

Human Factors Considerations in New Generation Fighter Planes to Enhance Combat Effectiveness

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Abstract : Role of fighter planes in modern network centric military warfare scenarios has changed significantly in the recent past. New generation fighter planes have multirole capability of engaging both air and ground targets with high precision. Multirole aircraft undertakes missions such as Air to Air combat, Air defense, Air to Surface role (including Air interdiction, Close air support, Maritime attack, Suppression and Destruction of enemy air defense), Reconnaissance, Electronic warfare missions, etc. Designers have primarily focused on development of technologies to enhance the combat performance of the fighter planes and very little attention is given to human factor aspects of technologies. Unique physical and psychological challenges are imposed on the pilots to meet operational requirements during these missions. Newly evolved technologies have enhanced aircraft performance in terms of its speed, firepower, stealth, electronic warfare, situational awareness, and vulnerability reduction capabilities. This paper highlights the impact of emerging technologies on human factors for various military operations and missions. Technologies such as 'cooperative knowledge-based systems' to aid pilot's decision making in military conflict scenarios as well as simulation technologies to enhance human performance is also studied as a part of research work. Current and emerging pilot protection technologies and systems which form part of the integrated life support systems in new generation fighter planes is discussed. System safety analysis application to quantify the human reliability in military operations is also studied.

Keywords : combat effectiveness, emerging technologies, human factors, systems safety analysis

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