ENTER THE RAFALE

The IAF's Next Gen era begins !

The Dassault Rafale F3 variant marks further development of this multi-role combat aircraft, with priorities shifting towards both nuclear strike and conventional attack yet retaining formidable air superiority attributes, leading to classification by its manufacturer Dassault as being an 'omni-role' aircraft.

To execute successful attack missions, the Rafale with its superb manoeuvrability and high degree of cockpit automation, is designed to make use of terrain following and masking, particularly at night and in adverse weather conditions, to fly a terrain/obstacle-avoidance profile at 5.5g down at 100 feet in altitude, using to the Automatic Flight Control System (AFCS) that can operate in either digital terrain–following or radar terrain following mode. With digital terrain–following, the AFCS manoeuvres the Rafale over terrain based on a three dimensional map database which is pre-programmed into the AFCS software. The radar terrain following mode of the RBE-2 AESA radar can scan the terrain ahead and safely fly the jet over all obstructions before resuming nap-of-the-earth operations.

In these missions, its digital Fly-By-Wire (FBW) controls and canard-type fore-planes allows the Rafale to secure all advantages of delta wing platform including high fuel storage, low drag, increased manoeuvrability with considerably more authority in pitch, fewer control surfaces and reduced Radar Cross-Section (RCS) while minimising most instabilities that arise when an aircraft carries significant external stores during low-altitude missions. The digital FBW controls in particular empower the Rafale with remarkable manoeuvrability at low altitudes as well as high resistance to *g-bumps* enabling it to fly fast and low, deliver ordnances on targets with high degree of accuracy and capable of destroying alerted opposing fighters with their formidable defensive weaponry and electronic warfare suite on their flight back.

To further complicate tasks of the adversary, the Rafale has significantly lower Radar Cross Section (RCS), with priorities attached to stealth characteristics from the conceptual phase. The two 'kidney shaped' side-mounted intakes were meant to lower Rafale's 'frontal RCS' by shielding moving parts of the Snecma M88-2 engines compressors while the vertical fin was made of electromagnetic transparent composites. High acceleration Snecma M88-2 engines with 72.9-kN of thrust each in turn enables Rafale to fly in 'super cruise' mode while in supersonic flight without the use of afterburners during part of the ingress and egress route without imposing serious penalty on range. Consequently, exposure to enemy air defence systems and networks are reduced, enhancing its survival capability. This statement is partially true especially in the egress route when at least a part of enemy air defence systems and networks are on full alert after being struck.