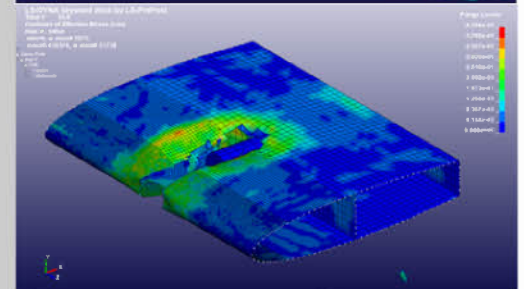
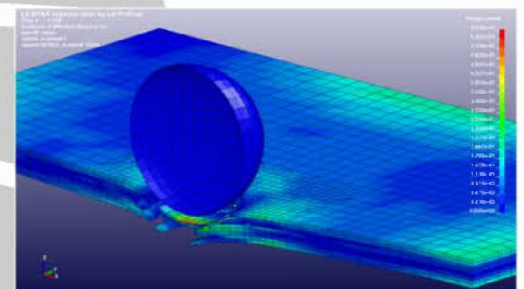
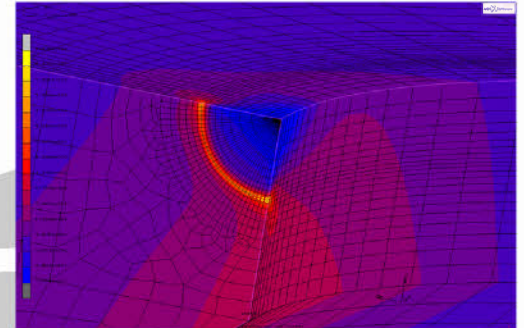


## DESIGN AND ANALYSIS SERVICES

### The range of services includes:

- Analysis of isotropic and composite structures (including aircraft structures, windshields and others) subjected to foreign object impact with the use of LS – DYNA, including bird strike simulations (ALE and SPH methods),
- Fatigue analysis of aircraft structures, including load spectra development (based on the in-service load measurement),
- Developing test specifications for static and fatigue tests of aircraft structures,
- Crack propagation analysis of metallic structures (2D & 3D) with the Finite Element and Boundary Element Methods (ANSYS 10, FRANC2D, FRANC3D, AFGROW, NASGRO),
- Designing test rigs for the purposes of Structural Testing Laboratory including strength analysis with the use of the Finite Element Method,
- Static Finite Element Analysis (linear, nonlinear),
- Comprehensive research services, from test rig design and coordination of test rig manufacturing conducted by approved subcontractors to the final test report.



### Software used for analysis:

- LS-DYNA
- ANSYS
- FRANC2D/3D
- AFGROW
- NASGRO
- MSC PATRAN/NASTRAN
- MSC MARC



**Institute of Aviation  
Materials & Structures  
Research Centre**

al. Krakowska 110/114, 02-256 Warsaw, Poland  
Phone: +48 22 868 51 06, + 48 22 846 00 11 ext. 246  
Fax: +48 22 868 56 80  
e-mail: [msrc@ilot.edu.pl](mailto:msrc@ilot.edu.pl)  
[www.msrc.pl](http://www.msrc.pl), [www.cbmk.pl](http://www.cbmk.pl)



Achieving Competitive Excellence  
The United Technologies Operating System