Pratt & Whitney Military Engines
2014 Overview

This presentation includes "forward looking statements" concerning expected revenue and other matters that are subject to risks and uncertainties. Important factors that could cause actual results to differ materially from those anticipated or implied in forward looking statements include the health of the global economy; strength of end market demand in the commercial aerospace industry; fluctuation in commodity prices, interest rates, and foreign currency exchange rates.

For information identifying other important economic, political, regulatory, legal, technological, competitive and other uncertainties, see UTC's SEC filings as submitted from time to time, including but not limited to, the information included in UTC's 10-K and 10-Q Reports under the headings "Business," "Risk Factors," "Management's Discussion and Analysis of Financial Condition and Results of Operations" and "Cautionary Note Concerning Factors that May Affect Future Results," as well as the information included in UTC's Current Reports on Form 8-K.
UNITED TECHNOLOGIES CORPORATION

Overview

2013 Revenue: $62.6 billion

BUILDING & INDUSTRIAL

AEROSPACE

Photos credit: UTC
Updated: 4/1/2014

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PRATT & WHITNEY

Markets

Commercial Engines

Military Engines

Pratt & Whitney Canada

Pratt & Whitney AeroPower

Photos credit: Pratt & Whitney

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2013 sales

PRATT & WHITNEY

2013 reported sales
$14.5B

Photos credit: Pratt & Whitney

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Updated: 4/1/2014
MILITARY ENGINES PRODUCTS

Operational Military Engines
- F-15 / F-16 F100 Engine
- EA-6B Prowler J52 Engine
- B-52 Stratofortress TF33 Engine

Mobility & Surveillance Systems
- C-17 Globemaster III F117 Engine
- E-8 JSTARS JT3D & JT8D Engine
- KC-46A Tanker PW4062 Engine

Fifth Generation Fighter Engines
- F-22 Raptor F119 Engine
- F-35 Lightning II F135 Engine
- F-35A CTOL
- F-35C CV
- F-35B STOVL

Advanced Engine Programs
- AH-64 Apache HPW3000 Engine
- Predator C Avenger PW545 Engine
- Future Applications

Photo credit: U.S. Air Force
Photo credit: U.S. Navy
Photo credit: General Atomics
Image credit: Boeing Illustration

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All engine photos credit: Pratt & Whitney
Photo credit: Staff Sgt. Aaron D. Allamon II
Graphic credit: U.S. Air Force / Sylvia Saab
All engine photos credit: Pratt & Whitney
Photo credit: U.S. Air Force
Photo credit: General Atomics
Image credit: Boeing Illustration
WORLDWIDE MILITARY ENGINE FAMILY

- United States
- Argentina
- Australia
- Belgium
- Brazil
- Canada
- Chile
- Denmark
- Egypt
- Great Britain
- United Arab Emirates
- Turkey
- Thailand
- Taiwan
- Singapore
- Saudi Arabia
- Qatar
- Portugal
- Poland
- Pakistan
- Norway
- Netherlands
- NATO
- Morocco
- Kuwait
- Korea
- Jordan
- Japan

F-35 Partners & FMS
F-15 Customers
F-16 Customers
C-17 Customers
B-52 Customers
E-3 AWACS Customers
E-8 JSTARS Customers
EA-6B Customers

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F100 OVERVIEW

Powering the world’s 4th generation fighters

43 Years of fighter engine experience

Over 3100 operational engines in service

Over 25 million engine flight hours

Air forces of 22 nations

Powers 100% of all production USAF F-15s

Industry leading safety and reliability

Production opportunity through 2016+
C-17 / F117 ENGINE

Power for the C-17 Globemaster III

40,000 lb thrust class

Member of P&W’s proven PW2000 family of commercial engines

First flight: 1991

Initial operational capability: 1995

Over 1200+ F117 engines delivered

International customers: UK, UAE, Kuwait, Australia, Canada, Qatar, NATO, India

More than 30 International C-17s

Over 10 million engine flight hours

Globemaster III Integrated Sustainment Program partnership with Boeing for F117 overhaul & repair
Program size: 179 Boeing 767-2C aircraft

358 BOM PW4062 install engines

10 spare program engines

All EMD engines on purchase order

1\textsuperscript{st} engine delivery in November 2013

KC-46A Tanker first flight in 2014
P&W PROVIDING 5TH GENERATION POWER

1st Gen
- F-94 Starfire
- J48

2nd Gen
- F9F Panther
- J42

3rd Gen
- A-6 Intruder
- J52

4th Gen
- F-100 Super Sabre
- J57

5th Gen
- F-111 Aardvark
- TF30

- F-16 Fighting Falcon
- F100

- F-15 Eagle
- F119

- F-22 Raptor
- F135

- F-35 Lightning II

Pratt & Whitney Engines
Safety, Reliability & Maturity
The Only Engine for the 5th Generation Fighters

5th Gen A/C Characteristics
All Aspect Stealth
Fighter Performance
Increased Situational Awareness
Net-Enabled Operations
Advanced Diagnostics
F-22 RAPTOR / F119 ENGINE
Safe & reliable fifth generation propulsion

35,000 lb thrust class
System integrated diagnostics
First fielded maintainable low observables
Initial operational service: 2005
World class fighter safety and reliability
Delivers game changing capability to the F-22
Production completed at 187 aircraft / 507 engines; transitioning to sustainment
F-35 / F135 ENGINE

The world’s most powerful fighter engine

40,000 lb thrust class

Providing power for all F-35 variants

Many common features with F119

First engines to test:
CTOL / CV: October 2003
STOVL: April 2004

F-35 first flights:
CTOL: December 15, 2006
STOVL: June 11, 2008
CV: June 10, 2010

CTOL / CV and STOVL initial service release achieved in 2010

In production – over 130 delivered

Growing affordable sustainment footprint

Photo credit: U.S. Marine Corps / Lance Cpl Brendan King
Photo credit: U.S. Navy / Maj. Karen Roganov, 33d Fighter Wing Public Affairs

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MILITARY DEVELOPMENT PROGRAMS
FUTURE MILITARY NEEDS
Driven by U.S. Defense strategy

Range
Persistence
Power and thermal
Flexibility, adaptability
Technologically advanced
ADVANCED ENGINE PROGRAMS (AEP)

Create, validate, transition technologies to product

Industry technology development & transition leader

Product affordability

Sustainment and fuel burn cost reduction

Military / commercial dual use

Integrated power and thermal systems

Green technologies (noise, emissions, effluents)
AETD

Maturing critical technologies for adaptive engines

Program Goals: -25% SFC, +10% thrust relative to 5th Generation Fighter Engine Baseline

AETD program elements:

- Engine preliminary design
- AETD core demonstrator
- Adaptive fan & 3-stream exhaust engine demonstrator
- Common core studies

Completed Adaptive Fan Risk reduction testing

Image credit: Pratt & Whitney
SMALL MILITARY ENGINES (SME)

Affordable rotorcraft performance for military customers

Market segment focus for P&W Military Engines

Teamed with Honeywell on advanced 3000 shaft HP development

SME focus – military turboshift applications and UAV
  Pratt & Whitney Canada engine derivatives
  New centerline development
  Small engine technology development
HPW3000 PROGRAM

Achieving outstanding technical success

3000 shp turboshaft engine

Significant improvement in efficiency and power density

Capability improvement for UH-60 Black Hawk and AH-64 Apache

Significant Operational Energy/O&S cost savings

HPW3000 ready for transition
NAVY UNMANNED COMBAT AIR SYSTEM

Highly successful flight test program

Aviation first – first-ever catapult launch and arrested landing of a UAV on a carrier at sea in 2013

2013 Collier Trophy awarded to US Navy, Northrop Grumman, and Industry team

Dependable, proven single-engine safety with the F100-PW-220U
SPECIAL TECHNOLOGY PROGRAMS (STP)

Next generation low observable (LO) technology

Leader in LO technology

Next generation system integration

Advanced unmanned systems
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