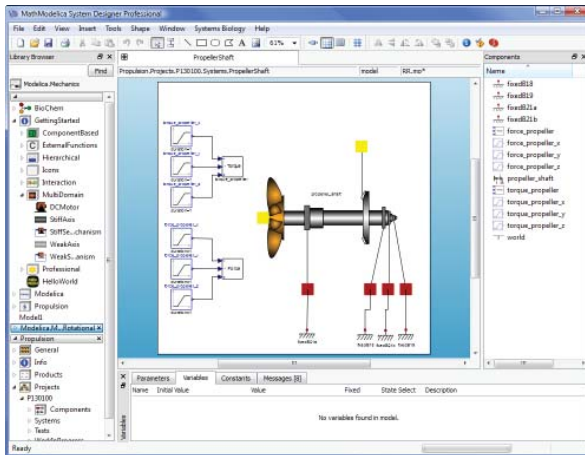


# MATHMODELICA



modeling • simulation • analysis • documentation • contact

# modeling



## Fundamentals

- multi-domain
- components
- blocks
- object-oriented
- declarative
- acausal

## Supported domains

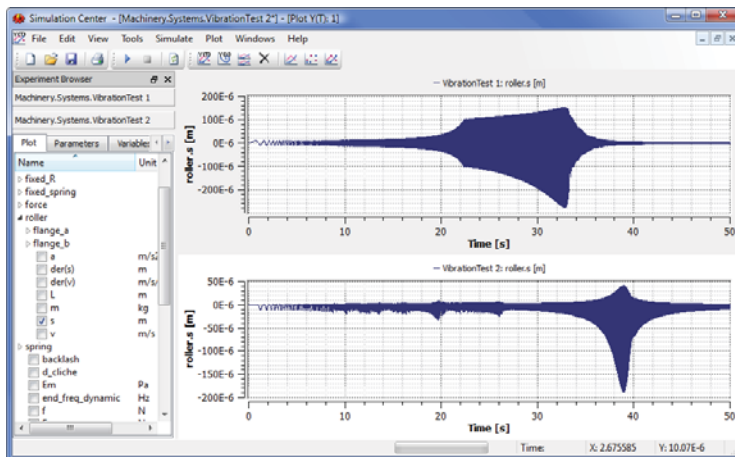
- 1D & 3D mechanic
- electric
- hydraulic
- thermodynamic
- controls engineering
- systems biology
- and more

***Build your model with real-world behavior using predefined components in an easy drag-and-drop environment.***

Whenever you need a new component you can develop it in the Modelica language, simply by specifying the component equations, by modifying an already existing component from the standard libraries, or by combining already existing components in the *System Designer*.

The acausal nature of *MathModelica* allows you to build your model without having to define in advance exactly what to simulate or what are to become input and output signals. Hence it is possible to use and re-use the model in many different ways. This allows you to perform simulations for many different scenarios based on essentially the same model.

# simulation



***Perform experiments on your models and optimize your systems.***

In the *Simulation Center* you can create experiments for your models. The experiment browser makes it easy to handle several experiments simultaneously in order to compare results from different simulations, trimming parameters and testing alternative solutions, making it possible for you to achieve a better understanding of your systems and improve them.

## Related training

MathCore provides *MathModelica* as well as Modelica training. Courses can be combined and customized according to your needs.

## *MathModelica* training

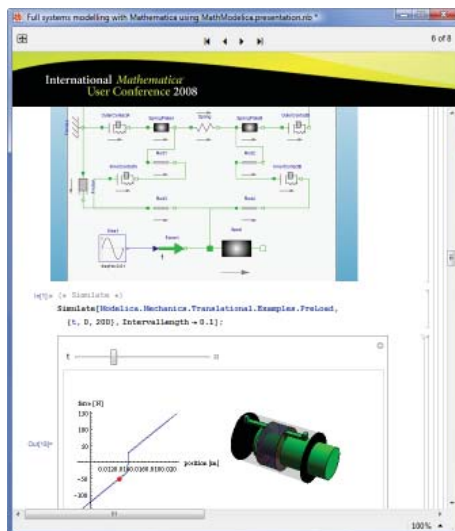
- Introduction to *MathModelica*
- Library development using *MathModelica*
- Pre- and post-processing of *MathModelica* models

## Modelica training

- Introduction to the Modelica modeling language
- Modeling in the Modelica language

Contact MathCores sales department for more information about courses.

# analysis



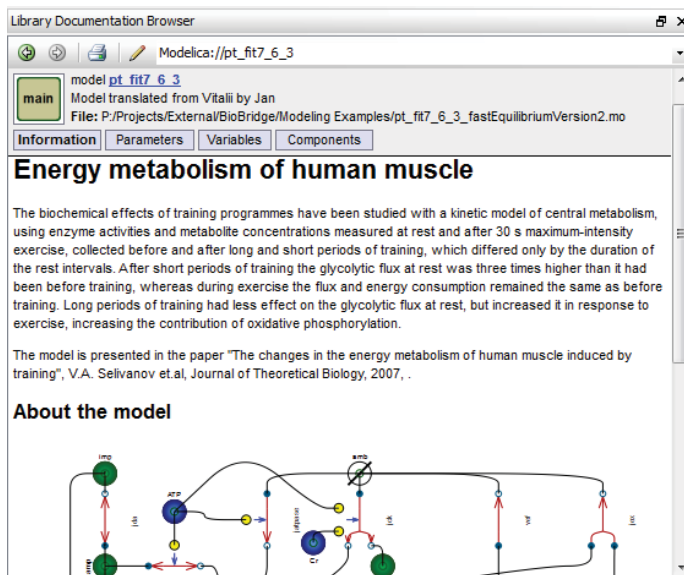
*The ability to analyze your results is a key issue in order to truly understand your systems. A tight integration with Mathematica offers MathModelica users an unparalleled possibility for analyzing simulation results.*

The professional edition of *MathModelica* offers a connection to *Mathematica*, including extra functionality to handle models and simulations within the *Mathematica* notebook environment. The combination offers unparalleled facilities for mathematical computation, plotting, calculation, natural display of mathematical formulae, inline documentation of your models and results. Making it the perfect tool to help professionals understand and improve their systems.

***MathModelica Professional*** is targeted for projects and research in industry and academia, offering unparalleled possibilities for analyzing results. Users with *Mathematica* can benefit from the included *Mathematica* link.

***MathModelica Student*** is ideal for students studying math, science, engineering or systems biology. This edition is only available for personal use by university students.

# documentation



The screenshot shows a web browser window titled "Library Documentation Browser" with the URL "Modelica://pt\_fit7\_6\_3". The page content includes a "main" section with the model name "model pt\_fit7\_6\_3", a note "Model translated from VItalii by Jan", and a file path. Below this are tabs for "Information", "Parameters", "Variables", and "Components". The main heading is "Energy metabolism of human muscle". The text describes the biochemical effects of training on a kinetic model of central metabolism, mentioning enzyme activities and metabolite concentrations. It also references a paper by V.A. Selivanov et al. from 2007. A section titled "About the model" contains a metabolic pathway diagram with various metabolites and enzymes represented by colored circles and arrows.

*Document models and results to secure your intellectual property and communicate results with partners and colleagues.*

With the built-in library documentation browser it is not only easy to find information about existing models, but also to edit the documentation.

The documentation also features autogeneration of tables with available model constants, parameters, variables, components, connections, and classes.

## Also from MathCore



*MathCode* gives you maximum performance, portability, and flexibility when developing prototypes in *Mathematica*. The two editions ***MathCode C++*** and ***MathCode F90*** convert *Mathematica* code to optimized and portable C++ and Fortran code respectively.



As a full service provider of modeling and simulation solutions we offer **consultancy services**, including problem solving and customization projects.



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