RESEARCH FOR FUTURE

FLEX

Flutter expert system for general aviation composite structures.

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**The small aircraft design challenges**

- increasing efficiency of propulsion systems

- utilization of advanced composite materials

- increase the small aircraft speed limits

- flutter design drivers should be considered on early design stage

- the FEM CSM models of composite structures are effective for transport

  aircrafts

The "**Flutter Expert System**" is needed to accelerate development of small aircraft structures using the enhanced design tool. The newly elaborated system should allowed a nearly real time dimensioning of the composite structure.

Output Set: Mode 6 13.09702 Hz
Animate(0.231): Total Translation
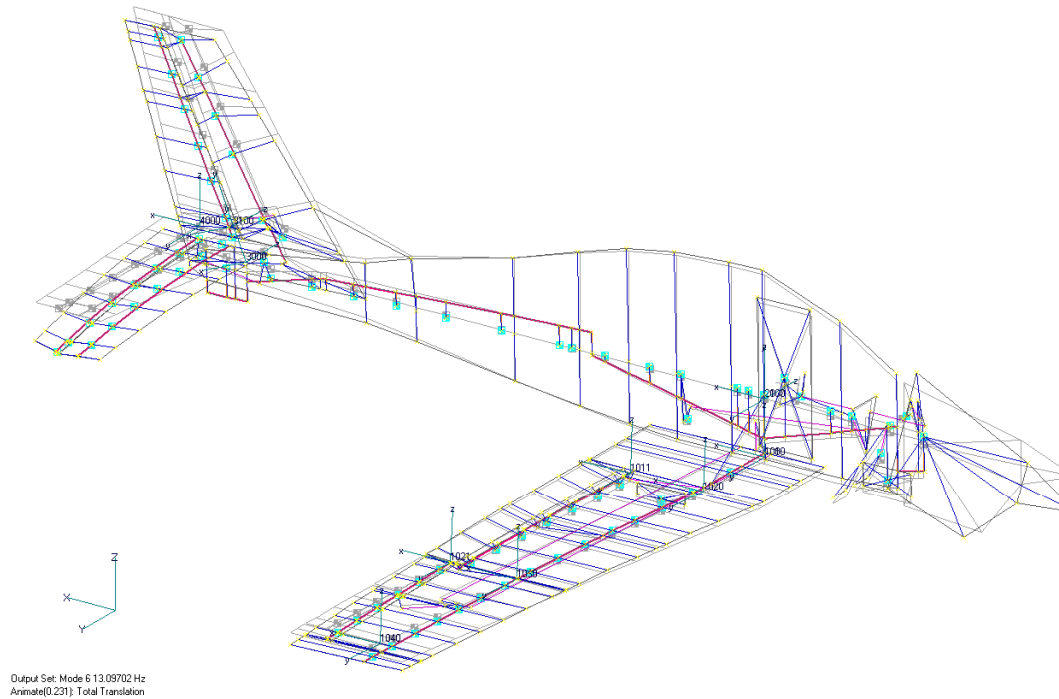
Research in Poland on the simplifications of small aircraft flutter clearance using affordable, in house software has bee started in 1975 Instituce of Aviation has now main research institution which deliver the industrial partners flutter calculation results for EASA in Poland

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The "**Flutter Expert System**" will consits of

1. Control unit including:

   - aircraft configuration data

   - simplified structural beam model data including factors for non-structural mass

     (partially under preparation in CESAR project)

   - mass evaluation

   - structural composite layout data

   - flutter analysis method data

2. Beam stiffness interface

3. Mass distribution evaluator

4. Free vibration interface

5. Eigen modes – flutter interface (interface elaborated during TAURUS project)

6. Expert system Graphical User Interface.

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Thank for your attention