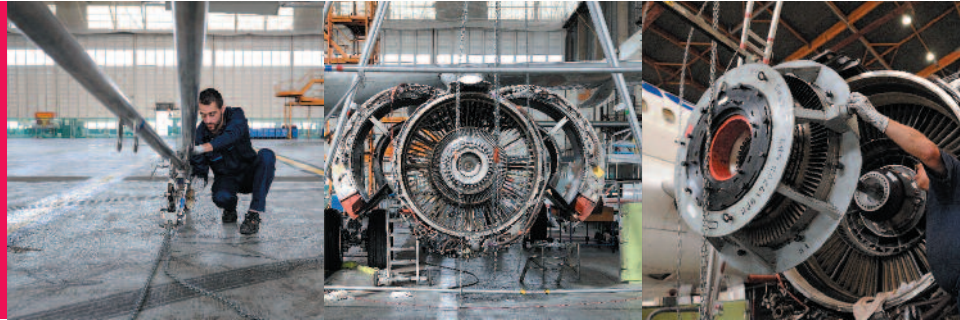


Gantry Crane For CFM56

On-wing Services

The MRO Lab
Adaptive Innovations



AFI KLM E&M is one of the few MROs to have developed special tooling to perform CFM56 on-wing/on-site engine tasks at locations lacking hoisting facilities. This tooling consists of a gantry crane and two chain hoists, for on-site LPC and HPT module removal.

The issue

Most new-generation engines require on-wing and/or off-wing repairs before going to shop for performance restoration. Cost-savings can be achieved by combining on-site/on-wing maintenance and shop maintenance operations. For example, Low Pressure Compressor module removal and installation is a task that can be performed on-wing without removing the engine. Engine LLPs are governed by the number of flight cycles operated, while the declared life of LLPs differs from one engine module to another. Consequently, an airline operating an A320 on short-haul routes is well-advised to use LPC life limited parts on its CFM56-5B engines for as long as possible and then replace the LPC life limited part to restore the engine's flight-cycle potential. On the other hand, some technical problems on the LPC may also require on-wing repair. To conclude, LPC replacement and repair are necessary, and the ability to carry out these jobs on-wing reduces total engine maintenance costs. To perform such a repair on-wing, at any locations, special tooling was required.

The adaptive solution developed by AFI KLM E&M

AFI KLM E&M developed a special tooling to on-wing replace the Low Pressure Compressor, in complete autonomy, at locations lacking hoisting facilities. The tooling consists of a gantry crane. The upper part of the gantry is a hoist boom that supports two chain hoists. With a maximum capacity of 1,5 tons, this gantry can be used for on-wing Low Pressure Compressor (LPC) removal without removing the engine as well as on-site High Pressure Compressor (HPC) top/bottom case, and High Pressure Turbine (HPT) removal on a off-wing engine while it is on pedestal in a hangar. The ability to remove HPT and LPC modules on-site means that replacements, repairs of blades, disks, modules can be carried out without sending the engine to the shop. The wheeled gantry crane can be steered and positioned vertically above the engine requiring repairs. When assembled, with its 4-meter wheelbase, the hoist boom is 6 meters off the ground. This special tooling has been designed so that it can be ferried to and deployed at remote bases to assist CFM56 operators. AFI KLM E&M has already performed 45 on-site/on-wing support operations using this gantry crane. Crane development and manufacturing costs amounted to approximately €38,000.

Key benefits

- Shorter TAT
- Reduced maintenance costs
- Avoids the use of a spare engine
- Avoids the need to ferry a spare engine
- Avoids the need to ferry the unserviceable engine to the shop



video



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AFI KLM E&M - Adaptiveness® - March 2015 - Design: LOVE IT - Photos: Patrick Delapierre

“The solution that enlarges your CFM56 on-wing repairs”

This adaptive solution was developed by the **AFI KLM E&M Aerostructures Department** within the Aircraft Business Unit. For further information please contact your Sales Manager.



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