

PW4170

Advantage70™ Engine

Best Overall Capability for the A330

- **Best-in-class emissions**
- **Increased thrust**
- **Improved fuel burn**
- **Lower maintenance cost**
- **World-class reliability**
- **Superior EGT and performance**



Durability improvements include new high pressure turbine (HPT) technologies such as thermal barrier coatings, ceramic-coated outer air seals and an improved TALON™ II combustor. Together, the upgrades help extend the engine's time on-wing.

Software enhancements are also part of the Advantage70 program. An improved Full-authority Digital Electronic Control (FADEC) system gives your pilots more flexibility in takeoff and climb thrust power to better match engine thrust with specific flight requirements. Similarly, the upgrade to Pratt & Whitney's Advanced Diagnostic Engine Management (ADEM) system provides better real-time input for more effective maintenance planning.



Pratt & Whitney has taken its successful PW4000 100-inch engine for the Airbus A330 to new heights with the introduction of the PW4170 Advantage70™ program. This program includes upgrades that enhance engine performance, save fuel, increase durability and reduce maintenance costs.

The Advantage70 engine reduces fuel consumption over the baseline PW4168A engine by one percent, providing a direct savings of about \$140,000 per aircraft per year. The fuel savings also means that each Advantage70-powered aircraft reduces its output of carbon by about 1.5 million pounds per year.

Both the current PW4168A and new PW4170 engines meet regulatory noise level requirements with margin and produce the lowest total emissions—compared with other engines powering the A330.

The PW4170 Advantage70 program offers both a new engine and an upgrade to existing engines. The upgrade includes a package of technology enhancements that can be incorporated during engine overhaul. The upgrade kit features a new high-pressure compressor (HPC) ring case based on successful designs used on other members of the PW4000 engine family. The PW4170 engine will lower fuel burn to provide best-in-class fuel efficiency and enhance durability to extend maintenance intervals.

New Pratt & Whitney Advantage70 engines entered service June 2009, starting with the A330-300 operated by launch customer Air Caraïbes. Other PW4170 engine customers include Asiana, China Southern, Hong Kong Airlines, Kingfisher Airlines, Korean Airlines, Malaysia Airlines, TAM Linhas Aereas and Vietnam Airlines. The PW4170 engine has been selected by Flyington Freighters and MASKargo on the A330-200 freighter. In addition, Advantage70 upgrade kit customers include Air Caraïbes, Asiana, Delta Airlines, Kingfisher and TAM Linhas Aereas.

As a leading OEM and MRO service provider, Pratt & Whitney is uniquely capable of developing ongoing improvements that reflect the company's Green Engine program. Today, the PW4000 engine family offers green alternatives for 72 percent of the listed repairs and replacements.

Developed specifically for the Airbus A330 twinjet and introduced in 1994, the PW4000 100-inch fan engine has thrust capability from 64,500 to 70,000 pounds at takeoff.



PW4170 Advantage70™ Engine for the A330

Offered as a complete propulsion system, the PW4000 100-inch fan engine features an advanced, light-weight nacelle. It also incorporates a number of service-proven technologies in materials, aerodynamics and controls to enhance performance, reliability and durability. The engine was the first in aviation history to qualify for ETOPS (Extended-range Twin-engine Operations) prior to entering service. It meets all present and anticipated noise and exhaust emissions regulations.

PW4000 100-inch fan engines have accumulated over 10 million hours of revenue service through May 2010 on the A330. The engine is built to provide maximum value, and its success is reflected by its service experience in the A330 market.

Pratt & Whitney's Global Service Partners network offers a variety of fleet management, line and shop maintenance and repair services for the PW4000 engine family.

Pratt & Whitney. **It's in our power.™**



Pratt & Whitney

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www.pw.utc.com

For more information, contact Pratt & Whitney's
24-Hour Customer Help Center at
800-565-0140 (Domestic U.S.)
860-565-0140 (International)
or e-mail at HELP24@pw.utc.com

Product Facts

Program Milestones

| | |
|---------------|--|
| December 1994 | Entry into service on Airbus A330 |
| July 1995 | 180-minute ETOPS approval |
| May 2001 | TALON™ II low emissions combustor entry into service |
| November 2008 | PW4170 Advantage70 FAR33 certification |
| June 2009 | PW4170 Advantage70 engine entry into service |
| April 2010 | PW4170 Advantage70 engine certified on A330-200F |

| Characteristics | PW4164 | PW4168 | PW4168A | PW4170 |
|-------------------------------|--------|--------|---------|--------|
| Diameter, fan tip, in. | 100 | 100 | 100 | 100 |
| Length, flange to flange, in. | 163.1 | 163.1 | 163.1 | 163.1 |

Nominal Performance—Sea level, static

| | | | | |
|--|--------|--------|--------|--------|
| Takeoff thrust, lbs. | 64,500 | 68,600 | 68,600 | 70,000 |
| Flat rated temp. (degrees Fahrenheit) | 86 | 86 | 86 | 86 |
| Bypass ratio | 4.9 | 4.9 | 4.9 | 4.9 |
| Overall pressure ratio | 32.0 | 32.4 | 32.4 | 34.1 |
| Fan pressure ratio | 1.75 | 1.75 | 1.75 | 1.76 |

| Aircraft Installation | A330 | A330 | A330 | A330 |
|-----------------------|---------|---------|---------|--------------|
| | 200/300 | 200/300 | 200/300 | 200/300/200F |