

LIGHT AVIATION IN THE CONTEXT OF COMMERCIAL AVIATION WORLDWIDE: EVOLUTION AND MODERN TENDENCIES

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In official documents, the following division of aircraft by take-off weight is proposed: heavy - aircraft with a take-off weight of more than 136 tons, medium - aircraft with a take-off weight of less than 136 tons, but more than 7 tons, light - aircraft with a take-off weight of less than 7 tons.

At the beginning of its existence, all aviation was an exceptionally small aviation - aircraft made of wood or other light materials. Only after the First World War, during the "golden age" of aviation, more massive aircraft began to appear, created for transporting shipment (mainly mail) and as bombers. However, small aircraft did not stop its development, but on the contrary, the invention of jet engines marked the beginning of the division of light aviation to aviation with internal combustion engines and jet engines. Military and civil aviation began to radically different because, in military aviation, the carrying capacity and speed of fighters mattered. Civilian small aviation needed more economical aircraft, because of which piston engines are still mainly used there. Today, almost all commercial aviation is either heavy aircraft due to the number of passengers it carries, or lighter business jets that sometimes belong to the small aircraft category. In this paper, the following issues were considered: modern trends in light aviation, possibilities of replacing medium-body and wide-body airliners with more compact aircraft, necessary upgrades to service programs and training of service personnel to support the proliferation of small commercial aircraft.

At the moment, small aircraft are used mainly for private purposes and for the most part, low-weight aircraft are similar in design. However, since the development of a new type of small aircraft is many times cheaper than the development of a large airliner, there are many private enterprises in the world specializing in the creation of this type of aircraft with a wide variety of design solutions and innovations.

Aviation is a relatively young technology compared to other methods of transporting cargo, so it is still undergoing cardinal changes that are changing this entire area. So, we observe that the era of supersonic passenger aircraft has exhausted itself, and the era of Jumbo Jets is also coming to an end. It is quite possible that in connection with the issues of economy and profitability of flights, in a few decades, modern liners that can accommodate hundreds of people will become a thing of the past. When you look at fuel efficiency, all standard passenger aircraft have roughly the same fuel consumption per passenger no matter are they light, medium or heavy. However, smaller aircraft have a significant advantage in the cost of maintenance, as well as due to their size, an advantage in the number of airfield fees. It is worth noting that there are already projects, including those implemented, of aircraft of small passenger capacity and cargo capacity, the cost of a ticket for which in its pure form is comparable to a ticket for a business class on a large aircraft, with a longer range and almost equal to the flight speed.

A delicate topic, however, is the congestion of air and airport traffic, because to replace one traditional passenger aircraft like the Boeing 737-800, about 20 light aircraft with up to 10 passengers on board will be required. However, a significant problem will be more likely to be a problem of workload on air traffic controllers (ATC) than on traffic in general, because smaller aircraft are characterized by smaller wingtip vortices, which significantly reduces the required distance between the sides, thereby increasing the number of sides that can be in the air at the same time and all of them will need to get in touch with ATC, as well as due to bigger number of possible flight levels, vertical separation of such aircraft is greatly simplified, which gives even more room for manoeuvres.

It should be noted that all aviation-related countries already have a wide network for training aerodrome and airport personnel. The less an aircraft spends on the ground, the more profitable it is for the operator, and since pilots cannot stay in the air for the same amount of time as an aircraft, there are several aircraft crews per aircraft in an airline required. As the number of aircraft in service grows steadily and pilots tend to retire, every year the world needs thousands of new pilots and maintenance personnel, because the more time an aircraft is in operation, the more rigorous check of all its parts it needs.

Small aviation is still a promising part of civil aviation, as well as a space for testing new technologies and creating new concepts in aviation. Today, small aircraft are used for commercial activities in exceptional cases, because its introduction everywhere would have a significant positive impact, mainly on passengers, but airlines will not receive such benefits from this, which in a short time would cover such a radical change in the direction of development. In general, light aircraft today have a chance to occupy a niche in aviation and, thanks to their advantages, be a competitive type of air transport, and in the context of modern global trends in technology and ecology, such aircraft have more room for development, which will undoubtedly play a crucial role in the future of aviation in general.

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