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Streszczenie rozprawy doktorskiej

Temat pracy: „Badania teoretyczne i eksperymentalne hamulca lotniczego z napędem elektrycznym – analiza konstrukcyjna hamulca”

Obszar i dziedzina nauk technicznych

Dyscyplina: budowa i eksploatacja maszyn

Promotor: prof. dr hab. inż. Roman Domański, Instytut Lotnictwa

Promotor pomocniczy: dr inż. Zbigniew Skorupka, Instytut Lotnictwa

Abstract:

This thesis presents issues connected with designing electric brakes. Author are interested mainly in designing during his own work in Institute of Aviation. The designing process has been presented since the first conception phase. In that phase was made the selection of existed brakes solutions and then was created the first conception of electric brake. In next phase the model was upgraded few times and in the final concept the brake was adapted to I-23 landing gear. During the designing changes the model strength was optimized in FEM methods program. Eventually the final model 3D was created and the draft documentation was created from it. In the final phase the prototype was created and then was tested in Landing Gear Laboratory. All these designing issues were taken into account when author showed the designing methodology and methods of finding designing solutions based on literature, experience of designer and people connected with designing in our department. Nevertheless, the author is aware of the extreme of the topic and the opportunity to show diversify of the issues related to the design. In order the author presented the selected issues which were the most interesting and important. Also, the author sees the gap and the lack of thesis related with designing methodology and methods.

It was presented a comparison between the electric brake and existing hydraulic brakes. There were shown the theoretical issues related to the whole process of airplane landing. One of the most important part it was created the electric brake and comparison to hydraulic solution. The most important part of the thesis were the laboratory tests of electric brakes, which were performed. The tests, parameters, machines, analysis were described in detail. The tests were performed based on the hydraulic brakes methodology.