

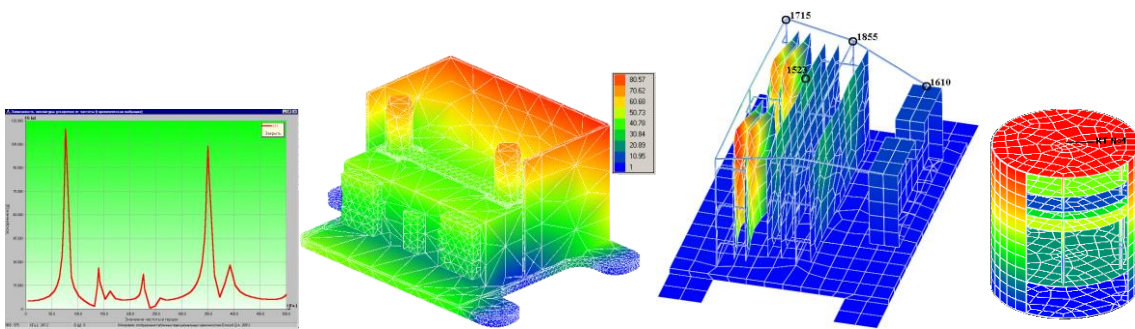
ASONIKA - Automated system for design and testing of thermal and mechanical properties of radio-electronic devices: Reliability and quality control simulation

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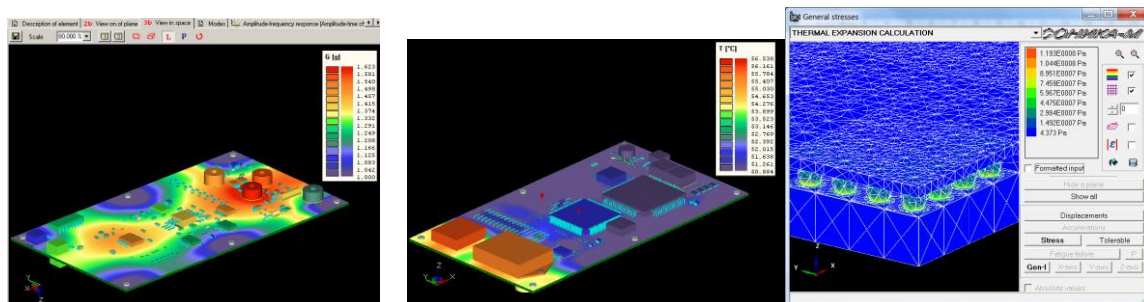
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The computer program ASONIKA is designated for design and testing of thermal and mechanical stability and reliability of radio-electronics devices. Computational grid models implement macroscopic equations for heat transfer and mechanical forces in combination with 3D graphical interface, which allows design of complex devices and equipment (set of connected radio-electronic devices). ASONIKA is based on CALS (Continuous Acquisition and Life cycle Support) technology.



ASONIKA consists of series of modules, which can exchange data via a common interface. Each module can operate as independent computer program designated for solving the special tasks related to the device design and computing its properties. Each module has its own data base of materials, which can be expanded and modified in a dialogue mode:



BASIC SUBSYSTEMS OF SYSTEM ASONIKA

1. ASONIKA-M-3D: the analysis and maintenance of firmness of microcircuits and any volume designs of the radio-electronic means created in systems ProEngineer, SolidWorks and other CAD-systems in formats IGES and SAT, to mechanical influences (vibration, shock, linear acceleration), to thermal stationary and non-stationary influences. The subsystem allows to carry out also calculation of temperature pressure and fatigue durability at thermal stationary and non-stationary influences.

2. ASONIKA-TM performs simulation of thermal and mechanical characteristics of printed circuit boards and enables computation of steady and non-steady thermal effects at normal and low pressure and mechanical effects such as harmonic and random vibration, single and repeated shock, linear acceleration and acoustic noise.

3. ASONIKA-UST: the analysis of fatigue durability of designs of printed circuit boards at mechanical influences (vibration, shock, linear accelerations).

4. ASONIKA-B performs analysis of boxes, blocks, printed circuit boards and electronic components for potential failures and non-failure operation.

5. ASONIKA-BD: the integrated database of electronic components and materials on geometrical, physicomechanical, thermal, electric, electromagnetic, radiating and reliability parameters.

6. ASONIKA-V performs analysis of the mechanical characteristics of various sets of electronic devices built in boxes, racks and blocks mounted on vibration insulators under harmonic and random vibration, shock loads, linear acceleration and acoustic noise. The subsystem enables computation and optimization of parameters of vibration insulators with the purpose of minimization of mechanical stress on the equipment.

7. ASONIKA-EMC: the analysis and maintenance of electromagnetic compatibility of the radio-electronic means.

8. ASONIKA-RAD: Assessment Of Radiation Exposure.

9. ASONIKA-UM performs integration of the engineering data for radio-electronic equipment design on the level of product manufacturing. The database of ASONIKA-UM contains data on device and equipment structure and manufacturing including production line organization and management and documents generated during the engineering process.