Ukraine's Thermite Spewing Dragon Drones : Impact, Limitations and Applications

---

Introduction

Recently in the Russia-Ukraine conflict, Ukraine started to deploy 'Dragon' drones, more commonly known as 'flame-thrower' drones which many believe has taken drone warfare to newer heights. Ukraine's 108th Separate Territorial Defense Brigade posted a video on their Telegram channel showing a modified drone blasting out Russian forward positions with molten thermite and burning the cover of trees within seconds.[1] The drone used in this attack seems to be a First-Person View (FPV) drone where the pilot who flies the drone gets a clear view of the area of operation on board camera. Will the above tactics help Ukraine and the world militaries to utilise drones in any battle environment? Although the use of drones in the Nagorno-Karabakh battle was intense, directed towards tanks, artillery and infantry units and produced the desired results for Azerbaijan, Ukraine's flame-thrower drones seem to be designed to inflict close battle damage on military personnel.

Incendiary Weapons Usage in Conflict Zones

The United Nations Office for Disarmament states that incendiary weapons are those which can cause massive destruction and environmental damage. Thermite is a chemical substance which can burn even metals and was first discovered by a German scientist in the 1890s and was originally used to weld rail tracks. During the World War I, its military utility was discovered where it was dropped as bombs. In the Second World War, both the Axis and Allied powers used it as aerial bombs and disabled artillery units. Thermite is as such just one variant of incendiary weapons, the others being napalm and white phosphorous. The United States used napalm to burn Tokyo during World War II and also used it extensively during the Vietnam wars. In the current Russia-Ukraine conflict, thermite was used by Ukraine to disable Russian tanks.[2] Similarly, Russia has also been reported to have used similar weapons containing thermite in residential neighbourhoods of Vuhledar in eastern Ukraine.[3] In May 2022, social media videos suggested Russian use of artillery shells containing thermite mixture to bombard Mariupol, Donetsk and Marinka.[4]

Impact on Battlefield

The impact of use of molten thermite is deadly over both man and machine. Ukraine has been using thermite in the form of free fall ammunition. The combustion temperature of such ammunitions usually reach to around 2,400 degrees Celsius. Thermite can burn through the steel hull of light armoured vehicles and effectively melt the aluminium armour of infantry fighting vehicles like Boevaya Mashina Pekhoty (BMP)-3 & 4.[5] In February 2024, Ukraine was reported to have damaged an abandoned Russian BTR-82 armoured protected vehicle by using just one thermite munition. The combustion is aided by a chemical reaction between the hull metal and thermite. The cost of such munition is very low, costing about USD 12 and the design and assembly is simpler, giving an economically viable option.[6] On the other hand, the impact

of thermite on humans is devastating. If deployed correctly, they can be very effective against ground troops. It can destroy covers, positions, and negate the use of bunkers.[7] On individual level, it can burn muscles, nerves, bones etc. Apart from physical injury, they also leave a psychological scar in the minds of any soldier. The reason Ukraine has been able to use such weapons in the current conflict is because unlike napalm or white phosphorus, thermite is not banned for military operations under international laws.[8] The deployment of thermite-equipped drones for the first time in the Russia-Ukraine conflict exposed a critical vulnerability in Russian defenses which could be studied in general by the militaries all over the world.[9]

Limitations of Ukrainian Strategy

Even though thermite has been a unique weapon for the Ukrainians to some extent, it has certain limitations. Unlike other incendiary weapons that burns very quickly and to a wider area, thermite's reaction zone is confined to a small area over a longer period, thus not causing a significant damage at a short duration. Its difficulty to get extinguished quickly can also prevent its usage in civilian areas, where there will be a risk of collateral damage.[10] The other major drawback is since thermite is itself not a very secret chemical substance to manufacture or produce, easy to acquire and assemble into drones, it can be used as a munition by any military. Russia now using similar dragon drones should not come as a surprise. Russians have also learnt to use thermite as an aerial munition off late and have quicky deployed its own thermite spewing drones over Ukrainian troops. A video posted on Telegram by a Russian politician and journalist Andrey Medvedev shows Russian troops deploying their dragon FPV drone using a thermite canister. The same video shows the drone visuals where the burning substance is dispensed over Ukrainian troops.[11]

Possible Applications in Indian Context

Although the scope and limitations of thermite spewing drones can be understood in the Russia-Ukraine war context, its utility in dealing with India's security threats can definitely be pondered upon, specially in the troubled areas of Jammu and Kashmir (J&K) and the Northeast (Manipur) where the security personnel have to deal with terrorists, militants and insurgents in thick vegetations, tree lines, bushes etc. Specifically in the J&K sector, in recent years most often the terrorists usually used to take cover in thick forest bushes and trees and ambush the security during search operations. When the terrorists hide in the high mountains with thick forest cover, the security personnel have lost lives because the advantage is with person at higher altitude. Similarly, sometimes the terrorists create bunkers, dugouts etc., under the cover of trees to evade getting detected. In such scenarios, the deployment of flame-throwing drones can definitely cause havoc in the minds of these terrorists, specially those crossing over from the Pakistani side.

From an economical point of view, the deployment of these drones will also be a lot easier as these FPV drones or quadcopters are relatively cheaper, easier to operate and can be procured

in large numbers. The higher the quantity of thermite, the higher will be the duration of flame ejection. FPV models like the Queen hornet can carry 20 pounds of payload which implies that it can burn an area more effectively.[12] A typical TF-19 WASP Flamethrower Drone Attachment costs around USD 1,599 with one gallon fuel capacity and 25 ft range.[13] These kinds of specifications will greatly help to eliminate the tactics of terrorists hiding in dense forests and vegetations and inflict a psychological damage.

Conclusion

The arrival of flamethrower drones in the Russia-Ukraine war is a significant development and will be studied by global militaries. Although use of thermite is no doubt a psychological weapon to create fear in minds of Russian soldiers, the gains will be limited as Russia has reversed the tactics on Ukraine. On the other hand, when these kinds of incendiary substances are mated with drones to tackle terrorists or militants, the advantages of guerrilla warfare strategies can be dented to a large extent as the natural tactics of hiding and attacking in natural terrain gets reduced to a large extent. Hence, India can learn from this development and utilise such drone techniques to tackle its own security challenges.

Endnotes

---

[1] Abhinav Singh, "Nightmare Fuel! Ukraine Using Flame Thrower Drones to Burn Russian Positions", WION News, September 4, 2024, https://www.wionews.com/world/nightmare-fuel-ukraine-using-flame-thrower-drones-to-burn-russian-positions-video-755851.

[2] Brad Lendon, "Ukraine's 'Dragon Drones' Rain Molten Metal on Russian Positions in Latest Terrifying Battlefield Innovation", CNN News, September 7, 2024, https://edition.cnn.com/2024/09/07/europe/ukraine-thermite-dragon-drones-intl-hnk-ml/index.html.

[3] Kieron Monks, "Video Appears to Show Ukrainian 'Flamethrower Drone", INews, September 3, 2024, https://inews.co.uk/news/world/flamethrower-drones-ukraine-battlefield-molten-thermite-3258603.

[4] Howard Altman, "Thermite-Spewing 'Dragon' Drones Are Ukraine's Newest Battlefield Innovation", The War Zone, September 4, 2024, https://www.twz.com/news-features/thermite-spewing-dragon-drones-are-ukraines-newest-battlefield-innovation.

[5] The Editor, "Flamethrowing Drone Burns up Russian Positions", UAS Vision, September 5, 2024, https://www.uasvision.com/2024/09/05/flamethrowing-drone-burns-up-russian-positions/.

[6] "Ukrainian Drones Use Thermite Munitions", Militarnyi, February 2, 2024, https://mil.in.ua/en/news/ukrainian-drones-use-thermite-munitions/#google_vignette.

[7] Stavrov Atlamazoglou, “Ukraine’s Flamethrower Drones Should Have Russia Freaked Out”, The National Interest, September 9, 2024, https://nationalinterest.org/blog/buzz/ukraine%E2%80%99s-flamethrower-drones should-have-russia-freaked-out-212660.

[8] Brad Lendon, Ibid.

[9] “Frontline Report: Ukraine Reclaims High Ground near Kharkiv’s Lyptsi, Deploying ‘Flamethrower’ Drones”, Euromaidan Press, September 10, 2024, https://euromaidanpress.com/2024/09/10/frontline-report-ukraine-reclaims-high-ground-near-kharkivs-lyptsi-deploying-flamethrower-drones/.

[10] Jesus Mesa, “How Ukraine Is Retrofitting Its Drones as Aerial Flamethrowers”, Newsweek, September 3, 2024, https://www.newsweek.com/ukraine-uav-drone-thermite-russia-1948296.

[11] Howard Altman, “Russia Now Using Thermite-Spewing ‘Dragon Drones’ to Torch Ukrainian Positions”, The War Zone, September 12, 2024, https://www.twz.com/news-features/russia-now-using-thermite-spewing-dragon-drones-to-torch-ukrainian-positions.

[12] Christopher McFadden,“ ‘Drakaris’: Ukraine’s Flamethrower Drone Torches Russian Trenches in Fiery Attack”, Interesting Engineering, September 3, 2024, https://interestingengineering.com/innovation/ukraine-flamethrower-drone-russian-troops.

[13] “TF-19 WASP Flamethrower Drone Attachment”, Throwflame, August 30, 2024, https://throwflame.com/products/flamethrower-drone-kit/?srsltid=AfmBOoq8_2iKTYcfGgxaMi3z2yDag-joqT7za6e6Ud5LzVSdNrZbAd2L.

Ajay Kumar Das, Independent Researcher and Analyst of International Affairs and Security Studies.

Article uploaded on 04-10-2024

Disclaimer : The views expressed are those of the author and do not necessarily represent the views of the organisation that he/she belongs to or of the USI of India.