

NOT ALL PARTS ARE EQUAL



During climb, the pilot heard a loud bang, and the Cessna P210N lost power. After a forced landing, an inspection of the engine revealed cylinder head separation from the barrel.

The registered operator had diligently followed service instructions from the original equipment manufacturer (OEM), and the incident came as a surprise.

But one of the fleet's engines had been fitted with a make of cylinder granted parts manufacturer approval (PMA) by the Federal Aviation Administration.

To the operator's embarrassment, a mandatory service bulletin from the manufacturer of the PMA cylinders had addressed the fault, but he did not know about it. The failed PMA cylinder belonged to a bad batch and would have been replaced free of charge, with reimbursement of the labour costs. The operator paid for his ignorance dearly and not only missed the compliance action deadline but risked the aircraft and its occupants.

Many registered operators think that OEM service requirements cover PMA parts, and their local equivalent, APMA (Australian parts manufacturer approval) components, as well.

However, there might be some additional requirements issued by an APMA parts manufacturer. In fact, the issuing of service documentation peculiar to PMA and APMA parts is on the rise as the components and companies manufacturers them proliferate.

Non-standard parts for type-certified aircraft are manufactured under various

production approvals designed to boost competition.

Most are made under production certificate (PC) to type certificate but some are manufactured using PMA and APMA.

Rising costs amid slower-moving lines of aircraft and engine parts that last longer have created an expanding niche market for PMA and APMA components competitive on cost, durability and availability grounds. The Federal Aviation Administration issues PMA. CASA issues the APMA, the Australian equivalent of PMA.

The PMA and APMA are design, production and installation approvals used for modification or replacement parts to be installed on previously type-certified aircraft, aircraft engines or propellers. They may be an approval to manufacture for sale a part proven to be equivalent to an original type-approved part. They may be a modification part made to STC data.

APMA part designs comply with the applicable airworthiness requirements on the basis of "identity" or "test and computation" and may replace OEM parts. The certification basis for the APMA part is the same as that for the aeronautical product on which it is to be installed.

OEM and APMA parts may be identical in form, fit and function and fully interchangeable, but their commonality ends there. The assumption that material and material properties are identical is false. The manufacturers are different and so are the designers, manufacturing plants, materi-

Policies to boost global competition in aircraft parts manufacture carry added responsibilities for the operator and maintainer, writes Obaid Soomro.

als, production processes and quality control. The differences must be accounted for in the approval process, however.

OEM parts manufacturers must provide service documentation and address any unsafe conditions. APMA parts manufacturers must too, whenever maintenance requirements differ from the published data.

Registered operators are responsible for reviewing applicable service documentation related to OEM, PMA, APMA and STC parts installed on their aircraft, and to approved repairs and modifications. They are also responsible for making informed decisions accordingly.

Checking the aircraft and engine documents and overhauling shop records to find out if any APMA parts are installed is the first step. (Alternatively, tell your contract maintenance shop in writing not to use PMA/APMA parts on your aircraft, engine or prop.)

The second step is to establish a system to receive and assess service documentation issued by PMA and APMA parts manufacturers.

The third is timely compliance to the documentation. The last step is the periodic evaluation of the system established in first three steps.

The decision to install PMA parts may be optional. The requirement to review the associated service documentation is not.

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