PurePower™ Family of Engines
Advanced product offerings for multiple market segments

Corporate Jets
PurePower PW800

Regional & Mainline Jets
PurePower PW1000G

Thrust Class 10,000 - 40,000 lbf
# P&W Design Objective

*Lower engine operating cost greater than 20%*

## Cost Drivers
- Fuel Burn
- Maintenance Cost
- Noise
- Emissions
- Reliability

## Key Enablers
- Geared Fan, Advanced Core, Improved Materials
- Engine Configuration, Longer Operating Time
- Geared Fan, Component Technologies
- 3rd Generation TALON Combustor
- Matured Technology, Proven Configuration
Step Change in Efficiency

Conventional Turbofan

- Fan speed constrained by low pressure spool
- Low compressor & low turbine speed constrained by fan

PurePower™ PW1000G Engine

- Ultra-efficient, light-weight, low-speed fan
- Low compressor & low turbine speed optimized

Incremental Improvement

Step-Change Improvement
Step Change in Fuel Burn Savings

Per Trip
140 gallons
$350 savings

Per Day
840 gallons
$2,100 savings

Per Year
305,000 gallons
over $760,000 savings

500 nm mission • 2,200 trips per year • $2.50 per gallon
A Greener Future

*PurePower™ PW1000G engine slashes CO₂ emissions*

3,000 tonne reduction:
equivalent to planting over 700,000 trees
Dramatic Reduction in Community Noise
73% reduction in noise footprint – LaGuardia (LGA)

Potential 2-3% reduction in Cash Operating Cost:
lower noise fees • direct flight tracks • curfew extensions

Source: Wyle Labs
Existing turbofan: 75 dB contour = 34.8 sq mi
PW1000G engine: 75 dB contour = 9.5 sq mi
Significant Reduction in Emissions
Over 50% margin to most stringent $NO_x$ regulation
PurePower™ PW1000G Engine Benefits

Comprehensive approach to economic and environmental operation

- Fuel burn improvement 12-15%
- CO₂ emissions reduced by 3,000 tonnes per aircraft per year
- NOₓ emissions cut in half
- Noise levels of Stage 4 minus 20 dB
- Lower operating costs

$1.5 million annual operating cost savings per aircraft

500 nm mission • 2,200 trips per year • $2.50 per gallon
PurePower™ PW1000G Suite of Technologies

Composite Fan Case

Very High Bypass Geared Fan

3 stage LPC

Advanced Technology HPC
- Cantilevered Stators
- Shaft-Tied Rotors

TALON™ X Combustor

High Efficiency Advanced HPT
- Adv Aerodynamics
- Adv Sealing
- Adv Cooling
- Durability Technologies

Mechanical Components
- Fan Drive Gear System (FDGS)

25,000-cycle LLPs

System Benefits
- Performance/Noise
- Weight
- Emissions
- Maintenance Cost

All airfoils accessible via borescope locations

Shown: PW1524G engine for Bombardier CSeries
Key Technologies at TRL6

TECHNOLOGY READINESS LEVEL (TRL)

9  In service
8  Qualification/certification
7  Flight test
6  Engine demo prototype
5  Rig/core (expanded design space)
4  Rig test (minimal design space)
3  Proof of concept
2  Technology concept
1  Basic

In service
Rig tested
Parts tested
Paper technology
Technology Demonstrator Program

Over 400 hours of testing completed

Ground Test
250 Hours

747SP Flying Test Bed
12 Flights
44 Hours

A340-600 Flying Test Bed
27 Flights
76 Hours

2007

2008
PurePower™ PW1000G Engine Schedule

On track for 2013 entry into service

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PurePower™ PW1217G Engine

Exclusive power for the Mitsubishi Regional Jet (MRJ)
PurePower™ PW1524G Engine
Exclusive power for the Bombardier CSeries

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PurePower™ PW1000G Engine by Pratt & Whitney

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- Maintenance cost
- Emissions
- Noise
- Engine operating costs

The comprehensive economic and environmental solution