



Fleet Management Demands Today's Technology



Complex, high-performance engines require complex models, created with as much rigor as possible. GE applies today's technology in defining an accurate, complete Maintenance Cost Per Hoursm (MCPHsm) model. Such a model is critical to the creation of a fleet management plan that best meets the needs of the customer airline.

With the help of a very complex technical model development process, called PPR (Product Platform Review), GE is able to develop an estimate of the cost per engine flight-hour for its customers. Used in determining rates for Maintenance Cost Per Hour (MCPH) agreements, each model takes months of analysis to ensure that it is as accurate as possible.

And before it is put into use, each model is subjected to multiple reviews.

Customers are the best source for the type of information that is particularly important in estimating cost and turnaround times. Therefore, customers are encouraged to provide comprehensive data in such areas as flight operation parameters (flight legs, derates, city pairs), engine histories (age, life-limited parts in cycles), warranties and guarantees, and optional coverage (leasing and transportation of spare engines).

Each model comprises two basic components:
(1) the length of time an engine will be on wing;

and (2) the estimated cost of overhaul and repair of the engine. To create these components, GE employs a technical probability tool called a weibull, which uses historical data from overhaul shops plus engineering analyses based on hardware replacements.

A two-phase review of the conclusions reached is then conducted by a team of as many as 75 people, representing engineering, overhaul shops, engine model platforms, and other disciplines as needed from within GE Transportation, Aircraft Engines. In the first phase, all new hardware and all system and design changes introduced via the model are reviewed. The second phase addresses the provision in the model for shop process improvements in maintenance and repair schedules during the remaining life of the engine.

Following successful completion of this review, yet another review is conducted by top leadership within GE Transportation, Aircraft Engines, including the vice president of Engineering, the chief financial officer, and the president of GE Engine Services.

With the concurrence of this top leadership, the model is approved and the collateral formulas are adopted throughout Engine Services. Sales and service personnel are thus able to develop a customized MCPH plan that enables each customer to transfer fleet management responsibilities to GE, confident in GE's proven ability to sustain highly reliable operations at a predictable cost.

Note: GE repeats this process some 25 times each year, creating MCPH programs for a broad spectrum of engine models.

Contact: **D. Sangeeta** d.sangeeta@ae.ge.com



Maintenance Cost Per Hour: 'No Surprises'

The popularity of the Maintenance Cost Per Hour (MCPH) program is steadily growing as more operators recognize the bottom-line benefits of world-class engine maintenance at a fixed cost. GE works with each airline to tailor a plan that best meets that airline's specific needs, whatever its size and route structure. Recent new MCPH clients include Ryanair, Mexicana and AHK Air Hong Kong.

Ryanair Holdings plc. Ryanair has entered into a 10-year MCPH agreement, with an option for a 10-year extension, which ensures maintenance for the CFM56-7 engines that power Ryanair's current fleet of 75 Boeing Next-Generation 737-800® aircraft, plus another 80 aircraft on firm order. The plan also provides for coverage of as many as 123 options scheduled to be delivered in the next few years.



Founded in 1985, Ryanair has established itself as a major low-cost airline, transporting 27 million passengers, in the fiscal year ending April 2005, to 210 destinations in 19 countries.

"There are no surprises. Our MCPH plan covers the work performed, no matter how extensive it is. That's critical to us," said Michael Hickey, Ryanair's director of Engineering. "And the fact that it's the engine OEM doing the work, where the quality is assured, is a big plus, too."

Ryanair selected every option available in its MCPH contract: repair and overhaul of engines and engine components; spare parts provisioning; technical support of the fleet; repair and provisioning of all line-replaceable units (LRUs); on-wing support; foreign object damage service; compliance with all service bulletins and airworthiness directives; and all necessary transportation of engines. The contract also provides for fleet management assistance to

ensure that Ryanair will have engine assets to support the fleet anytime, all the time. This includes use of a lease engine if the inventory of spares falls below a predetermined level.

The contract also allows for a program manager to oversee engine removals to keep them even across the fleet and minimize the risk of an aircraft being grounded because an engine is not available.

Mexicana Airlines. Mexicana Airlines has extended their MCPH contract for their CFM56-5B/P engines to include their fleet of 10 Airbus A318® aircraft. This enables Mexicana to continue to enjoy the advantages of an MCPH program tailored to their fleet of leased aircraft and provides them the benefits of fixed predictable payments.

Mexicana, which flies a fleet that is among the most modern in the world, is the oldest airline in North America. Founded as Compañía Mexicana de Transportación Aérea (CMTA) in 1921, it was renamed Mexicana Airlines in 1924. The first scheduled service began in 1928, linking Mexico City, Tuxpan, and Tampico.



Now headquartered in Mexico City, Mexicana Airlines is the leading International carrier of Mexico. Each year, Mexicana flies more than 20 million passengers to more than 50 destinations in Mexico, and in North, Central and South America and the Caribbean.

AHK Air Hong Kong Ltd. Not quite three years old, Air Hong Kong already recognizes the advantages of MCPH care: a recently awarded 14-year MCPH contract provides for overhaul and repair of the CF6-80C2 engines powering Air Hong Kong's eight new Airbus A300-600F®

General Freighter aircraft. Air Hong Kong is the first carrier in the world to operate the A300-600F, which incorporates such unique features as a cargo loading system that accommodates almost every type of container and pallet, plus a side door at the rear of the lower deck for loading large general freight items.



Air Hong Kong has introduced four of the aircraft into service and will take delivery of the remaining four before the end of 2006.

Organized in 2002 as a business partnership of Cathay Pacific (60%) and DHL Express (40%), Air Hong Kong is the sole dedicated cargo airliner operating from a Hong Kong hub, serving a route network that includes Tokyo, Osaka, Taipei, Singapore, Seoul, Bangkok and Penang.

"As a start-up airline, we have to concentrate on taking care of our customers' needs," said David Saechiu, chief operating officer of Air Hong Kong. "MCPH enables us to do that. We know our engines are getting the best possible maintenance, within an established budget, so we feel free to do what we do best—fly freight where and when it's needed."

Contact: **Angela Jarczyk** angela.jarczyk@ae.ge.com

Unison Industries Will Provide More Product Solutions

Unison Industries recently announced the acquisition of Aircraft Parts Corporation (APC), formerly a privately held company. The transaction took place through GE Transportation, Aircraft Engines.

The acquisition of APC expands Unison's existing power generation product line of engine-dedicated alternators and power control and conditioning units, with the addition of APC's starter-generators and generator control units. APC manufactures and repairs these starter-generators and generator control units for business/commuter jet, helicopter and military applications.

"We're very excited about this acquisition and the new technologies APC brings to our business," said Brad Mottier, president of Unison Industries. "With APC's aircraft electrical system products, Unison will expand its integrated product solutions for aircraft customers. Unison and APC have a strong history of innovation, engineering excellence and entrepreneurial spirit, and we anticipate a seamless transition as we begin the integration process."

Founded in 1960, APC manufactures and services its generator products on Long Island, New York, and maintains a full-service center in Wichita, Kansas. APC will retain its brand and company name, operating as a wholly owned subsidiary of Unison Industries, LLC. Additional information about APC is available at www.apcmfg.com.

Unison Industries, LLC, a wholly owned subsidiary of GE Engine Services, Inc., is a leader in the design and manufacture of electrical



and mechanical components, sensors, and systems for aircraft, industrial, marine, and space uses. Unison is a global provider and Tier-1 Systems Integrator of turbine ignition systems, wiring harnesses, engine-dedicated alternators, piston ignitions, sensors, switches, and metal tubes and ducts. Headquartered in Jacksonville, Florida, Unison operates manufacturing facilities and logistics centers worldwide. Additional information about Unison is available at www.unisonindustries.com.

Contact: **Angela Milligan** angela.milligan@unison.ae.ge.com

Aviall to Support CF6-50 and CF6-80A Operators

GE's CF6-50 and CF6-80A engines power a global installed base of more than 1,500 aircraft: Airbus A300Bs® and A310-200s®, Boeing 767-200s®, 747-200s®, DC-10-30s® and KC-10® military refueling tankers.

To ensure continued world-class logistical support of these engines during their remaining years of service, GE has awarded to Aviall, Inc. a contract to serve as the exclusive distributor for OEM parts unique to CF6-50 and CF6-80A series engines.

Aviall is the world's largest independent provider of new aviation parts and related aftermarket services. To accommodate its network of customers, Aviall maintains customer service centers throughout Asia, Europe, North America, Australia and New Zealand.

Under the terms of the contract with GE, Aviall will be responsible for handling customer orders, forecasting, warehousing and delivering OEM spare parts unique to CF6-50 and CF6-80A engines. GE will continue to manufacture and source the unique replacement parts plus the common spare parts used on all GE and CFM engine platforms.

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Over the next few months, GE will develop a seamless transition plan with Aviall. Once the transition is complete, customers will contact Aviall to order the unique spare parts they need. Long-term agreements and current contractual obligations will be fulfilled by either GE or Aviall, depending upon the type of agreement or obligation.

To reach the Customer Support Center from within the United States, call 1.877.432.3272 toll-free. From other locations, dial 1.513.552.3272. The e-mail address of the Customer Support Center is geae.csc@ae.ge.com.

Contact: **Shari Hollstegge** shari.hollstegge@ae.ge.com

Patrick Sample, president of GE Engine Services Distribution, LLC, advises customers: "Follow your current ordering process for all CF6-50 and CF6-80A spare engine parts during the transition. For further information, please visit our Web site, <https://customer.geae.com>, or contact your customer account manager or our Customer Support Center."

US, CANADA & LATIN AMERICA

Tom Curtis / Western United States
tom.curtis@ae.ge.com
+1.513.243.7950
Fax: +1.513.243.8509

Russ Shelton / Eastern United States & Canada
russ.shelton@ae.ge.com
+1.513.243.7896
Fax: +1.513.243.2994

Doug Izarra / Latin America
doug.izarra@ae.ge.com
+1.305.593.4303
Fax: +1.305.593.4300

WESTERN & CENTRAL EUROPE

Jack Lutze / Western and Central Europe
jack.lutze@ae.ge.com
+33.1.4765.7611
Fax: +33.1.4642.9403

Klaus Huber / Central Europe
klaus.huber@ae.ge.com
+1.513.243.7824
Fax: +1.513.243.2412

UK, IRELAND & AFRICA

George Duncanson
george.duncanson@ae.ge.com
+44.20.8897.4206
Fax: +44.20.8897.4003/4899

EASTERN EUROPE, MIDDLE EAST & CENTRAL ASIA

Muhammad Al-Lamadani
muhhammad.al-lamadani@ae.ge.com
+1.513.243.4090
Fax: +1.513.243.2412

GREATER CHINA REGION

Andy Solem
andy.solem@ae.ge.com
+86.21.3222.4508 ext. 300
Fax: +86.21.6289.8980

JAPAN

Kenji Uenishi
kenji.uenishi@ae.ge.com
+81.3.3588.5211
Fax: +81.3.3588.5210

EAST ASIA

Steve Tagariello
steve.tagariello@ae.ge.com
+82.2.390.2781
Fax: +82.2.390.2788

SOUTH ASIA PACIFIC

Max York
max.york@ae.ge.com
+61.2.9965.1403
Fax: +61.2.9965.1408


SINGAPORE

Colin Low
colin.low@ae.ge.com
+65.6326.3199
Fax: +65.6326.3332

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GE Transportation
Aircraft Engines

General Electric Company
One Neumann Way J4
Cincinnati, OH 45215 U.S.A.
Phone: +1.513.552.3272 (internationally)
+1.877.432.3272 (within U.S.)
Fax: +1.513.552.3329
E-mail: servicesolutions@ae.ge.com

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