

Povzetek

Namen naloge je bil ugotoviti, katere sile delujejo na letalo, kaj vse poleg sil še vpliva na let, kakšne so povezave z zračnim tlakom. Izkazalo se je, da ima letenje kar nekaj povezave s tlakom, saj sta na obeh straneh krila različna tlaka, kar pa dosežemo z ukrivljenostjo. Zanimalo me je tudi, če večja ploskev pomeni večji vzgon, kar se je izkazalo za eno od pomembnih lastnosti krila, ugotovil pa sem tudi, da potovanje pri večji hitrosti tudi ustvari večji dinamični vzgon. To sem ugotovil z vetrovnikom, primerjal pa sem dve krili različnih velikosti. Ugotovil sem tudi, da vpadni kot tudi vpliva na sili dinamičnega upora in dinamičnega vzgona, v nekaterih primerih negativno, v nekaterih pozitivno. Za merjenje sem uporabil na mikrokrmilnik micro:bit povezan merilec sile, podatke pa sem iz micro:bit-ovega 10 bitnega načina shranjevanja podatkov pretvoril v newtone, ki pa niso bili najbolj točna izbira zaradi neenakomerno razporejene sile na merilnik. Na koncu sem meritve izrazil v procentih prvotne sile teže krila s podporo.

Ključne besede: letenje, dinamični vzgon, vetrovnik, micro:bit

Abstract

Purpose of research was to find out which forces have influence on airplane and what else beside forces influences on flight and connection with air pressure. Research demonstrated that has flight connection with air pressure because it is different on each side of wing and this is achieved with curvature of wing. I was also interested wing's surface size creates bigger dynamic lift and this turned out to be one of biggest properties of wing. I found out that bigger speed creates bigger dynamic lift. Wind tunnel enabled measurement and comparison of two different sizes. I found out also that angle of flight also on size of forces dynamic drag and lift, in some cases positively and in other negatively. For measurement I used device micro:bit connected to force sensor. I collected logged data from micro:bit's 10 bit measurement of data. I converted data to forces but this turned out not so accurate option because of uneven influence of force on sensor. At the end I expressed measurements in percentage of initial gravitational force of wing and metal support.

Key words: flying, dynamic lift, wind tunnel, micro:bit