

Title

EVALUATION OF CRITICAL PARAMETERS FOR THE FRONT FUSELAGE DESIGN OF A FIGHTER AIRCRAFT

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The aim of this paper is to analise the forward body design criteria of a fighter aircraft that can serve for the air support needs of a wide range of potential end users ranging from national airforce to other ally nations' airforces. A fighter aircraft requires a highly complex structure to perform complicated capabilities during various combat modes. By definition, a fighter aircraft is a high-speed air force or naval jet airplane designed for air-to-air combat missions and with high speed maneuverability to intercept enemy aircraft, as opposed to a bomber which is designed to attack ground targets by dropping bombs. The hallmarks of a fighter jet are small size, high speed and high maneuverability.

The aerodynamic design considerations deal with forward body shaping, forward camber, forebody length, asymmetric vortices, forwardbody fineness ratio, nose effect on stability, nose strakes, nose bluntness, radar and laser-ranging installations besides influence of the crew accommadations. Some of the major design criteria that need to be considered for the structural design of such aircraft's forward fuselage are flight loads, landing gear loads, cockpit pressure, drainage, heating-cooling system, visibility, ergonomy, canopy and access doors, avionics systems and also skin material effect. In this paper, above mentioned aerodynamic and structural design solutions which are mentioned above will be compared step by step with other similar aircraft design solutions and also under the effects of these criterias, the structural and aerodynamic behaviors of the aircraft will be analyzed.

Biography

Burhan CETINKAYA has completed his master at the age of 26 years from Istanbul Technical University and currently he is studying at Istanbul Technical University as a PhD candidate. Recently, he has been working at Turkish Aerospace Industry (TAI – TUSAŞ) on Hürkuş and Hürjet Aircraft Projects as a structural design engineer. He had been worked at OTOKAR Automotive and Defence Industry Inc. in ALTAY National Main Battle Tank Project for 3 year. Before he had been worked for short time BIAS-Eksen Engineering as a test engineer in İstanbul. .During the project with Istanbul Technical University and Tengri Aviation Inc co-operated to fund his short term education namely " Aircraft Structures Design and Analysis" which had been organised by Kansas University and BOEING in Orlando, FL, USA. In addition, he established Göktürk Glider Team at İstanbul Technical University with 20 members and our main project about self-launch electrical sailplane.

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Session name/ number: -
Category: Oral presentation