American Journal of Engineering Research (AJER)
e-ISSN: 2320-0847 p-ISSN : 2320-0936
Volume-10, Issue-11, pp-134-138
www.ajer.org
Research Paper Open Access

The Hıstory And The Evolutıon Of UAV's

Rüştü GÜNTÜRKÜN
Selcuk University School of Civil Aviation Department of Aviation Electrical and Electronic
Konya / TURKEY

SUMMARY
In this study, the development of UAVs from the armed balloons invented by the Austrians in 1849 to attack Venice has been examined. Thanks to the rapidly developing technology, human beings have realized another dream with the UAVs used in many sectors every day. Especially in the military; The use of UAVs is becoming widespread in many fields, especially in forestry, agriculture, travel, sports, photography, engineering, disaster management, traffic, film industry, mining, energy and construction sectors. For whatever purpose UAVs are used, they will be an indispensable part of our lives in the near future.
KEY WORDS: *UAV, Technology, Drone, Kargu II*

Date of Submission: 16-11-2021 Date of acceptance: 01-12-2021

I. GİRİŞ

The first uses of drones machines In 1849 it was first used an unmanned combat air vehicle when the Austrians attacked the Italian city of Venice with 200 unmanned balloons (Figure 2.8) loaded with bombs fitted with timer devices. [1]. In 1900 Nikola Tesla (1856-1943) presents the concept of wireless control of the balloon (figure 2.9) and in 1915 described a fleet of unmanned aerial vehicles in aerial combat, [1]However, the first UAV as it is used today was developed by British engineer and physicist A. M. Low in 1916. A model specially developed for this purpose, called the Lighting Bug, was used in Vietnam and South Asia from the mid to late 1960s[2]. A new generation of UAVs, as Bill Yenne's author of Birds of Prey, has a history of US UAVs, the offspring of 1980s Israeli initiatives, not 1960s American initiatives[3].Therefore, it is difficult to make a difference between armed and non-armed drones. Regarding the economics of drones, the UAV military market is expected to have a revenue of $13 billion by 2025[30].

Unmanned systems cost much less and offer longer times than their manned counterparts, making them ideal for many of today's missions.

II. THE EVOLUTION OF UNMANNED AERIAL VEHICLES (UAVS)

In 1916, occurs the earliest attempt to use an unmanned aerial vehicle powered so-called „aerial target" by Archibald Montgomery Low (1888-1956), target planes were controlled from the ground by an automatic Hewitt-Sperry known and as the "flying bomb" [4, 5, 6], which is integrated in the control of a gyroscope (1917). In 1917 November Kettering Bug plane (Fig. 1) called "aerial torpedo", flew in automatic mode for representatives of the US military, though he was not ready to fight in the war[7, 8, 9].

Figure1. The unmanned system- Kettering Bug

Efforts for producing an unmanned plane continued and the British developed a gait drone called Queen Bee that was used for deceiving the enemy's anti-aircrafts in the 1930s [10].Armies continued to work on pilotless aircrafts in the 1950s and 1960s. While the US Navy tested a remotely controlled helicopter, land forces deployed UAVs in Eastern Europe[11]. China was a customer to the Soviets, it later began to develop its drone program through reverse-engineering in the 1960s[12].The first armed drones appeared in 2001 and were used inAfghanistan and Yemen[13]. Since then, besides US Army, Israel, China, Turkey, Iran, and as many as thirty more countries have armed UAVs.Russians could enter the unarmed UAV market in 2010s and have just begun to develop sophisticated armed drones as of 2019.

The Global Hawk (see Figure2) transitioned from an ACTD production to an operational program in2001. Global Hawk is a relatively newsystem, control from the United States has allowed for more rapid adjustmentsand improvements to the control system than was possible ifthe vehicle had been controlled in theater[14].

Figure 2. Global Hawk UAV.

In 1999, the Predators were redeployed over Kosovo as part of 'Operation Allied Forces'. While UAVs were successful in finding targets, a major problem was that it took time to transmit the precise location of a target to an armed aircraft. The solution was to add a laser to the Predator so that drone operators would 'light up' a target with their laser, a target that other armed drones could then 'see' and hit. [15]

Figure 3. Leading System' Amber UAV – grandfather of the Predator drone

III. CLASSİFİCATİON OF UAVs

In the most general sense, UAVs are classified by reference to their maximum take-off weight.
UAV0: UAVs with a maximum take-off weight of 500 g (including) – 4 kg,
UAV1: UAVs with a maximum take-off weight of 4 kg (including) – 25 kg,
UAV2: UAVs with a maximum take-off weight of 25 kg (including) – 150 kg,
UAV3: UAVs with a maximum take-off weight of 150 kg (including) and more.
In the near future, the impact of a UAV operating on nuclear energy and gaining full autonomous capability with artificial intelligence in the field of conflict will not be doubted[16]. In the 2000s, when armed UAVs first emerged, between 2007 and 2011, the USA and England flew 300,000 hours with UAVs and fired approximately 200 missiles in Afghanistan alone[17]. In addition to its use with a single launcher, ALPAGU BLOK II also offers coordinated operations in the tactical operational field with its basic level swarm intelligence in its multi-launcher version. In addition to land vehicles, the system can also be used by sea and air platforms[18].

Figure 4. Alpagu II[18]

The Akıncı Attack Unmanned Aerial Vehicle (TİHA) is an unmanned aerial vehicle with the most advanced features of Turkey, developed at the BAYKAR National S/UAV Systems Production and R&D Facilities. With the flight of Bayraktar Akıncı, Turkey has become one of the four countries in the world to have unmanned aerial vehicles in this class[19].

Figure 5. Akıncı Tiha[19]

IV. ARMED DRONES COME İNTO THEİR OWN

On February 16 2001, US air force officials sitting in a trailer at Indian Springs Airfield in the Nevada desert held their breath as test pilot Curt 'Hawg' Hawes punched a button on a control desk[20]. Moments later an inert Hellfire missile flew from a Predator unmanned aerial vehicle flying overhead and hit a disused tank sitting on the ground a few hundred metres away[21].

Figure 6. Predator unmanned aerial

Again the missiles 'hit the target' and the test was deemed asuccess[22].Perhaps the most compelling evidence that Israel uses armed drones comes from a secret US Embassy cables published by Wikileaks detailing drone strikes in Gaza during Operation Cast Lead in 2008-09[23].In 2007 with US military commanders increasingly using drones to launch missile attacks, the Predator's bigger and more lethal brother the Reaper was introduced into service first in Afghanistan and then into Iraq[24].

Figure 7. Israeli Heron drone

V. SONUÇ

Continuously developed unmanned aerial systems have obvious advantages over piloted aircraft in terms of design. UAVs can be designed in any size suitable for the mission profile, from tactical missions to strategic operation. UAVs are vehicles that are controlled by remote or satellite systems, can take off and land vertically, can perform long-term flights, and do not need a runway due to their vertical take-off-landing capability.

REFERENCES

[1]. http://www.ctie.monash.edu.au/ hargrave/rpav_home.html [consulted at 16.03.2016]
[2]. Bill Yenne, Yırtıcı Kuşlar: Yırtıcılar, Biçiciler ve Amerika'nın Savaştaki En Yeni UAV'leri, Specialty Press, 2010, s.14
[3]. İbid. s,23
[4]. Perarson L., Naval Aviation News, Mai-Iunie 1995, SUA, pp.70-73,http://www.history.navy.mil/download/ww1-10.pdf.
[5]. John David Blom, Unmanned Aerial Systems: A Historical Perspective, Institute PressCombat Studies Institute Press US Army Combined Arms Center Fort Leavenworth, Kansas, ISBN 978-0-9823283-0-9, 2010, 153p.
[6]. Barnhart R.K., Hottman S.B.,Marshall D.M., Shappee E., Introduction to unmanned aircraft systems, CRC Press, 2012, ISBN 978-1-4398-3520-3, 215p.
[7]. Keane J.F., Carr S.S., A BriefHistory of Early Unmanned Aircraft,189Journal of Defense Resources Management Vol. 8, Issue 1 (14) /2017Johns Hopkins APL Technical Digest,vol. 32, no.3, 2013, p.558-571.
[8]. Dalamagkidis K et al., OnIntegrating Unmanned Aircraft Systemsinto the National Airspace System,Intelligent Systems, Control andAutomation: Science and Engineering54, DOI 10.1007/978-94-007-2479-2 2,Springer.
[9]. http://es.wikipedia.org/wiki/Kettering_Bug, [consulted at27.04.2016].
[10]. Cole, C. (2014). Rise Of The Reapers: A Brief History of Drones. https://dronewars.net/2014/10/06/rise-of-the-reapers-a-brief-history-of-drones/, (Accessed on 29.09.2019).
[11]. Blom, John David, "Unmanned Aerial Systems : a historical perspective", p. cm. -- (Occasional paper ; 37), ISBN 978-0-9823283-0-9, September 2010
[12]. Hsu, K. (2013). China"s Military Unmanned Aerial Vehicle Industry. Washington: USCC.
[13]. Bergen, P. et al. (2019). How We Became a World of Drones. https://www.newamerica.org/in-depth/world-of-drones/1- introduction-how-we-became-world-drones/, (Accessed on 02.10.2019).
[14]. Ibid.
[15]. Dr David Jordan and Ben Wilkins, Unmanned Aerial Vehcile Operations since the 1980s, in Air Power: UAVS: The Wider Context, RAF Directorate of Defence Studies, p37
[16]. US DoD (2013). "IntegratedUnmannedSystemsRoadmap 2013-2038, Washington DC, US.
[17]. Ak, T. (2017). Günümüzün Değişen Çatışma Koşullarında İnsansız Hava Araçları ve Etik Tartışmalar. Ankara: Sistem Ofset Yayıncılık.
[18]. https://www.savunmasanayist.com/alpagu-blok-ii-vurucu-iha/[5].
[19]. https://www.trthaber.com/haber/savunma/akinci-tihanin-ilk-prototipten-gunumuze-uzanan-hikayesi-604562.html[6]
[20]. Matt j. Martin with Charles W. Sasser, Predator: The Remote Control Air War over Iraq and Afgahnistan: A Pilot's Story, Zenith Press, 2010, p20
[21]. Sue Baker, Predator Missile Launch Test Totally Successful, Ai Force News Service, 27.02.01.

[22]. In his evidence before the National Commission on Terrorist Attacks Upon the United States, CIA Director George Tenet stated that weapons firing tests from Predator in May and June 2001 gave "mixed results" stating "While missile accuracy was excellent, there were some problems with missile fusing that raised questions about its suitability against some targets." See 'Written Statement for the Record of the Director of Central Intelligence Before the National Commission on Terrorist Attacks Upon the United States, March 24, 2004' p16
[23]. Mary Dobbing, Israel and the Drone Wars: Examining Israel's production, use and proliferation of UAVs, Drone Wars UK, January 2014
[24]. Tom Vanden Brook, Drone attacks hit high in Iraq, USA Today, 29.04.2008; David Axe, Killer Drone's Iraq Debut, Wired, 25.07.2008

Rüştü GÜNTÜRKÜN. "The Hıstory And The Evolutıon Of UAV's."*American Journal of Engineering Research (AJER)*, vol. 10(11), 2021, pp. 134-138.