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Abstract.

The introduction of carbon fiber reinforced polymer (CFRP) 3D printing into the production of military unmanned aerial vehicles (UAVs) represents a significant breakthrough in defense technology. This approach combines several key advantages that significantly improve the performance and effectiveness of military UAVs. The first of them is the light weight and high strength of CFRP materials, which makes it possible to create aircraft with high maneuverability and resistance to mechanical loads. In addition, the integration of 3D printing allows for the creation of complex and optimized designs, which increases the functionality and efficiency of UAVs.CFRP materials also provide a high degree of protection and stealth, which makes UAVs less vulnerable to the enemy. The integration of various components, such as sensors and communications systems, allows for the creation of multi-role aircraft capable of performing a wide range of missions on the battlefield. With these advantages, military UAVs based on CFRP materials and 3D printing can be successfully used for reconnaissance, surveillance, combat support and other operations, improving the tactical capabilities and defense power of the armed forces. This line of development thus represents an important contribution to modern military technology and supports strategic superiority in air operations.

Keywords:

CFRP (Carbon Fiber Reinforced Polymer), 3D printing, UAV, Functional efficiency, Scalability.