CUSTOMER SUCCESS STORY

California's SkyDance SkyDiving finds the ideal jump airplane

Texas Turbines fits new Honeywell engine to Cessna Caravan

Photo credit: Kurt Issel

Overview

Ray Ferrell operates one of the largest skydiving centers in Northern California. Part of the skydiving industry since 1978, he knows what's required of a commercial jump airplane and he found the ideal solution when he engaged Texas Turbines to fit a new Honeywell engine to his Cessna 208-B Caravan.

Background

SkyDance SkyDiving operates out of Davis in the Sacramento Valley, California, where it caters to local jump fans, has a thriving international and tourist clientele and also works on Hollywood films and TV commercials.

It was formed in 1987 by Ray Ferrell, an experienced parachute instructor and Federal Aviation Administration (FAA) parachute examiner who also runs Maxim Aviation which leases aircraft to other jump operators.

Ferrell started his business with Beechcraft King Air B90s and piston Cessna 182 and 206 airplanes but wanted a better alternative because traditionally, jump planes were just converted corporate aircraft.

He contacted Pacific Aerospace in New Zealand and worked with the company to develop the P750XL, a single turboprop skydiving plane.

Ferrell imported the aircraft, used them for his own operation and still has a number out on lease. But as the P750XL can only carry 12-15 jumpers, it did not fully match his commercial requirements. He needed greater capacity and that meant more power.

Business Need

"For skydiving our target is an airplane that's fast, efficient and can climb to 13,000 feet within 15 minutes while carrying a good load of jumpers," said Ferrell.

"We also want a user-friendly plane that's easy for pilot training and maintenance. It needs to be high-winged with a large door and to have a wide center of gravity (CG) range so it's not going to stall easily. Overall it must be safe and reliable.

"The Cessna Caravan has always been a pretty good airplane but a standard model is so underpowered that it didn't make a very good plane for sky diving operations. We realized that if we were going to average more than 14 jumpers, converting a Cessna Caravan to a bigger engine was the way to go."

The company had previously put a Grand Caravan out for conversion and has used it for two years but there were various issues with the conversion company so when he wanted a second Caravan upgrade, Ferrell chose Texas Turbines and Honeywell.

Solution

SkyDance SkyDiving decided on a Supervan 900 conversion for its Cessna 208 Caravan, replacing the standard PT6 engine with a 900hp Honeywell TPE331 12JR turboprop. Texas Turbine Conversions holds the supplemental type certificate (STC) for this work and has been converting aircraft to the Honeywell engines since the mid-90s.

QUICK FACTS

Honeywell solution
TPE331-12JR engine

Customer results

- Four ascents per flight hour to 13,500 feet with up to 20 skydivers
- Fuel economy saves between three and six gallons of fuel per flight hour
- Less engine noise and longer time between overhaul (TBO)
- The robust Honeywell engine delivers reliability and safety

Why SkyDance SkyDiving chose Honeywell

- Additional Cessna 208 engine performance required for sky diving operations
- Honeywell engines deliver the necessary power combined with economic operation
- These are recognized and highly regarded upgrades for the Cessna Caravan
- Honeywell partner Texas Turbines has a 20-year record of these conversions

Customer

- Name: SkyDance SkyDiving
- Location: Davis, California
- Industry: Sky diving
- Website: www.skydanceskydiving.com

> The Texas Turbines conversion makes great commercial sense for us because with the Honeywell engine, we're averaging four loads per hour up to 13,500 feet, when the best Super Otter will only do about two and a half loads."
>
> **Ray Ferrell, president and managing director, SkyDance SkyDiving**

The TPE331 engine is flat-rated to lengthen its lifespan while holding rated power at higher altitudes and higher temperatures. It's a direct drive engine which enables instantaneous power response with no spool-up time. Also, coupling the four-blade Hartzell prop with the slower turning 900 shaft horsepower (SHP) engine lowers noise levels but increases static thrust for takeoff, quicker climb and faster cruise.

Texas Turbines' generic comparisons between the PT6A-42A engine and the Supervan 900 TPE331-12R show a 26 percent improvement in take-off distance, a 19 percent increase in climb rate and a five percent increase in maximum cruise speed. Average overhaul costs are reduced by 58 percent and operational costs per hour, based on time between overhaul (TBO), are reduced by 70 percent.

Benefits

"The Texas Turbine conversion makes great commercial sense for us because with the Honeywell engine, we're averaging four loads per hour up to 13,500 feet, when the best Super Otter will only do about two and a half loads," said Ferrell.

"We have it set up so that it can comfortably take 18 to 20 jumpers and they're very excited about it. With its high-wings and large door they like it more than any other airplane we have ever operated here."

Fuel economy is vital for this commercial organization and Ferrell estimates that with the new Honeywell engine they're saving between three and six gallons of fuel per flight hour, compared to their previous conversion.

Another advantage for the bottom line is that quicker turnaround times mean quicker re-packing so the company can operate with fewer tandem parachutes. Previously it required up to 14 of these $14,000 rigs but now needs just ten.

The Honeywell engine is much quieter than others for takeoff and landing and at 13,000 feet it is inaudible on the ground.

At 7,000 hours, it has the advantage of longer TBO and pilots also have the comfort of knowing that because of improved performance, they can safely take off in 1,500 to 1,800 feet. Work currently being done on the NTS lock-up system also means that descents will be considerably faster.

"My experience with Texas Turbines and Honeywell has been excellent and the bottom line is that we are really happy with the conversion," said Ferrell.

"The spectacular customer service and the customer support is unlike any I have found with any other aviation company in the past. The airplane has performed better than my expectations and the Honeywell engine is extremely robust."

This was proved recently when the aircraft was loaned out in Texas and a pilot taxied it into a set of steps.

The prop was destroyed but the engine remained intact. Honeywell and Texas Turbines got the airplane back in the air in ten days and Ferrell estimates the cost to be one third of similar work on a PT6 engine.

"All in all, it's been a great experience and both Honeywell and Texas Turbines have been really good to work with," concluded Ferrell. "The service we have received has been better than any other engine manufacturer we have dealt with over the years.

"We think that this conversion gives the Grand Caravan all the horsepower required for the skydiving industry which needs to get people to altitude quickly. We like the overall performance of the airplane and I'm so happy with it that I plan to do another conversion in the not too distant future."

Honeywell Aerospace
Honeywell
1944 E. Sky Harbor Circle
Phoenix, AZ 85034
Telephone: 1.800.601.3099
International: 1.602.365.3099
www.honeywell.com

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