



UK CHAPTER NEWSLETTER FEBRUARY 2023

Happy New Year

The UK Chapter President and Board of Directors would like to take this opportunity to wish all our members a most prosperous, happy, and healthy New Year. It is sincerely hoped that 2023 will allow many more of our members to resume our frequent gatherings, events, and of course friendships once again.

Items of Interest

UK MoD To Improve EW Analytical Skills (use the link below)

<http://digitaleditions.telegraph.co.uk/data/1219/reader/reader.html?social#!preferred/0/package/1219/publish/1219/page/101/article/NaN>

'Our brains are our rifles': Inside the secret drone factory manned by teenage students

The makeshift production unit takes orders from front-line commanders as the conflict of electronic warfare within Ukraine heats up - Daily Telegraph By Ben Farmer 13 December 2022

Image Credits: Justin Yau for The Telegraph



A drone flight instructor watches the progress of a device on a video feed to

In a secret location, somewhere in Ukraine, fresh-faced engineering students, some still in their teens, are working day and night to build drones for the front line.

On work benches piled with sometimes donated and scavenged components, they modify commercial drones to turn them into weapons of war or build their own designs from scratch.

This makeshift production line is only one of

his goggles

many that have sprung up since Russian forces invaded Ukraine, and it has already produced 2,500 unmanned aircraft for the front, estimates its founder, Maxim Sheremet.

"Our brains are our rifles," he told The Telegraph. "Most engineers in my lab are students. They are not even 18 years old. They fight on the rear lines; they fight using their brains. They are trying to do something. Creating drones is a very important part of the drone war."

The nine-months-long war has unleashed a flurry of grassroots innovation on the Ukrainian side. Ukrainian techies, academics, hobbyists, and entrepreneurs have joined forces with the military to try to give troops an edge against Russian forces. They are repurposing and modifying consumer technology, as well as building their own from scratch. This cottage industry resembles agile techie start-up culture, much more than the costly and long-running industrial weapons programmes that arm conventional forces in the West.

Mr Sheremet's Dronelab takes orders from commanders on the front line, to build reconnaissance and bomber drones. Some engineers fashion bomb bays to carry grenades on small commercially available drones. Others are making a line of surveillance drones, complete with thermal cameras, that allow front-line units to keep an eye on Russian forces and spot targets even at night. Some of his biggest designs can carry a payload as high as 8kg.

He says: "Guys with guns come to my lab and say, 'Hey Maxim, we need drones that fly a certain distance'. I say, 'Okay, let's do it'." The lab employs around 100 student engineers, and as many as 60 can be working at any one-time, wielding soldering irons, poring over 3D printers and fitting circuit boards. Batteries salvaged from e-cigarettes power the smallest craft. Engineers sometimes get to see the fruits of their work, in clips of battlefield video showing their drones dropping grenades on Russian positions. "It's a special kind of pleasure when I see this," admitted one young worker.

Ukraine's engineers are in a constant arms race with their Russian opponents, who use electronic warfare to jam, block or scramble the drones. "2022 is a conflict of electronic warfare," says Mr Sheremet. "Interference is the biggest problem in the drone war. " Flying drones is one example of Ukrainian ingenuity, but the approach has also seen a fleet of exploding naval drones dispatched to attack Russian shipping in Crimea. The maritime drones are thought to have been propelled by modified jet ski engines. The audacious attack in late October was described by one military expert as "a glimpse into the future of naval warfare".

Yevhen, a drone operator with another volunteer group called Aerial Reconnaissance, was a remote-control enthusiast long before he was called up to fight in 2015 following Russia's attempt to annex the Donetsk region. Arriving on the front line with badly

equipped Ukrainian forces, he was quick to see drones' potential. He said: "When I first got to the front, everything was archaic, drones were hardly used then. Reconnaissance had to be done independently. To adjust the artillery, they climbed trees and looked."

Commanders soon saw the benefits of an eye-in-the-sky and adaptation moved on to dropping bombs. He said: "I thought that if I was already flying over them and if I had a bomb that I could drop, it would be good." Engineers and military analysts say the key to Ukraine's success has been the flexibility to adapt and get quick feedback from the front line.

While the formal Ukrainian military can still be bureaucratic and conservative, individual commanders, particularly at the front line, are often willing to experiment and those higher up can turn a blind eye to restrictions. Commanders and volunteer battalions approached renowned drone makers for help to overcome specific battlefield problems, he said. They gave briefs about what they wanted, and they very quickly reported back on what did and did not work.

"The military command takes certain risks and turns a blind eye to some things in order to get a result, because everyone is focused on victory and understands that we cannot win if we fight without innovations," said Yevhen. "It is very important that we modernise all the time, quickly identify weak points and immediately look for solutions for improvement. "It takes a couple of weeks to find and implement new solutions, given that we have constant combat testing of our devices, we have the ability to work on it quickly."

Russia is formidable at using electronic warfare to bring drones down, he said. Yet its forces do not appear to be adapting as fast as the Ukrainian side, he said.



Sheremet's lab takes orders directly from commanders on the front line to build reconnaissance and bomber drones

"I think because they are less motivated. We have motivation at all levels. Various people come to us offering their help, engineers, entrepreneurs, etc."

Yevhen says he dreams that one day the Ukrainian forces could have access to the big missile-carrying Reaper drones used by the Royal Air Force and the US. But ultimately, he thinks drone warfare is heading to smaller, cheaper drones, not larger.

"I think that there will be more drones in service, for example, land-based drones for mining and de-mining are currently being tested.

"Globally, I think that the trend is towards cheaper and mass production. For example, if

you have 10 very expensive and good drones, and the opponent has 1,000, but cheap and of worse quality, then the victory is most likely for the one who has more of them." Small drones were widely used and adapted in the Syrian war, but the evolution of this new kind of warfare has stepped up a gear in Ukraine. The drone contest over Ukraine is being keenly watched by international military experts.

Ukraine's use of cheap, adaptable drones has important lessons for Britain's forces and their own fleet of costly, specialised unmanned aircraft, a recent think tank report suggested. The Ministry of Defence, following in the footsteps of the Pentagon, has in recent decades concentrated on building a fleet of multi-million-pound drones operated by small numbers of highly specialised pilots. Strict civil aviation safety regulations make testing and developing new drones, or even just training with them, a lengthy and bureaucratic process.

Their use now needs to be broadened out much more widely across all branches of the military, the Royal United Services institute said. Troops need large numbers of cheap and dispensable drones they can use themselves for reconnaissance and finding targets. The importance of drones also shows that the UK has not invested enough in electronic warfare to jam or block them, the report said.



Sheremet estimates that his lab has already produced 2,500 unmanned aircraft for the front line

Cheaper, smaller, commercially available technology that can be weaponised in the hands of less wealthy nations and non-state groups will be a major trend in 21st century warfare, said Mike Martin, a senior war studies fellow at King's College London.

He said: "US forces in Syria, for instance, are regularly attacked with tiny suicide drones, and the Ukrainians are buying quadcopters from Amazon and modifying them to drop bombs on Russian forces.

"This, more than anything else, will change how and who we fight in the coming wars."

If You Follow The World of Cyber – Interesting Snippets!

- <https://www.theguardian.com/world/2022/dec/20/we-were-allowed-to-be-slaughtered-calls-by-russian-forces-intercepted> - a Guardian article about the lack of communications discipline in Russian front-line soldiers.
- <https://samcurry.net/web-hackers-vs-the-auto-industry/> - general interest as to why you might not want to own a modern car.

Latest EW News Roundup

(Kindly supplied by Dr Thomas Withington – Writer and analyst, editor of the Armada International EW webpage and newsletter)

‘Our weapons are computers’: Ukrainian coders aim to gain battlefield edge

One of the most fascinating aspects of the tragic ongoing war in Ukraine is the role played by Ukrainian software developers. This intriguing article details the work they have performed developing command and control, and battle management systems exploiting open-source intelligence.

https://www.theguardian.com/world/2022/dec/18/our-weapons-are-computers-ukrainian-coders-aim-to-gain-battlefield-edge?CMP=Share_AndroidApp_Other

The Organizational Determinants of Military Doctrine: A History of Army Information Operations

Sarah White has penned an excellent long article looking at the history of US Army information operations. This aspect of warfare is very much on the agenda and will grow in importance in the future. Ms. White’s article provides some important lessons from the past.

<https://tnsr.org/2023/01/the-organizational-determinants-of-military-doctrine-a-history-of-army-information-operations/>

‘Electronic Warfare Podcast 24: FARRAH in the Falklands’

Following our previous news update and the link to an article on the use of the US FARRAH signals intelligence satellites during the Falklands War, this podcast talks to the article’s author about the role the constellation played in that conflict.

<https://www.armadainternational.com/2023/01/farah-in-the-falklands-electronic-warfare-podcast-24/>

Pantsir Air Defense Systems Appear On Moscow Rooftops

Regime paranoia or prudence? Recent weeks have seen Russian ground-based air defences deployed in and around Moscow. This provides a useful opportunity to see how these systems are deployed and the targets they are defending, giving more important clues on Russian air defence doctrine.

<https://www.thedrive.com/the-war-zone/pantsir-air-defense-systems-appear-on-moscow-rooftops>

Eyes of the Fleet

Fellow Crow and naval warfare expert Richard Scott has penned a timely new book on the history of Royal Navy rotary wing airborne early warning airborne surveillance and control. It can be ordered from the Navy Wings website. Proceeds go towards the work



of this organisation keeping Royal Navy heritage aircraft flying.

<https://shop.navywings.org.uk/products/eyes-of-the-fleet-by-richard-scott>

Can You Help a UK Chapter Member?

'Hello all, I'm Harry Sharrock and I am hoping to reach out to someone with either a role within or knowledge of the GPS tracker industry. My partner and I will be taking on the Camino del Santiago (400 Mile Route) through Northern Spain from July to August 2023 to raise money for the charity 'KIDS'. The utilisation of a tracker would be useful for keeping our donors, sponsors, and the charity in the loop as to our progress. I am reaching out to the AOC membership as this may be your specialty and you may be able to advise or connect me with someone in the know on where to acquire a suitable device?

The route takes us through very rural areas and at times we'll be walking in temperatures in excess of 40 Degrees Celsius. I believe that a bog-standard commercial tracker would not provide the durability and service that I am looking for when trekking through the rural areas and in the temperatures expected and so I thought first to consult with the AOC community.

If you feel you can assist, please get in touch at harry.sharr@hotmail.com

(If you would like to know a little more about our challenge, please visit the GoFundMe - 'KIDS' Camino Trail Fundraiser Or if you're interested at seeing the work of the charity it is - Kids.org.uk - Charity No. 275936)

Letters to the Editor

Once again, I invite any UK Chapter member to consider sending any feedback you may have on any aspect of this Newsletter, the UK Chapter, or indeed the AOC. If you have a comment, a suggestion or observation to make, (hopefully positive) then please contact me direct at cahowe500@gmail.com when I will be only too pleased to respond and consider your thoughts for change or indeed items of interest for future newsletters. Thank you.

Future Events/Visits

UK Chapter AGM 2023

A date for your diary - The UK Chapter AGM for 2023 will be held virtually using zoom, commencing at 1800 on Wed 15 March 2023. Any member wishing to take part please register your intention by email to the UK Chapter Secretary, Roger Hannaford.

Emailto: rogerhannaford1000@gmail.com

AOC Europe 2023 – Bonn, 15 - 17 May 2023 link: <https://www.aoceurope.org/>

Chris Howe MBE

AOC UK Chapter - President

Keep Checking out the UK Chapter website at:

www.ukaoc.org