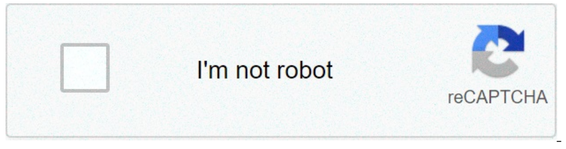

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The Truengine program - available for CF6 engines, GE90, GEnx, CF34 and CFM56 - was developed in response to growing industry needs to better understand the content material of the engine because the activities are evaluated and redistributed. With Truengine styling, engine owners, potential buyers, the contours and experts know that the history of contents and maintenance of a motor has been verified by GE or CFM, allowing them to evaluate more easily the engine configuration, the asset value and market attractiveness. Studies show that the engines maintained in OEM configuration can have a higher residual value at 50% with respect to such engines maintained with the contents of the parties' production Authority (PMA) and / or repairs of the designated engineering representative (DER) Ã ¢ â ¬. For details about this research, see the GE Service Article [PDF] solutions regarding a study conducted by the International Bureau of Aviation (IBA) that examined the resale prices for Asset CF6-80C2 and CFM56-3 engines / - 5C. The qualification process TRUEENTIFICHE includes the presentation of the maintenance records of the customer and a review by GE and CFM to ensure that the engine configuration and auditing practices practices are consistent with the GE engine manuals and CFM and other recommendations. There's no charge to attend and Truengine designation is fully transferable. The Truengine designation is granted on a serial number of the individual engine series, and remains in force until the next shop visit (re-qualification). Participants also enjoy other benefits such as extended warranty replacement parts and optimized product support. Ã ¢ ¬ "Based on CFM, GE and GE and the research of independent third parties. GE90 GE90 GE90 turbofan GE90-115B GE90-115B Type Turbofan National Origin United States National Manufacturer GE Aviation First race in March 1993 [1] Key Applications Boeing 777 Product of 1993 the submission number Built 2800 by 20 July 2016 [2] developed by CFM International CFM56 General Electric CF6 developed at General Electric GEnx Engine Alliance GP7000 Ge9x the General Electric General Electric GE90 is a family of turbofan aircraft engines high bybofan built by GE Aviation for the Boeing 777, with thrust ratings from 81,000 to 115,000 LBF (360 to 510 KN). It entered service with British Airways in November 1995. It is one of three options for versions 777-200, -300 and -200er and exclusive -200LR engine, -300ER and 777F. It was the biggest jet engine, [3] until it is not passed in the January 20 by his successor, 110,000 LBF (490 KN) GE9 X, which has a more extensive fan of 61 (15 ...). The GE90 is still even more powerful than its successor, Ge9x. Development A Simulation CFD 1998 airflow through the engine The GE90 has been developed by the energy-efficient motor of the NASA in 1970, a prototype version of the General Electric CF6. Fan not nominated GE GE36 (propfan) is meant to replace the CFM International CFM56 turbofan high by international-bypass which was initially uncompetitive against rivals IAE V2500. However, when the V2500 ran into technical problems, sales of CFM56 departed. GE was not interested in having the Ge36 Cannibalize the CFM56, and while "the UDF could be made reliably by earlier standards, Turbofans were becoming much, much better than that." However, GE has integrated the technology of the UDF in the GE90 blade directly. [4] The GE90 engine was launched in 1990. [5] Ge Aviation has partnered with Snecma (France, 24%), IHI (Japan) and Avio (Italy) for the program. [6] Initially, the GE90 was only one of the three options 777 and GE Aviation then-CEO Brian H. Rowe would pay for it To put it on an A330, but the Airbus strategy for a long ray was the four A340 engine, missing the market that favors the twins. [7] The largest and most higher-thrust -115b version that feeds the second generation 777 (-300er, -200LR and -200F) had its first race at the GE structure in Peebles, Ohio in November 2001. [8] Design diameter ge90-115b is 128 in (325 cm) while the fuselage 777 is 244 in (620 cm) high pressure pressure from 10 stages ge90 ge90 developed a relationship of pressure then record sector of 23: 1 and is driven by a 2-stage, air-cooled, HP turbine. A low pressure compressor 3 stages, located directly behind the fan, potentiates the core. The fan / LPC is driven by a 6-low-pressure turbine stage. The thrust greater variations, GE90-110B1 and -115B, have a different architecture from that of the previous versions GE90. General Electric built a large fan diameter made of advanced composite materials that have improved thrust at low speed flight. However, GE also necessary to increase the power core to improve net thrust at high speed flight. As a result, GE elected to increase basic skills, which are made by removing a stadium from the back of the HP compressor and the addition of an additional stage to the LP compressor, which has more than offset the decline of HP compressor pressure ratio , resulting in a net increase in the core mass flow. [9] the high-thrust GE90 variants are the first production engines to sweep the rotor blades function. The ship has a maximum diameter of 166A at (4,200Ã mm). [10] operating history as one of the three engines available for the new Boeing 777, the GE90 was a brand new $ 2 billion plan intended to handle transoceanic routes, in contrast to the offers by Pratt & Whitney and Rolls-Royce, who were changes existing engines. [11] The first GE-powered Boeing 777 was delivered to British Airways on 12 November 1995. [12] The aircraft, with two GE90-77Bs, he entered into service five days later. Initial service has been affected by wear concerns of the gearbox bearings, which caused the airline to temporarily withdraw its 777 fleet from transatlantic service in 1997. Airline British Airways' returned to full service later that year. [13] Problems with the development and testing GE90 caused delays in the certification from the Federal Aviation Administration. Also increased production of the GE90 was not put to use by the airlines and was also the heaviest of the three engine choices available, making it the least popular option, while Rolls-Royce has held the top spot. British Airways quickly replaced the GE90 with Rolls-Royce engines on their 777s. [11] [14] A motor GE90-115B For second generation versions 777 long-haul Boeing (then called 777-200LR, 777-300ER, and 777F), greater thrust was necessary to meet the specifications. General Electric and Pratt & Whitney insisted on a winner-take-all contract for the investment of $ 500 million necessary changes to the engine to meet the requirements. GE was received sole supplier of engines for higher thrust engines for the 777-200LR, -300ER and 777F. [11] [14] The improved version is entered service with Air France in May 2004. [15] The GE90-110B1 upper outlet and -115B engines, in combination with the second generation 777 -200LR and -300ER variants, Ã ¨ been a primary factor of sales of the past twinjet competitors A330 series / 340. [16] by using two engines produces a typical operating cost advantage 8a of 9% for the -300ER on A340-600. [17] The 777-300ER was also seen as a 747-400 replacement amid rising fuel prices, given its 20% of the fuel consumption advantage. [18] Until passÃ² its derivative, the GE9X, the GE90 series has held the title of the biggest engines in aviation history. The fan diameter of the original series being at 123A (310a cm), and the largest GE90-115B variant has a fan diameter 128a (330a cm). As a result, the GE90 engines can be by air only in assembled form from outside air cargo measures such as the Antonov An-124, which present unique problems if, because of emergency, a 777 were blocked in a place without the appropriate spare parts. If the fan is removed from the core, then the motors can be shipped on a 747 cargo. [19] The -94B for the -200er is equipped with some of the first printed 3D FAA components. [20] In 2011, its list price was US $ 27.5 million, and had a flight shutdown rate (IFSD) of one million hours flight hours. [3] Until when 2015, has accumulated more than 8 million cycles and 50 million flight hours in 20 years. [21] In July 2020, the fleet of 2,800 engines has surpassed 100 million hours, feeding more than 1,200 aircraft to 70 operators with 99.97% of a dispatch reliability rate. [2] Records GE90 without cowling The push higher GE90-115B mounted on GE's Boeing 747 Aircraft. The GE90-115B is powerful enough to fly the Boeing 747-100 BOEING testbed with other engines idling, an attribute he showed during a test flight [22] [23]. According to the Guinness Book of Records, to 127,900 LBF (569 KN), the engine holds the record for the highest pressure (although rated at 115,300 lbf (513 kn)). This thrust record has been realized inadvertently as part of a triple 24 hours of engine stress test. To accommodate the increase in torsional stress, it is a new alloy steel was created, GE1014 has been created, and then machined to extreme tolerances. [24] The new record was set during the development of a GE90-115B engine testing at the operation of the peebles GE Aviations test, which is a test complex outdoor outside Peebles, Ohio. Eclipse the previous world record of Guinness of 122,965 LBF motor (KN 546.98). [25] On 10 November 2017, his successor, the Ge9x, has reached a new Thrust 134,300 lbf record record (597 kn) in peebles, Ohio. [26] In October 2003, a Boeing 777-300ER broke the record of being able to fly ETOPS five hours and a half hours (330 minutes) with a closed engine. [27] The plane, with GE90-115B engines, flew from Seattle to Taiwan as part of ETOPS certification program. On 10 November 2005, the GE90 has entered the Guinness World Records for a second time. The GE90-110B1 has fueled a 777-200LR during the flight longest in the world by a commercial airliner, although there were no paying passengers on the flight, only journalists and invited guests. The 777-200LR flew 13,422 ml (21,601 kilometers) in 22 hours, 42 minutes, flying from Hong Kong to London, "The Long Road" over the Pacific, over the continental United States and then across the Atlantic to London. [28] Incidents on 11 August 2004, a GE90-85B power Boeing 777-200ER British Airways Flight 2024 suffered an engine failure on takeoff from George Bush InterContinental, Houston. The pilots noticed a noise and vibration on takeoff but continuÃ² rotation. At 1500 ft AGL they noticed smoke and haze in the cockpit and the cabin equipped the cabin was filling with smoke. They returned to the airport for an immediate emergency landing. The findings were a 2-stage turbine blade had separated to its shank, which damaged the final blades that cause the vibration. The debris was contained in the casing of the engine. [29] On May 28, 2012, an Air Canada 777 take off from Toronto en route to Japan suffered a failure of a GE90-115B to 1,500 feet (460 m) and went back safely. The engine debris were found on land. [30] [31] On 8 September 2015, a GE90-85B that feeding a Boeing 777-236er on British Airways flight 2276 has suffered an unmistakable failure during the takeoff roll at the airport in Las Vegas McCarran, leading a fire. The NTSB and FAA investigations were initiated to determine the cause; The initial results were reported in September 2015. [32] [33] On 27 June 2016, a GE90-115B powering a Boeing 777-300ER, Singapore Airlines Flight 368, received an engine oil warning during flight and returned to Singapore Changi airport. Landing malfunction of the right engine caught fire, leading to the fire damage to the engine and the wing. [34] Transfer Gearbox Gualces The FAA issued a Aiutoworthiness Directive (AD) May 16, 2013 and sent to owners and operators of engines General Electric and ge90-115b turbofan engines. This emergency announcement was requested by reports of two failures of transfer shift assemblies (TGBS) that led to flight closures (IFSD). The investigation revealed that failures were caused by cracking and separating the TGB radial margin. Additional inspections found two additional radial gears with cracks. This condition, if incorrect, could In additional IFSDS of one or more engines, thrust control loss, and damage to the aircraft. The aeravigability directive is subject to compliance by adopting corrective measures within five days of receipt of the AD. [35] Specifications to Ge90-94B (B777-200er), Straight Bladesa fan Ge90-110B1 (777-200LR), Fan blades Curve GE90 Data Type Certificate Sheet [36] Variant -76B / -77B / -85B / -90B / -94b - 110b1 / -113b / -115b dual rotor type, axial flow, high bypass turbofan compressor 1 fan, 3 stages lp, 10 phases hp 1 fan, 4 stages lp, 9 stages hp [37] turbine 2 stages hp, 6 stages LP Length [a] 286.9Ã, A (7.29Ã, m) 286.67ã, A (7.281Ã, m) max. Width 152.4ã, A (3.87Ã, m) 148.38ã, A (3,769Ã, m) Max. Height 155.6Ã, A (3.95a m) 154.56ã, in (3,926Ã, m) fan diameter [38] 123a a (3.1am) 128a a (3.3am) weight [b] 17,400ã, lb (7,893 , Kg) 19,316Ã, LB (8,762Ã, kg) Taking off 81.070Ã ¢ 97,300Ã, LBF (360.6Ã ¢ 432.8Ã, KN) 110.760Ã ¢ 115,540Ã, LBF (492.7Ã ¢ 513.9Ã, KN) [c] LP speed rotor 2.261.5 rpm 2.355 rpm hp rotor speed 9.332 rpm bypass ratio [6] 8.4 - 9 9 pressure ratio [37] 40: 1 42: 1 push-weight ratio 5.59 5.98 take-off tsfc 0.278ã, lb / l BF / H (7.9a g / kn / s) [39] Cruise TSFC 0.545Ã, LB / LBF / H (15.4Ã, g / kn / s) (-76b) [40] (-85b) [41] or 0.520Ã, lb / lbf / h (14.7ã, g / kn / s) (-85b) [40] [42] Product derivatives â €