Phillips

10 **Insurance Considerations During Maintenance**
by Lawrencey Searcy, Jr.

Cover Story

14 **A Profile in Power:**
Turbine Motor Conversions, LLC
by Matt McDaniel

Owner's Corner

26 **Matt Waits**
by Grant Boyd

On Final

32 Think of it as a School Zone
by David Miller

COVER PHOTO:
Photo courtesy of Matt McDaniel.

Issues of Twin & Turbine are available for free *www.twinandturbine.com*

“That all-important first impression was waiting on a parking pad, outside a private hangar.

A Profile in Power:
Turbine Motor Conversions, LLC

by **Matt McDaniel**

Growing up, I was taught that you only get one chance to make a first impression. It's a concept that Kenny Meines obviously understands well. As founder and owner of Turbine Motor Conversions, LLC (TMCX), Meines had graciously offered to show me what his young company was up to. My airline flight arrived at the Pullman-Moscow Regional Airport (PUW), situated between the towns of Pullman, WA, and Moscow, ID, in the beautiful rolling hills and croplands of the Washington/Idaho Palouse Region. Kenny picked me up and drove us to the other end of the airfield, exchanging pleasantries along the way. That all-important first impression was waiting on a parking pad, outside a private hangar.

The unmistakable profile of a Helio Courier soon came into view. No ordinary example, though. The long-tapered cowling flowed perfectly between the immense fuselage lines and the flat-black spinner. The huge exhaust stacks on either side and the 4-bladed prop, resting in full feather, removed all mystery of what the cowling was hiding. After a causal preflight inspection and discussion, we climbed aboard. Soon, the familiar clicking of ignitors, whining of turbine wheels, and meshing of reduction gears culminated in a satisfying whoosh as the engine lit off and spooled up.

After the Start and Before Takeoff Checklists were complete, and the required two-minute warm-up was accomplished, we made a radio call over the common traffic frequency. Meines lined up on the centerline, locked the tailwheel, and taxied forward a few feet to verify it was locked. The blustery wind was mostly down the runway, with a 10 to 15-knot headwind component. Brakes held, the PT6's power was advanced and allowed to stabilize. Control yokes neutral, brakes released, the giant Helio rolled forward perhaps two fuselage lengths before leaping into the air. Meines pitched for best angle of climb (Vx) while reducing power, and our mutual laughter could not be contained. Still giggling like schoolboys, Kenny leveled off at pattern altitude. Looking straight down, I could see we were roughly halfway down PUW's 7,100-foot runway. We had taken off and climbed 1,000 feet vertically in roughly 3,500 feet horizontally. Expressed another way, we'd gained one foot of altitude for every 3.5 feet of forward travel. First impression made!

Low Aspirations

Meines never aspired to soar to great heights in business jets or airliners. His sights were not set upon the heavens; they were more along the low horizons. He was a young man and private pilot flying a classic 1947 Bonanza for recreation when he inquired about becoming a crop duster

pilot. Soon, an unusual offer came along. Greg Beck, owner of Beck's Spray Service in Ontario, OR, told Kenny that if he'd complete an aerial application training school and buy his own ag plane, there would be work for him. In fact, he promised Kenny 50% of his company's ag flying the following season.

In a giant leap of faith, Meines headed off to Georgia for training in early 1993. Initial training was conducted in Super Cubs. Having been taught to fly in a Champ in 1989 by a 50,000-hour octogenarian, Kenny had an instant leg up but still had to be taught how to fly low. Very low! He quickly advanced into the single-seat Piper Pawnee, where he was largely on his own to learn the trade. Transition into larger ag aircraft soon followed. All this, while also completing the academic side, learning the rules that regulate aerial application operations and the chemicals used by farmers and ag pilots. Once he'd completed the course, Kenny sold his beloved V-Tail Bonanza.

Using the Bonanza proceeds, he purchased a Cessna 188 AgHusky. The AgHusky was the ending model of Cessna's AgWagon series, which began production in 1966. The original AgWagon design borrowed heavily from the C-180 airframe, including the same 230 hp engine. The 188 line eventually evolved into the 310 hp AgHusky, which closed out C-188 production in 1985. After spraying for Beck through the 1993 season, Meines moved to Pullman, OR, and started his own spray business. He progressed through a series of ever larger and more powerful spray planes, mostly turbine-powered. Over the course of a 31-year career, Kenny logged some 17,000 hours flying low over crops. He earned his stories of taking off loaded with every ounce his burly ag plane could lift from some super-sketchy farm strips.

For the past 20 years, Meines has also been a test pilot for Cascade Aircraft Conversions (CAC) in Garfield, WA. CAC specializes in converting piston-engine ag aircraft to turbine power. Over the years, they did this for many different types of ag planes. When a turbine conversion emerged from their hangar, it was usually Kenny at the controls for the first test flight. Between the day job and this side gig, Meines developed a deep respect for the reliable power of Pratt & Whitney's PT6 family of turboprop engines, not a single one ever letting him down. He tells the story of when his son would fly all day applying load after load to the crops, before Kenny would take over to continue spraying through the night, using night-vision goggles (for which he carried special certification). During those spraying marathons, the PT6 on their Thrush spray plane would often run continuously for 24+ hours as they hot-fueled and hot-loaded, over and over, for the quickest possible turnaround times!

A Family That Whines Together

Over the years, Kenny and his wife, Beth (a Private Pilot herself), owned several aircraft for fun and adventure. The one that impressed Kenny the most was a Murphy Moose he bought nearly completed in 2022. Moose builders commonly install the Vedeneyev M-14P radial, which produces 360 to 400 horsepower, depending on variant and factory options. Aftermarket options can push these 9-cylinder Russian radials up to 460 hp. While the M-14 is well regarded for its power, it wasn't designed with the long life span and dispatch reliability most Western pilots have become accustomed to.

Kenny longed for a rugged STOL bush plane (like the Moose) for taking his family camping in the backcountry. But he wanted turbine reliability supporting high-altitude takeoffs at Max Gross Weight (MGW). While he often jokingly whined about this turbine dream machine, it was his wife who initially pushed the dream towards reality. Beth and Kenny had flown the Moose to Sunriver, OR. When it was time to depart for their second destination in southern CA, the M-14 experienced a hydraulic lock on the two lower cylinders. Kenny was soon pulling plugs and draining oil on the tarmac to clear the lock. They'd already experienced multiple flights with engine roughness and constant headaches with the engine monitor system. Beth's confidence in the plane had hit bottom. She suggested they cancel the trip across the

rugged terrain to California and return home to Pullman, adding, "Once home, you are going to order that turbine engine you've been wanting to put on this thing!"

The Moose needed a turbine whine, and Kenny knew just how to get the ball rolling. He headed over to his old friends at CAC and told them what he wanted, laying out strict ground rules. The turbine Moose needed to be engineered as well as any of their certified ag plane conversions. It needed to be designed and executed so that it looked natural, rather than cobbled together. He wanted a robust bush plane, but it needed to also look like a factory engine installation. CAC and Meines agreed that they would all work together to do it right, or not at all.

The Beast with Two Heads

The plane that Meines would eventually dub "The Beast" began coming

together in early 2023. By June, it was ready to fly and, of course, Kenny was at the controls. The first-ever Murphy Turbine Moose was better than he'd hoped for. He reported to CAC that it was one of the most uneventful initial test flights of his career. The offset CAC had engineered into the motor mount for the turboprop engine seemed perfect, and the turbine Moose needed less rudder on takeoff than it had with the M-14 radial. His synopsis of the flight was that it was "flawless."

Concurrently, the 2023 aerial application season was extremely slow for Meines and his company, Ranch Aero, Inc. He began to reevaluate his retirement plans. The need for his services was dwindling in the Palouse Region. Plus, he was feeling the toll of the long hours, high stress, and physical labor the job required. Reluctantly, he decided maybe the time had come to hang it up. His company and his beloved turbine Thrush ag plane sold at the asking price so quickly that he didn't have an opportunity to change his mind.

With new freedom and time, he posted some videos of his Beast Moose online. It didn't take long for pilots to start asking how they could get one too. Retirement began to look different. Thus, TMCX was born. The Beast was displayed at Oshkosh AirVenture 2023, and TMCX was introduced to the aviation world. What began as simply wanting turbine reliability and performance had grown a second head. Suddenly, he was in the turbine conversion business, looking to the future and other airframes with modification potential.

A friend soon approached Kenny about a turbine bush plane, but he didn't want to build a Moose. Kenny suggested he consider a Helio Courier. Kenny explained the history and capabilities of the legendary bush plane, made famous by the JAARS airshow demonstrations of the Helio's incredible STOL capabilities. The Courier airframe was big, stout, and more than capable of handling turbine power. In fact, the final version of the Courier (the H-800) was produced with an 8-cylinder Lycoming IO-720 engine weighing much more than the Pratt & Whitney PT6A-20. They soon struck a deal, and Kenny expanded his arrangement with CAC as they again engineered a Helio turbine conversion. Meines found his client a 1984 H-700 Courier (considered a late-model) that was a good candidate for conversion. Today, that Turbine Courier serves double duty as the owner's personal turbine bush plane and TMCX's demo plane.

Design and Installation

Regardless of the airframe, Meines insisted on some unique features for these turbine conversions. First and foremost, they are designed to operate from remote, unimproved strips. So, some specific threats were

addressed from inception. The biggest was preventing the expensive turbine engine from ingesting FOD. Remote strips and off-airport operations can require reverse thrust and heavy braking, which throws up dust and dirt that could be sucked into the engine. Traditional inertial separation doesn't work well in such conditions, as there is little to no forward motion of the aircraft at that point. The solution was quadruple K&N intake air filters instead of particle or inertial separators. Of course, filters can clog (with backcountry dust or in-flight ice). To prevent engine intake air starvation, an alternate intake air system was incorporated via a cockpit-controlled Alternate Air Valve.

Custom exhaust stacks move exhaust air further outward than on most PT6 installations. This allows stock fresh-air vents on the fuselage sides to remain without fear of introducing exhaust gases into the cockpit or cabin. Such vents don't exist on aircraft designed originally with turbine power. On aircraft originally piston-powered (with exhaust usually exiting under the cowl/fuselage), it was easier to design custom PT6 stacks than to redesign all the cabin air vents. Of course, there is a second benefit to these custom stacks; one that is not trivial. They almost eliminate fuselage soot residue, greatly reducing the amount of cleaning required to prevent metal or paint discoloration.

Meines also wanted a fuel purge collector tank installed. Many PT6's purge a small amount of fuel at shutdown. Usually, this fuel is dumped overboard. However, because these conversions are designed for bush planes (sometimes operating on floats), Meines wanted to be environmentally friendly and prevent even small fuel dumps into pristine lakes or onto backcountry soil. The purge tank can be drained manually, and its contents poured right back into the fuel tanks (a small, but noteworthy, economic savings).

The PT6A-20's 550 shp is converted to 2,500 pounds of static thrust at the propeller. Considering the largest conversion so far (an H-800 Helio Courier) has a MGW of 4,000 lbs., that is an impressive thrust-to-weight ratio. The Murphy Moose and the lighter Helio conversions have lower MGWs, producing even better ratios. Thus far, TMCX has installed 3 and 4-blade, full-feathering, reversible props from three manufacturers, ranging from 99 to 104 inches in diameter.

Of course, when strapping 550 shp to the front of a taildragger, directional control is paramount. CAC already had much experience taming left-turning tendencies, via their ag plane conversions. On The Beast, they designed in offset thrust angles both down and 2 degrees right. Similar offsets were applied to the Helio conversions and have already been

engineered for future conversions on other airframes. The custom-made engine mounts are also engineered to be extra-beefy, absorbing the punishment of the backcountry and/or on floats. CAC's hearty 5-point mounts have proven more than up to the task.

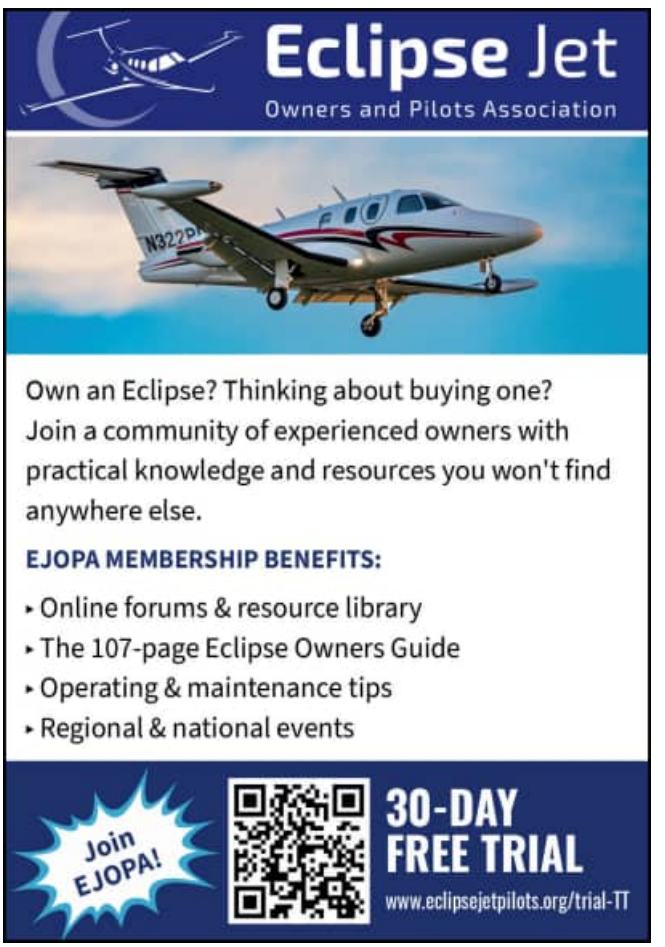
TMCX's conversions do not stop at the firewall, however. Each aircraft is customized to order, spinner to tailcone. The most typical requests are avionics-related. Since the engine instrumentation and throttle quadrant must be updated anyway, most buyers opt for a full Garmin glass panel (VFR or IFR, depending on the future mission). The Garmin G3X system is robust and feature-packed, especially when combined with a Garmin digital autopilot and touchscreen navigators. Airframe mods or existing STCs can be applied upon request, as well (such as baggage door mods, various tundra tire options, etc.). Upgraded upholstery, interior appointments, and exterior paint work can all be accommodated and customized by request, whether optimized for backcountry durability or flashy show-plane glitz.

To meet federal regulations, each conversion is delivered with a serial-number-specific Pilot Operating Handbook (POH) and maintenance manual with instructions for continued airworthiness. For the conversion of certified aircraft, this starts with their existing manuals, upgraded for the firewall forward conversion, and any other upgraded equipment or features installed. For aircraft that were in the Experimental category to begin with, this means Meines and his team are carefully crafting such procedures and manuals where none existed before, adding significant value and safety to those airframes.

The Bottom Dollar

The most common questions that TMCX fields are those related to cost, both for conversion and operation. The numbers are surprisingly economical in the grand scheme of turbine aircraft. Firstly, TMCX is not ordering or offering brand new PT6 engines (which can go for more than $750,000). Such an expenditure makes little sense for an experimental aircraft that is unlikely to be flown more than a couple of hundred hours per year. Instead, TMCX sources mid-time PT6A-20s that have more remaining hours than most recreational owner-pilots fly in a lifetime. These engines usually have around 3,600 hours total time and have a typical lifespan of ~11,000 hours. They also have zero time since hot section inspection, next due after 1,800 hours. As a result, TMCX offers the firewall-forward conversion for around $250,000 (including prop), depending on the specifics of the package requested.

Operationally, the -20 burns approximately 25% more fuel than the reciprocating engines it replaces (generally big-bore Lycomings



or Continentals or the M-14 radial). Takeoff fuel burns can be as high as 50 GPH. However, rarely, full takeoff power is actually required in these aircraft, given their natural STOL capabilities. Reduced power takeoffs can be utilized to minimize engine wear and fuel burn for most non-extreme takeoff scenarios. These conversions truly astound in high-density altitude operations. Operators can still expect 2,500 FPM climbs departing at density altitudes up to 12,000 feet. Takeoff distances have been reduced from 500 feet in the piston-powered models to under 150 feet in the turbine version. In cruise, 25-30 GPH is typical, depending on altitude and cruise speed desired. None of these airframes will ever be speed demons, as they are too draggy with their STOL-optimized designs. Turbine Helios typically cruise up to 150 MPH, while the Moose can see 200 TAS at altitude. Yet, it's not the top end that drives conversions. Rather, it's the turbine's takeoff and stopping power. The PT6 also shines in low oil usage. With a whopping 500-hour oil change interval recommended, typical consumption is only 1 qt every 30-50 hours.

Present and Future

As of this writing, TMCX has facilitated eight turbine conversions, including four Murphy Mooses and four Helio Couriers (including H-295, H-700, and H-800 models). As this article was submitted, a 5th Moose is beginning conversion, and a 5th Helio had been purchased for conversion. Engineering work is already complete for the Bushliner 1850, the Bearhawk 5, and the Cessna 185. If a buyer is interested in one of these conversions, they can opt to supply a completed airframe, or TMCX can help procure an airframe that both parties deem acceptable for conversion.

Meines and his team are turning out stunning work, well-engineered and rugged, with eye-popping performance. Thus far, their turnaround time has been three to four months, and their goal going forward is five conversions per year. As they expand into additional airframes and demand soars, TMCX's expectations could push even further. T&T

Matthew McDaniel *is a Master & Gold Seal CFII, ATP, MEI, AGI, & IGI, and Platinum CSIP. In 36 years of flying, he has logged over 23,500 hours total and over 6,100 hours of instruction given. As owner of Progressive Aviation Services, LLC (www.progaviation.com), he has specialized in Technically Advanced Aircraft and Glass Cockpit instruction since 2001. Currently, he is also a Boeing 737-series Captain for an international airline, holds 8 turbine aircraft type ratings, and has flown over 160 aircraft types. Matt is one of fewer than 10 instructors worldwide to have earned the Master CFI designation for 12 consecutive two-year terms. He can be reached at:* **matt@progaviation.com** *or 414-339-4990.*