This paper discusses the novel design and development of the state of art fatigue meter for the fighter aircrafts. The unique features of the enhanced fatigue meter (eFM) are its capability to be configured for critical parameters, adaptable across different aircrafts and flexible for using internal or external accelerometer. The combat aircrafts carry out a lot of maneuvers while flying. While doing so, these aircrafts experience large range of variations in the accelerations due to gravity i.e. G-variations. This sudden and large change in acceleration due to gravity, as a function of time forms the fatigue loading on the airframe. This fluctuating loading causes fatigue damage to be accumulated in the aircraft structure. Over a period of time, the accumulated fatigue damage leads to development of crack and breakdown of the structure. In order to monitor and keep track of the g-loads experienced by the aircraft and to predict the remaining service life of the aircraft, a system that measures the g-loads encountered by the aircraft every time it flies is essential. The relevant g-load spectrum of the aircraft can be derived from these recorded data.

Keywords: Fatigue, Loads, g-crossings, Lock, Unlock, Peak-trough, Maintenance

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