

Lufthansa Technik announced as latest service provider for the GENx

General Electric has established a network of six shops endorsed under its GE branded services agreement (GBSA) to offer GE material and engine shop visit workscoping on a GE engine. The GBSA network of overhaul facilities for the GENx engines has been increased by adding Lufthansa Technik.

In a previous article 'Acquiring maintenance capability for new generation engines' (see *Issue 98, Feb/Mar 2015 edition*), an analysis into the efforts of maintenance shops to gain the capability to provide repair and maintenance services on emerging engine types was provided. The GE GENx engine family was one of the examples of the new generation engines explored. The concept of OEM partnerships were introduced, including the risk and revenue service partnerships (RRSP) and branded services agreements.

New shop visit patterns were also investigated, including The GENx family concept of 'quick turn' shop visits. This is

a capability that was originally introduced on the GE90, and now used on the GENx. The GE90 and GENx have been designed so that engine shop visits only need to be performed on a modular level. Rather than involving the complete disassembly of an engine, which is time-consuming, expensive and unnecessary in many cases, an engine shop is able to use a quick turn visit to work on just a specific module when a defect is raised by the engine health monitoring system (EHMS). A quick turn can also be used to deal with a specific reliability issue that is encountered during the early years of operation. The quick turn visit concept is changing the philosophy of the

traditional engine shop visit. This would have been needed on an older engine type when initial reliability and technical problems were encountered in the first few years of operation.

A traditional shop visit would have involved the complete disassembly of the engine. All modules may have had to be disassembled and parts inspected and repaired, depending on the problem or issue that triggered the removal. It is expected that all those retained under the GBSA will show capabilities to perform quick turn shop visits.

For the GENx, General Electric had to date established a network of six shops in its network of providers endorsed under its GE branded services agreement (GBSA). The GBSA has now been added to by a seventh shop.

The GBSA allows an engine shop to offer GE material and workscoping for shop visit work on a GE engine. This is ultimately an endorsement that an engine shop now requires to be licensed to perform maintenance services on specific engine types by the OEM.

In the GBSA, providers are able to perform overhaul and OEM parts repairs on the GENx in their own facilities.

The first two shops are GE's facilities at Caledonian in Scotland, and Petropolis in Brazil.

Among those independent shops named by the first quarter of the year were Evergreen Aviation Technologies (EGAT), which has formed a joint venture (JV) with GE called GE Evergreen Engine Services. Full overhaul facilities for this JV is expected to take effect in 2019.

Abu Dhabi Aircraft Technologies (ADAT) has received FAA and UAE General Civil Aviation Authority approval for quick turn operations. It will ultimately be an overhaul facility for both the GENx-1B and -2B.

Air India is a member of the GBSA for GENx-1Bs.

GE has also has an agreement with Air France Industries KLM Engineering and Maintenance (AFI KLM E&M).

Air France Industries and KLM Engineering & Maintenance (AFI KLM E&M) have formed a joint venture where they share activity on the industrialisation and maintenance activity for the GENx1B. This will use AFI's test cell facility at Charles de Gaulle Airport, and KLM Engineering and Maintenance's engine cell in Amsterdam Schiphol

AFI KLM E&M is one of several GBSA members for the GENx, and Lufthansa Technik has recently been added to the GBSA. The GBSA members are permitted to offer GE material and engine shop visit workscoping for third party customers. In addition to two GE shops, there are another five shops in the GBSA for the GENx.



Airport.

As well as being a member of the GBSA for the GENx, AFI KLM E&M is also allowed to independently market its capabilities directly to third party customers. This puts AFI KLM E&M in a unique position compared to the other GENx GBSA members.

Part of this offering will include the development of original equipment manufacturer (OEM) hi-tech repairs for engine parts and components. These will be co-developed with GE. In particular, AFI KLM E&M will promote repairs for the GENx's compressor and high pressure turbine.

As announced during the Paris Airshow in June 2015, GE disclosed that Lufthansa Technik AG and GE Aviation will now create a new, state-of-the-art engine overhaul facility in Europe to service GENx-2B and GE9X engines; adding to those currently included in the GBSA network. Under terms of a memorandum of understanding (MOU), the new joint venture is expected to be operational in 2018. "We are committed to building a world-class facility that will help meet future demand for GENx-2B," said Kevin McAllister, president and chief executive officer at GE Aviation, Services during the press conference held at the Airshow. "Lufthansa Technik has an excellent reputation for engineering

expertise and customer service, and we are pleased to extend our long-standing collaboration with the formation of this new facility."

The new joint venture will be equipped to perform the full range of engine maintenance services for the GENx-2B and the GE9X, powering the Boeing 747-8 and Boeing 777X, respectively. The partners will continue to collaborate on repair development and mobile support services.

Lufthansa Technik AG has a long standing relationship with GE, having provided technical support for GE engines for over forty years. Lufthansa Technik has already developed the skills and knowledge needed for fast, smaller repairs to the GENx-2B engines used in the Boeing 747-8. The first two of these maintenance events - the 'quick turns' - are in progress and will conclude by the end of June.

Lufthansa is the largest operator of the GENx-2B-powered 747-8, and is the launch customer for the 777-9X aircraft, with 34 aircraft on order and deliveries scheduled to begin in 2020.

More than 400 GENx-2B engines are now in service. Compared to GE's CF6 engine, the GENx engine offers up to 15% lower fuel consumption, which translates to 15% lower CO2 emissions.

Main features of the GE9X include a

134-inch diameter composite fan case and 16 composite fan blades; a next-generation 27:1 pressure-ratio 11-stage high-pressure compressor; a third-generation TAPS III combustor for high efficiency and low emissions; and CMC material in the combustor and turbine.

Almost 700 GE9X engines have been ordered by customers since it was launched on the 777X aircraft last year. Engine certification is scheduled for 2018.

In addition to GE's GBSA for the GENx engines, AFI KLM E&M is interested in developing capability to support the Rolls-Royce (RR) Trent XWB engine. This will be a similar relationship that AFI has with GE. Air France will be one of the largest operators of the Trent XWB-powered A350.

Interestingly, RR has recently announced that it will dissolve the 50:50 joint venture partnership it has with American Airlines for the Texas Aero Engine Services LLC (TAESL) engine facility at Forth Worth, Texas.

TAESL was established in 1998 to provide an engine shop for American Airlines's RB211-535s, which power its 757-200 fleet. [AC](#)

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