



## CAE Fidesys

CAE Fidesys is an easy-to-use and effective tool for performing a full cycle of strength analysis – loading a CAD-model and its analysis, meshing, setting loads and the material mechanical properties, selecting and setting a FEM-solver, model calculation, and results visualization.

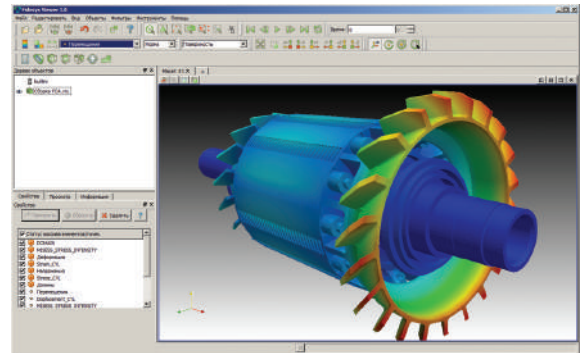
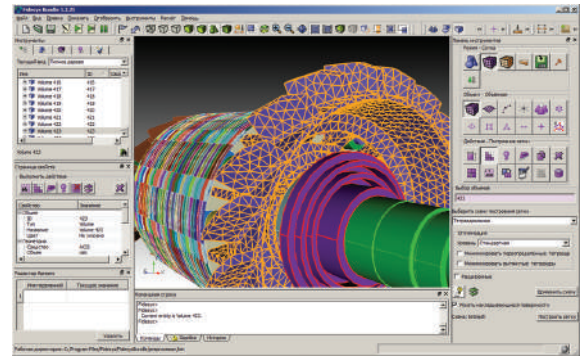
## CAE Fidesys Standard

### Features

- Solving problems at plane stresses and plane strains
- Stressed-deformed state calculation of 3D bodies at static and dynamic load
- Eigenfrequencies and eigenforms calculation of 3D bodies
- Critical loads and buckling modes calculation
- Solving problems for the bodies with beam and/or shell elements.

### Advantages

- High speed and accuracy of calculations due to the state-of-the-art technologies approved by a wide range of tests
- A flexible and reliable mesh adaptive geometry generator with the possibility of both automatic hexahedral mesh generation and tetrahedral mesh generation
- A wide range of supported CAD-formats
- Cross-platformity – CAE Fidesys can be run in Windows and Linux OS families with an approved and effective functionality on the software platforms of the leading manufacturers.



## CAE Fidesys Professional

### Features

CAE Fidesys Professional allows to solve static and dynamic strength problems that require the account for finite strains and other nonlinear effects like plasticity, nonlinear visco- and thermoelasticity, hyperelasticity, contact interaction of the bodies with friction.

### Advantages

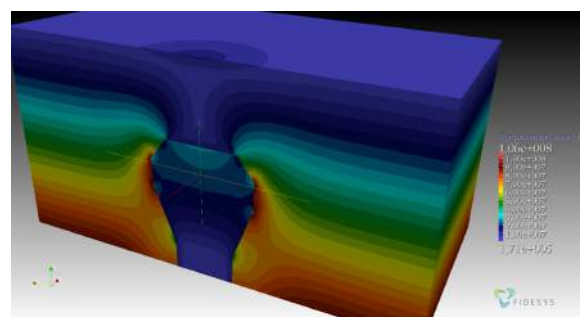
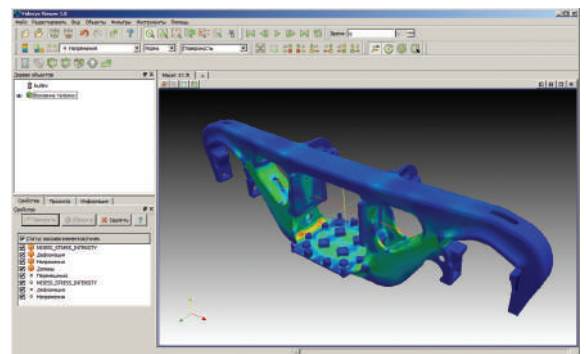
- Accurate estimation of the nonlinear effects appearing at finite strains and their redistribution
- Solving problems for weakly compressible and completely incompressible materials
- Strength analysis for the case of elastic-plastic deforming at finite strains.

## Functional modules

We are offering three functional modules - **Fidesys Dynamics**, **Fidesys Composite** and **Fidesys HPC** - which are designed for specific industrial needs. All of them can be installed on CAE Fidesys platform, and are included in the trial version, which can be downloaded from our website. The trial version gives access to the full functionality of **CAE Fidesys Professional** and all the functional modules for 30 days.

### Fidesys Dynamics

- Application of spectral element method for linear and nonlinear problems
- Solving non-stationary problems
- Full waveform modeling
- Seismic modeling
- Non-destructive control modeling



## Fidesys Composite

- Analysis of composites' effective properties
- Construction of the realistic composite's microstructure
- Strength analysis of tools and parts made of composite materials (including porous, fiber-laminated and woven composites)
- Estimation of effective properties of a monolayer
- Rubber-cord materials modelling

## Fidesys HPC

- Parallelization of major stages of computational process
- Speed-up calculations by up to 30 times
- OpenMP technology: parallelization on all computational cores of a workstation
- MPI technology: parallelization on several workstations inside a network or on nodes of a supercomputer

## Fidesys Viewer

FidesysViewer is a free-of-charge application for postprocessor processing, analysis and visualization of the calculation results using different filters. This product is useful for engineers, scientists and researchers who need to visualize the results of the strength calculations and measurements.

### Features

- Visualization of vector and tensor fields
- Graphing and charting
- Time dependency analysis.

### Advantages

- Free-of-charge
- A wide range of filters: slices, graphs, field combinations, transparency, isolines, isosurfaces, and many others
- Saving the results of visualization and processing in a VTK-format.

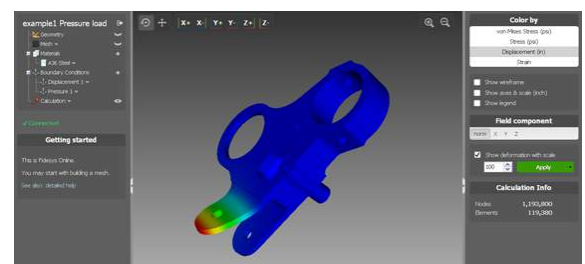
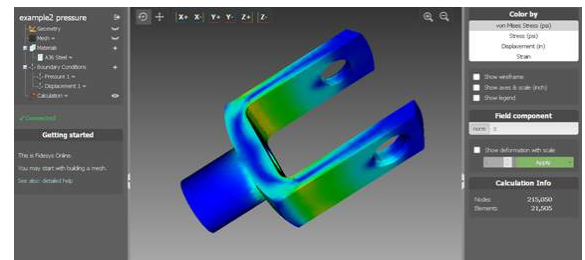
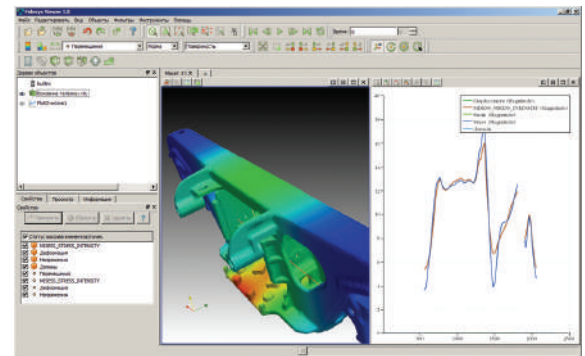
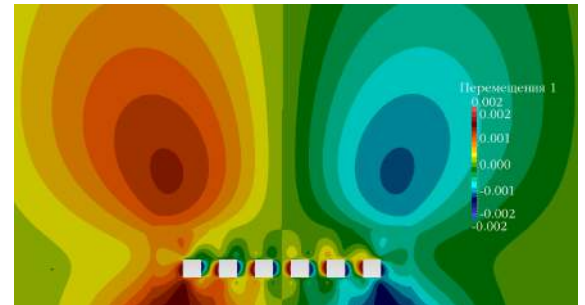
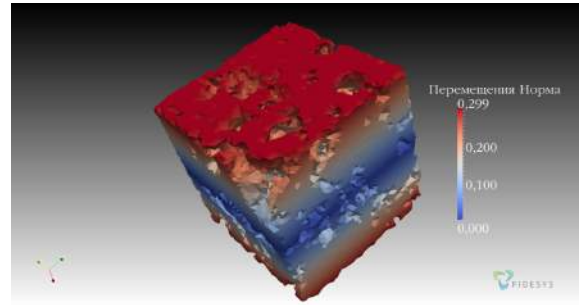
## SimForDesign

In January 2015 we launched the **cloud-based CAE service** called **SimForDesign** – simulation streamlined for designers. It is aimed at designers and does not assume its user to be a simulation expert.

SimForDesign enables to better understand structural performance (displacements and stresses) of your designs allowing you to evaluate the impact of design changes and to make smarter design decisions based on performance. SimForDesign is not designed to replace your Analyst's CAE tool for final design validation but is intended to support your design process and its associated decisions.

### Advantages

- **Smarter Design Decisions**  
*Make better design decisions and evaluate design alternatives before final design validation.*
- **Simplified Simulation Process**  
*Allow structural analysis to be an integral part of the design process by removing the complexities and mystery related to setting up standard structural analysis of parts and small assemblies.*
- **Available Anywhere**  
*You just need a web browser and Internet connection. All simulations are run in the cloud.*
- **Pre-Paid Usage Pricing**  
*Straightforward pricing model takes the guess work out of the cost.*
- **Reliable numerical method**  
*Commercially robust and proven finite element solution software for automatic mesh generation and analysis.*



## CAE Fidesys

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### System Requirements

System requirements for CAE Fidesys package are low: it can be run in any personal computer, and with one or more multi-core CPUs the calculations will be automatically parallelized for all the cores.

#### Hardware requirements

- CPU: Dual-core 1,7 GHz minimum
- RAM: 2GB minimum
- Free hard drive space: 5 GB
- Videocard NVIDIA GeForce GTX 460 or higher (for CUDA support)
- Screen resolution: 1024x768 or higher.

#### Operating System

- Windows XP SP3 32bit
- Windows 2003 Server R2 SP3 32/64bit
- Windows Vista SP2 32/64bit
- Windows 7 32/64bit
- Windows Server 2008 (including R2) 32/64bit
- Linux (RedHat, Debian).

### Service

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Fidesys company provides scientific and technical service, as well as engineering consulting service.

Our consulting service in the field of strength analysis, computational mathematics, computer modeling, parallel computing aims to effectively solve the most complicated problems and to work out the solutions integrated into the customer infrastructure.

Fidesys company provides the engineering consulting service based on the already existing CAE Fidesys computing kernels. The service like this is mainly provided for complicated problems that cannot be solved using the existing CAE-systems. The company analyzes atypical strength problems, including multiphysics, works out the appropriate mechanical and mathematical models, selects and validates the solution algorithm and realizes it effectively as a unique code with its later communicating to the customer (while reserving the intellectual property rights).

### For partners

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We offer cooperation in:

- **SimForDesign** localization and promotion (deployment in local data centres is possible);
- **CAE Fidesys** localization and promotion;
- **Consulting services** on CAE and strength analysis (including additive manufacturing);
- Development of specialized solutions for the **oil and gas industry**
  - Geomechanics, acoustic logging simulation with spectral element method
  - Development of virtual laboratories for core mechanical properties estimation based on CT scan data.
  - Hydraulic fracturing simulator development;
- Adapting CAE Fidesys Online for **educational use** (universities, colleges)

### About us

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Fidesys engineering company was founded in 2009 by the experts and graduates of the Department of Computational Mechanics of Lomonosov Moscow State University and is the Skolkovo Innovation Center resident.



### Contacts

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