

Editorial

It is my pleasure to bring to you the second special issue of this year's volume. Like we had done last year with the special issues on India's Strategic Culture and 1971 India-Pakistan War, we have been able to bring out two special issues this year. We are truly overwhelmed to receive so many congratulatory messages and letters of appreciation for the first special issue of 2022, on United Nations Peacekeeping Operations, which was published in August 2022. We hope that you will enjoy reading this second special issue of 2022 on "Future of Military Unmanned Systems in India" as well.

Considering that unmanned systems for use on land, air and sea, including surface and sub-surface systems are being extensively researched and deployed for various applications across the world, we felt that a special issue on this relevant theme would be an apt and timely contribution. Under the guidance of Ambassador Sujan R. Chinoy, Director General, MP-IDSA, this special issue was conceptualised a few months back. Like the previous special issues, we received several submissions and after a thorough review process, we finalised 11 articles and 6 commentaries which are featuring in this issue.

The first article "Unmanned Battlefield Systems: Future Unknowns", by Dr S. Guruprasad, talks about how unmanned systems have become a part of defence inventory and are fast becoming an important part of the combat forces apart from their Intelligence, Surveillance and Reconnaissance roles. It also explores relevant areas for further research like communication systems, manned-unmanned teaming, swarm systems, autonomous by birth type of systems, futuristic mine warfare, stealth technologies, radars, etc. In the second article "Global Developments in Sea-based Unmanned Crafts", Dr Sanur Sharma explores the sea-based unmanned crafts that includes a survey of Unmanned Surface Vehicles (USVs) and Unmanned Underwater Vehicles (UUVs) for military use. The article also talks about the challenges and legal issues in deploying such technologies and global developments pertaining to the application of these systems.

The third article titled “‘Anusandhan’-led ‘Atmanirbhar’ UAS Industry in India” is by Gp Capt R.K. Narang. The article talks about the two transformational goals India has set for its UAS industry, that is, becoming self-reliant in critical technologies and becoming a global drone hub by 2030, and proposes a way forward to achieve these goals. It is followed by the article “Maintenance Ecosystem of Small Unmanned Aircraft System (sUAS) in Military Aviation”, in which Gp Capt A. Karunakaran analyses the emerging Small Unmanned Aircraft System (sUAS) in armed forces, their maintenance aspects and proposes measures to enhance the maintenance ecosystem.

The fifth article is by Gp Capt A.V. Chandrasekaran, titled “The Matador’s Sword: Unmanned Aerial Vehicles Against Urban Terror”, which emphasises the need to have a robust technology-driven anti-terror mechanism in place to effectively counter terror. The article discusses how unmanned aerial vehicles can provide effective intelligence, surveillance and reconnaissance capabilities as well as enhance India’s operational preparedness to safeguard its citizens and thwart any terrorism attempts.

In the next article “Drones and Arms Control”, Prof. Manish discusses whether proliferation of drones challenge the existing arms control regimes, and how states should establish or modify the drones or arms control regimes to limit the proliferation of drones without endangering national security. In the article “Nuclear Mission of Drones”, Dr Rajiv Nayan discusses the nuclear role drones have been performing ever since the advent of nuclear weapons age and also touches upon the roles they may perform in the future, considering the rapid advancements in technology. Dr Mrinmayee Bhushan, in her article “Biological and Chemical Threats and UAV Delivery Systems: A Lethal Combination”, provides a detailed analysis of how modern Chemical and Biological Weapons and UAV technologies is a lethal combination and an attractive proposition for state- or non-state-sponsored warfare or terrorism respectively, and therefore, a potent challenge for global security agencies.

In the next article “Counter UAS Technologies for India: A Prognosis”, Lt Col Akshat Upadhyay discusses the importance of Counter UAS technologies in warfare, and the global perspectives as well as the Indian (tri-services and civilian) perspective on the philosophy of C-UAS. The article also talks about how ‘Atmanirbhar Bharat’ can be used to spur innovation and manufacturing of C-UAS technologies in a holistic manner.

The tenth article by Wg Cdr Swaim Prakash Singh deals with the “Concerns for Drone Proliferation in India and Challenges to Air Space Management”. The article highlights the importance of equipping the air defence agencies with sensors, shooters, and integrated procedures for the system to develop wholesomely and eliminate any security concerns. The article provides details of drone proliferation, counter-drone measures, and the need for air space management.

The last article “Counter-Unmanned Aircraft Systems (C-UAS): Future of Warfare”, by Col Apratim Sharma, discusses the future roles of UAS, analyses their tactical, operational and strategic impact, assesses their vulnerabilities and suggests a C-UAS philosophy, methodology, kill chain and a plausible approach to countering this potent threat.

Some more interesting topics related to the military unmanned systems are covered in the six commentaries featuring in this issue. We hope that this special issue will be received well by our readers. We thank Gp Capt Ajey Lele, Member of the JDS Editorial Committee for anchoring the special issue. We would also like to thank the authors and the referees who assisted us in the peer review process and would like to hear more from our readers about topics they feel should be addressed by the journal. We hope that along with our growing readership, we would also see more contributions to future issues.

Maj Gen (Dr) Bipin Bakshi, AVSM, VSM, Retd
Managing Editor