

**Honeywell**

THE POWER OF **CONNECTED**

# AIRLINES PILE ON THE POWER TO BEAT THE CHALLENGES OF THEIR HARSH ENVIRONMENT

Texas Turbines fits new Honeywell engines to Cessna Caravan and five de Havilland Otters

**“ The Honeywell engine conversions are unbelievable in what they do for airplane performance ... we’ve been able to reduce costs and still maintain the same amount of passenger traffic. ”**

*Mike Stedman, co-owner, Alaska Seaplanes  
and partner, Wings Airways*







## Overview:

From bear cubs and eagles to prisoners and tourists, the variety of passengers carried by Alaska Seaplanes and Wings Airways underlines their importance to life in Southeast Alaska. They need aircraft that combine power and performance with economical operation and, to achieve that, they engaged Texas Turbine Conversions to carry out Honeywell engine upgrades.

## Quick Facts

### Honeywell Solution

- TPE331-12JR and TPE331-10R engines

### Customer Results

- 20% improvement in take-off distance and 19% increase in climb rate (generic results)
- Time between overhaul (TBO) lengthened from 1,000 hours to 7,000 hours, reducing average overall costs by 58%
- Overall operational efficiency increased by 30 - 40% (generic results)
- Business levels maintained with fewer pilots and lower operational costs

### Why the customer chose Honeywell

- Honeywell engines deliver the necessary power combined with economic operation
- These are recognized and highly regarded upgrades for the Cessna Caravan and the Havilland Otter
- Texas Turbines has a 20-year record of these conversions

### Customer

- Name: Alaska Seaplanes and Wings Airways
- Location: Juneau, Alaska
- Industry: Air transport
- Websites: [www.flyalaskaseaplanes.com](http://www.flyalaskaseaplanes.com)  
[www.wingsairways.com](http://www.wingsairways.com)

## Background:

Aviation is the most efficient way to travel in Southeast Alaska and there are two companies that specialize in flying around this challenging region. Juneau-based Alaska Seaplanes is the leading commuter airline in the area, providing scheduled flights, charters and US mail services. Wings Airways specializes in float plane tours, especially for passengers from cruise liners that visit the area.

“You name it, we haul it,” said Mike Stedman, the co-owner of Alaska Seaplanes and a partner in Wings Airways. “People in the remote villages use us like city dwellers use a car. They fly into town with us, go to the grocery store, get their supplies and fly home. The local pizza restaurant will use our service to make deliveries, we’ve transported prisoners and I’ve even seen orphaned bear cubs and eagles on our planes.”

Seven days a week from May to September, Wings Airways flies cruise line passengers to the remote Taku Lodge and on sightseeing tours of the area’s dramatic glaciers.

## Business Need:

Both companies rely on aircraft that can cope with tough conditions and heavy workloads. A Cessna 208B ‘Supervan’ Grand Caravan is part of the Alaska Seaplanes fleet. Wings Airways’ line-up includes five single-engine de Havilland DHC-3 Otters that are fitted with floats in the summer.

All of these aircraft must be able to cope with adverse conditions, whether it’s the sea swell on the exposed Cross Sound or negotiating a Five Glacier Tour.

They need short take-off and landing (STOL) capability and fast airspeeds. Since they are commercial aircraft, they also need to operate economically with good payloads, low fuel and oil consumption and a long time between overhaul (TBO).

## Solution:

Increased power and efficiency were needed and, to achieve these benefits, the companies decided on engine upgrades for the Caravan and Otters. Alaska Seaplanes chose to install a 900hp Honeywell TPE331-12JR turboprop engine to replace the standard PT6 engine on its 1997 model Caravan which had 6,000 hours on the clock.

Wings Airways opted for Honeywell TPE331-10R turboprop engines to replace the standard Pratt & Whitney R-1340 radials on its Otters, and since the upgrade they have accumulated a total combined flight time of over 20,000 hours.

Work on all six aircraft was carried out by Honeywell partner Texas Turbine Conversions which holds the supplemental type certificate (STC) and has been implementing these modifications for 20 years. The company went to Wings Airways’ base in Juneau to convert the first two Otters but subsequent upgrades were carried out by one of Texas Turbines’ installation partners in British Columbia.

In addition to the engine upgrade, the Caravan was also fitted with new avionics and was given an interior refurbishment and new exterior paint job. Texas Turbine Conversions has been modifying aircraft with Honeywell TPE331 engines since the mid-90s. It has converted over 40 Otters since 2001 and even more Caravans.





## Benefits:

“The Honeywell engine conversions are unbelievable in what they do for airplane performance,” said Stedman. “We haul ten people in the Otters and we do two regular tours including the Five Glacier Tour where we fly up to 6,000 feet above the ice field.

The Otters also land on the Taku River to unload passengers at Taku Lodge. They fly all day and do so many hours that we have to double-staff them to comply with pilot safety hours. “We were not able to do that with the piston engines because the airplanes were just not fast enough.

“Previously, Wings used seven de Havilland Beavers, a couple of Cessna 206s and the five piston Otters. After the Honeywell upgrades, we’re now doing the same amount of flying with just five turbine Otters. “We’ve also eliminated a lot of overhead. We need fewer pilots and we’re not using as much engine oil as we were with the piston engines.

“Previously, we could burn up to three gallons of oil an hour so we were putting three gallons of oil in for every trip and that was very expensive. Also, the time between overhaul used to be 1,000 hours but with the new engines it is 7,000 hours, so the upgrades were a no-brainer for us. We’ve been able to reduce costs and still maintain the same amount of passenger traffic.”

Since Wings aircraft take off and land in a general harbour adjacent to the town of Juneau, noise is also a significant factor. Independent tests carried out on the Otters by consultant BridgeNet International showed that the turbine engines were significantly quieter than piston engines, both for departure and arrival.

In comparison to the Caravan’s PT6, the Honeywell engine has been found by Alaska Seaplanes to be substantially quieter during take off, climb and cruise.

The additional power of the Honeywell turboprop engine means that the aircraft fly faster and climb more quickly, reducing the duration of noise disturbance by 20 percent compared with piston-driven aircraft. Additional power also improves the overall STOL capabilities of the aircraft, which is particularly important for these operators.

“The PT6 was notoriously underpowered when you hit icy conditions and the new engines give much better performance,” added Stedman, referring to the stock PT6 on the Caravan. “This means that we can now fly in conditions that we couldn’t before. We have substantially improved rate of climb and the increased power also supports safety, particularly when getting out of the ice.

“One destination is a cannery where we transport workers three times a week in the summer months. We land on a narrow road and have to make a right turn on the short final approach because of buildings and antenna so that’s a pretty good challenge. “It’s at times like this when the improved performance is really useful. It also provides a better experience for the passengers.”

Texas Turbines’ generic comparisons between the PT6A-42A engine and the Supercub 900 TPE331-12JR 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 TBO, are reduced by 70 percent.



TPE331 - 10R



TPE331 - 12JR

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