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A Research on Conceptual Design of Short Range Tactical Ballistic Missile

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ABSTRACT: This is a short range tactical ballistic missile which is having a solid rocket motor propulsion and it carries four missile payload in upper part and parachute deployment system installed in top of the electronic and control system, after launching of missile from mobile launcher it travels in supersonic speed about Mach 1.2 and then after reaching target altitude or point then it slows down and release parachute and lower propulsion stage or solid rocket motor propulsion section is getting separate then in upper part with help of sensors or detection system the four missile payload ready to launch in which nose of missile is down to earth and propulsion section in upper part then after the system get stable descent with help of parachute then sensor detects target altitude and then it releases four missile payload at four different directions then four missile attack different Target in a targeting region and destroy them in seconds, it is a capability of attack four different Target at different direction without getting detect by radar because it's has lower radar signature and in swarm or group attack launch missiles in group its destroying target capacity is more than any traditional missile it's best for striking bunkers, vehicles trenches, and radars and it also jam radar for certain time using aluminium or metallic component flares.

KEYWORDS: Solid rocket motor, mobile launcher, radar signature, payload, missile, target, swarm

I. INTRODUCTION

Modern language, a missile, also known as a guided missile, is a guided airborne ranged weapon capable of self-propelled flight usually by a jet engine or rocket motor. Missiles have four system components: targeting/guidance system, flight system, engine and warhead. Missiles come in types adapted for different purposes: surface-to-surface and air-to-surface missiles (ballistic, cruise, anti-ship, anti-tank, etc.), surface-to-air missiles (and anti-ballistic), air-to-air missiles, and anti-satellite paper talks about geometrical design of solid rocket propellants motor.

It is stated that special series that are used for rocket motor are fuel that is potassium nitrate, ammonium perchlorate, wax and oxygen, hybrid rocket motors etc

A short range missile fire-and-forget anti-tank guided missile and anti-personnel missile with a tandem-charge heat warhead

A simple solid rocket motor consists of a casing, nozzle, grain (propellant charge), and igniter the solid grain mass burns in a predictable fashion to produce exhaust gases, the flow of which is described by Taylor-Culick flow. The nozzle dimensions are calculated to maintain a design chamber pressure, while producing thrust from the exhaust gases. A solid rocket motor is the main part of the propulsion system in missile.

One of the most important & critical components is guidance system of missile.

The guidance wire dispensation from the missile and the operator's response time for guiding the missile limited the missile speed to 100-180 m/s. The operator and the missile system were vulnerable to enemy counter actions during the prolonged flight time due to this low speed



II. RELATED WORK

An explosive charge is used to disintegrate the target, and damage surrounding areas with a blast wave.

Conventional: Chemicals such as gunpowder and high explosives store significant energy within their molecular bonds. This energy can be released quickly by a trigger, such as an electric spark. Thermobaric weapons enhance the blast effect by utilizing the surrounding atmosphere in their explosive reactions.

Blast: A strong shock wave is provided by the detonation of the explosive.

Fragmentation: Metal fragments are projected at high velocity to cause damage or injury.

Continuous rod: Metal bars welded on their ends form a compact cylinder of interconnected rods, which is violently expanded into a contiguous zig-zag-shaped ring by an explosive detonation. The rapidly expanding ring produces a planar cutting effect that is devastating against military aircraft, which may be designed to be resistant to shrapnel.

Shaped charge: The effect of the explosive charge is focused onto a specially shaped metal liner to project a hypervelocity jet of metal, to perforate heavy armour.

Explosively formed penetrator: Instead of turning a thin metal liner into a focused jet, the detonation wave is directed against a concave metal plate at the front of the warhead, propelling it at high velocity while simultaneously deforming it into a projectile.

Nuclear: A runaway nuclear fission (fission bomb) or nuclear fusion (Thermonuclear weapon) reaction causes immense energy release.

Chemical: A toxic chemical, such as poison gas or nerve gas, is dispersed, which is designed to injure or kill human beings.

Biological: An infectious agent, such as anthrax spores, is dispersed, which is designed to sicken or kill humans. Often, a biological or chemical warhead will use an explosive charge for rapid dispersal

III. METHODOLOGY

This technique of delivering warhead is not implemented till now and we conceptualized this system of warhead delivery to destroying target it's capacity and capabilities are far more better than any ballistic missile and in swarm attack it destroys everything in that strategic area and it penetrate Armors of tanks, vehicles and bunkers

IV. EXPERIMENTAL RESULTS

Cfd analysis of missile is similar to other but we internally added system that has different capacity and solid rocket motor propulsion-based system it's range upto 10 to 20 km for small missile and for larger it's range upto 300km. Its payload carrying capacity starts from 10 kg to 100kg

V. CONCLUSION

We have conceptualized and invented a an automatic missile warhead delivery technique using our own research and resources and it is a short range tactical ballistic missile which is having more capable than any missile in its range

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