



VABILO

Vabimo vas na predavanje z naslovom «*Composite Airframe Structural Design*»

Main stages and features of design of thin wall aerospace composite structures are shown on the example of aircraft wing spoiler:

1. Choice of structure topology. New optimization model of the body with changing density is used as example.
2. Discrete problem of optimization of a structure of positioning biaxial material is considered.
3. Various possibilities of structure modeling in ANSYS are discussed
4. Problem of transfer of large focused loads on the composite structure. Method of hinge fitting tests with the use of imitator of composite part of the structure is presented.
5. Method of design of hinge fittings using special optimization model is presented.
6. Results of static and cyclic (small number of cycles) tests on the spoiler are shown.
7. Results of design and experimental works on development of integrated hinge fittings are discussed.
8. As key problems to solve for successful implementation of composites into aeronautical structures the following aspects are considered:
 - Increase of binder durability in layered composites
 - Use of reacto and thermoplasts reinforced with the short fibers chaotically or controllably dispersed
 - Development of new methods of design that take into account lifetime of the construction

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About author:

- Director of Institute of Aeronautical Structures on a basis of Samara State Aerospace University named after Sergey Korolev, Doctor of technical sciences, professor, member of Russian Academy of Engineering, Emeritus professor of Beijing Institute of Technology, China.
- Author of more than 200 scientific works. Mentored more than 40 PhD, is an author of new mathematical model of a body of changing density, that allows solving wide range of problems on the early stages of aircraft design
- Is a pioneer of using finite element modelling in calculations of aeronautical constructions in Russian Federation, main research interests: topological optimization and weight design of aeronautical structures including composite
- Was participating in design of several aircrafts: first supersonic passenger aircraft Tupolev Tu-144, airbuses Ilyushin Il-86, Il-96, Amphibia airplanes A-40 and A-50, vertical take-off amphibious aircraft VVA-14, study aircraft Yakovlev Yak-130 and others.
- Together with american scientist T. Weisshaar developed new idea of concurrent design

Vabljeni!

Prof. dr. Igor Emri



Prof. dr. Branko Širok