



AirAsia Launches OnPoint Solutions

Our May/June issue announced GE's sweeping OnPointSM Solutions, and this issue introduces the first customer!

On June 14, at this year's Paris Air Show, AirAsia signed a 20-year OnPoint Solutions service agreement covering the 129 CFM56-5B engines that will power the airline's new Airbus A320-200 aircraft. Delivery of the aircraft will begin in December 2005 and continue into 2011.

AirAsia has entered into two previous maintenance agreements with GE: a five-year materials agreement signed in 2002 to support CFM56-3B engines powering AirAsia's fleet of Boeing 737-300 aircraft, and a second materials agreement in 2004 covering 16 CFM56-3B2 engines for nine years.

In accordance with the new agreement, GE will provide maintenance, overhaul and repair service for the CFM56-5B engines. The work will be performed at the GE Malaysia overhaul

facility located at SAAS Airport in Subang, Malaysia. GE Malaysia, a joint venture of GE and Malaysia Airlines (MAS), specializes in the overhaul and repair of CFM56[®] and PW4000[®] engines for MAS and other airlines.

"AirAsia has successfully pioneered low-cost travel in Asia," said Tony Fernandes, Group Chief Executive Officer, AirAsia. "Despite numerous

uphill battles, we have persevered, and AirAsia is now one of the leading low-fare airlines in Southeast Asia.

"We are extending our commitment to GE, based on the high quality of work and services GE has provided since 2002. We believe in strengthening relationships that work well for our business and allow us to keep costs low while ensuring the highest quality service."

AirAsia was founded in December 2001 as Malaysia's second national airline and Asia's first low-fare, no-frills airline that offered "ticketless" travel. The young airline has already been recognized as the Asia Pacific Low Cost Airline of the Year 2004 by the Centre for Asia Pacific Aviation (CAPA), and has earned the prestigious Euromoney award for Asia Best Managed Company in the Airlines & Aviation Sector, and Air Transport World's Market

Leadership Award at the recent 2005 Airline Achievement Awards.

AirAsia is headquartered in Malaysia, at Kuala Lumpur Airport, and operates an additional hub in Malaysia (Johor Bahru), as well as hubs in Bangkok, Thailand, and Jakarta, Indonesia. AirAsia flies over 100 flights daily: domestic flights from all hubs, and international flights from Kuala Lumpur and Bangkok to China, Philippines, Singapore and Macau.

OnPoint Solutions are flexible long-term commitments, tailored to meet the customer's unique engine service needs. Backed by GE's

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Around the World, Around the Clock . . .

That's the coverage On Wing Support (OWS) provides, 24 hours of every day, either as a supplemental maintenance provider on an on-call basis or as your primary solution for all your flight-line engine diagnostics and maintenance needs. Our comprehensive and adaptable OnPoint Solutions can be customized

specifically to realize maintenance cost productivity, optimized engine reliability and performance for your fleet.

The U.S. Federal Aviation Administration recently acknowledged the quality of that service when it presented the Diamond Award—the FAA's highest recognition of aviation maintenance personnel—to our U.S. operations team.

"In a sense, our operations worldwide share in the Diamond Award," said Rebecca Bompiedi, president of On Wing Support. "The same level of professionalism and performance that earned this distinction for our Cincinnati and Dallas sites also distinguishes our operations in Malaysia, England, South Korea, Poland and China. Excellence in performance characterizes all our operations.

"We position On Wing Support to be the most responsive and highest-quality provider of quick-turn maintenance within the industry. Alone or as a complement to the other outstanding GE Engine Service solutions, On Wing Support helps operators keep their aircraft flying. Our status within the original equipment manufacturer (OEM) organization enables us to provide high-quality OEM training to our airframe and powerplant (A&P) rated technicians. We also add every new GE and CFM engine type to our capability list concurrently with the engine's entry into service."

On Wing Support performs more than 3,000 on-the-wing and off-the-wing repairs each year for more than 250 customers.

When an engine can be repaired on the wing, On Wing Support gets the job done.

On-The-Wing Repairs

Fan Module Workscopes
Fan Vibration Survey/Balancing
Gearbox Workscopes
Rigging of Variable Stator Vanes
Rigging of Variable Bypass Valve
Removal/Installation of Line-Replaceable Units
Borescope Inspection/Blending
Adjustment of Fuel Nozzles
Module Repair/Replacement
"C" Checks
Troubleshooting
Engine Changes



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world-class support, these solutions help to maximize asset value and utilization and improve operating efficiencies. In addition to engine maintenance, overhaul and repair, OnPoint services include, but are not limited to, On Wing SupportSM, new/used parts supply/exchange, component repair, accessory services, technology upgrades, diagnostics and engine leasing.

GE Engine Services Malaysia to Expand Subang Maintenance Facility

GE Engine Services Malaysia (GEESM), which currently overhauls and repairs CFM56-3 and PW4000 engines, plans to extend its coverage to include CFM56-5 and CFM56-7 engines. GEESM forecasts that the growing Asian airline industry will account for up to 400 CFM56-5 and CFM56-7 engines entering service over the next several years.

The expansion may begin as early as next year.

On Wing SupportSM Network

On Wing Support also performs off-the-wing, quick-turn, and modular repairs in seven hospital shops worldwide. In many cases, On Wing Support hospital shops serve as a low-cost alternative to an overhaul shop visit.

Off-The-Wing Repairs

Repair of High-Pressure Compressor
Top/Bottom Cases

Engine Splits

Replacement of Modules

Modular Repairs

Replacement of Blades

(Fan, Compressors and Turbines)

Replacement of Carbon Seals

Engine Preservation/Storage/Transport

Engine Test Coordination

Quick Engine Change (QEC)

Powerplant Buildup

On Wing Support also performs diagnostic engine monitoring and provides service bulletin coverage to optimize engine reliability, time on wing and fuel burn.

Site	Customer Service	Engine Repairs	Engine Changes	Agency
Cincinnati (CVG)	1-859-334-4000	All GE/CFM JT9	Boeing, Airbus MD, EMB, CRJ	FAA, EASA CAAC
Dallas (DFW)	1-817-410-4980	All GE/CFM JT8, V2500	Boeing, Airbus MD, EMB, CRJ	FAA, EASA,
London (LHR)	44-208-893-7107	All GE/CFM RB211, Olympus		FAA, EASA CAA
Warsaw (WAW)	44-208-917-3258 (Same as LHR)	CFM56-3, CF34 AE3007, PW120	Boeing, EMB ATR APUs, Reversers	EASA, PAA
Seoul (SEL)	82-32-744-5971	CF34, CFM56, CF6 V2500, PW4000	APUs	FAA KCASA
Kuala Lumpur	60-37-626-4649	CFM56, CF6, GE90 PW4000, JT9		FAA, EASA DCA
Xiamen (XMN)	86-592-573-1603	CF34-3, CFM56		CAAC

24/7 AOG Hotline 1-513-552-3272

<http://www.geae.com/services/maintenance/ows/index.html>

Engine Performance & Reliability

Engine Diagnostics

Response to Trend/Exceedence Alerts

Service Bulletin Coverage

Integration with the OEM

Aircraft grounded? Engine problem? On Wing Support will dispatch a rapid-response line maintenance team to get you airborne again. If

the engine requires more extensive maintenance action, On Wing Support will change out the engine and arrange for the unserviceable unit to be shipped to one of its seven On Wing Support hospital shops. Want to focus on flying and leave engine line maintenance with On Wing Support? Contact our Global Sales and Marketing for our OnPoint Solution.

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Preparation Provides an Edge in GP7200 Maintenance

Editor's note: The Engine Alliance global network described below is designed to offer Engine Alliance customers a simple and efficient means of meeting their GP7200 engine maintenance needs. However, if a customer has engine overhaul capability and so desires, the Engine Alliance will work with the customer to define a program that best meets the customer's needs.

With entry into service of the GP7200 engine scheduled for 2007, service preparations are well under way. Under the new maintenance plan, GP7200 operators can have all their maintenance, repair and overhaul needs met at a designated overhaul facility within the Engine Alliance MRO global network.

The Engine Alliance is a 50/50 joint venture between GE Transportation—Aircraft Engines and Pratt & Whitney, a United Technologies company, MTU of Germany, Snecma of France and

Techspace Aero of Belgium are revenue-sharing participants in the GP7200 engine program.

The first two overhaul facilities have already been identified—GE Aircraft Engine Services Ltd. at Cardiff, Wales and Air France Industries in Paris—with more sites to be designated. The facility breaks down the engine into the major components, and each partner assumes maintenance responsibility for components for which it has design responsibility. GE assumes responsibility for high-pressure (“core”) components: the high-pressure compressor (HPC), combustor, and high-pressure turbine (HPT). Pratt & Whitney assumes responsibility for low-pressure components: the fan, low-pressure compressor (LPC) or “booster,” low-pressure turbine (LPT), and gearboxes.

When the repaired/replaced components have been returned, the facility reassembles the

engine, performs final inspection and test, and returns the engine to the airline.

Customers benefit from this plan in two key ways: (1) direct interface with the Engine Alliance, and (2) all repair and overhaul work is performed by those most familiar with the components.

Perhaps more important, the GP7200 team has made reducing maintenance costs a key focus during the design of the engine. The bottom-line impact: lower operating costs and longer time on wing.

Introduced at the conceptual stage and applied throughout the design process, digital modeling (or digital mockup) has played a key role in reducing and facilitating maintenance by enabling design engineers to anticipate and resolve potential maintenance issues:

- The mechanical simplicity of the two-spool

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system reduces the number of frames, sumps, bearings and seals, and modular construction enhances disassembly into major components.

- In the core and low-pressure components, the number of blades and vanes has been optimized: the number has been reduced, compared with previous engines, without compromising component performance.
- Wide-chord, swept, hollow titanium fan blades, adapted from PW4000 engines, have proven to be resistant to foreign object damage, bird strikes and hard-particle erosion.
- The HPC stage 1 blisk—a one-piece assembly of blades and the disk—eliminates cracks and/or fretting of blade dovetails and retaining rings, disk slots, and mid-span shrouds.
- The durability of the HPT is increased through the use of advanced alloys in the manufacture

of the blades, vanes and disks. The disks are boltless, and the blades and vanes are thermal-barrier-coated, single-crystal airfoils. A new nickel-based powder alloy, René 104, increases the service life and temperature capability of the rotor.

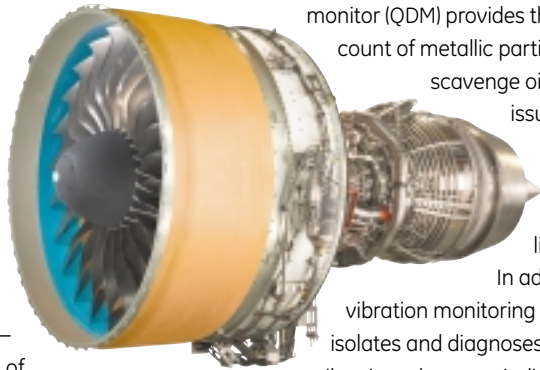
- The engine health monitoring system (EHMS) features expanded capabilities that enhance operational reliability. A quantitative debris monitor (QDM) provides the EHMS an exact count of metallic particles in the scavenge oil. The EHMS then issues a warning for post-flight maintenance action if pre-set limits are exceeded. In addition, advanced vibration monitoring (AVM) software isolates and diagnoses abnormal vibrations that may indicate hardware distress. A determination is then made as to when corrective action will be taken.

An important feature is the capability to readily separate the propulsor from the fan

module. As proven in service on the GE90 family of engines, the propulsor can then be shipped via any of several transport aircraft, at substantially less cost than would be incurred in shipping the full engine. A spare propulsor can be installed with the fan module, and the “new” engine promptly placed in service, with no high-power thrust assurance checks required. This feature offers airlines the option of ordering a combination of spare propulsors and relatively few full spare engines—a means of reducing investment costs without compromising fleet support.

Minimizing and facilitating GP7200 maintenance has been, and remains, a constant goal. The GP7200 engine has been designed to ensure ease of maintenance, and the Engine Alliance comprehensive maintenance plan is in place in anticipation of entry into service next year. Efforts continue to further improve engine maintainability and expand the maintenance program to best meet the needs of each customer.

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The purpose of *Service Solutions* is to enhance communication with our customers. Please contact us if we at GE Engine Services can be of further service to you. View *Service Solutions* online at www.geae.com/servicesolutions.

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