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Olexandr Prygara, Ihor Skyrda
National Aviation University, Kyiv

LANDING AND TAKEOFF WITHOUT LANDING GEAR DUE TO THE SUPERCONDUCTIVITY

Superconductivity is being applied to many diverse areas such as: medicine, transportation, power production, electronics etc. and now we want to try to apply it to aviation.

We'd like to consider the possibilities of the system that keeps an aircraft levitating from the touchdown till the apron. The basic concept of this technology is high-temperature superconductive materials (or superconductive magnet) at the bottom of a fuselage that cools during the approach and the varying magnetic field created at the runway by big coils. Due to the Meissner effect we suppose that it will remain in levitating mode. For the landing to be smooth we want to put the sensors on the runway which will control the current and consequently the induction to apply. It means we always shall keep the gap between an airplane and a runway discovering the loads produced by the aircraft to the runway. Putting the coils so as the poles are place in a sequence N – S – N, (Fig.1) we will protect the aircraft from the side wind letting it run straightly.

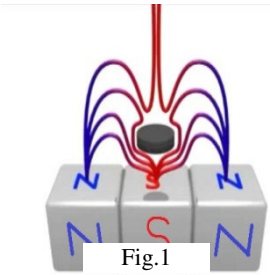

Fig.1

When taking off the airplane will save lots of fuel as the engine may not operate in the "takeoff mode". They will just work in order for the airplane not to feel transition when the magnetic field ends and be ready to provide needed thrust for climbing. As running along the runway the plane gradually gets the lift so the magnetic field should relatively diminish to provide the smooth transition. This will be done with the help of the rows of coils (Fig.2). The coils in the row are connected to the same Electro-Motive Force but each row has its own Electro-Magnetic Force with common sensor which controls the current. As for the propulsion, we can use alternating current to push the airplane. Even while taking off an aircraft may be accelerated to the speed of 400 km/hour.

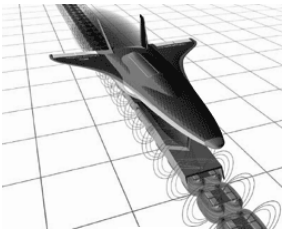
Fig.2

Landing is a little bit more difficult than takeoff because we must "catch" the plane from the air. Firstly, we should make the entry point less noticeable for an aircraft. The magnetic force shall increase gradually starting from the final approach in order for the airplane to find the magnetic corridor completely. After this, it will decrease in the same way. By applying reverse alternating current we may retard the airplane to the normal speed for it to have the energy to taxi to the very apron where it will be able to lower on the special prepared stands.

Supervisor – A.M.Grekhov, professor