

DYMOLA – Hydraulics Library

Overview

- Power hydraulics for machines, automatic transmissions and more

Key Features

- Wide range of pumps, cylinders, valves, restrictions, lines and volumes
- Real-time multi-engineering

Benefits

- Concurrent design of complex multi-engineering products
- Reduced risk during virtual development of power hydraulic systems

The Hydraulics Library allows you to optimize and verify the design of your hydrostatic drive system from the early design phases through control design and implementation. The Hydraulics library offers an open, object-oriented architecture that is suited for multi-domain system modeling. This enables seamless virtual component and system testing in realistic scenarios, and reduced risk for humans, environment, and prototypes.

> Hydraulic system design

The Hydraulics Library is a powerful yet simple-to-use tool for the modeling of hydraulic systems using mineral or synthetic oil. It is especially suited for multi-engineering and it can also be used for real-time and hardware-in-the-loop applications. The scope of applications includes machine tools, automatic transmissions, power assist, hydro-pneumatic systems, and open or closed circuit drives used in excavators or forklift trucks for example.

> Easy to get started

The library provides basic models for the modeling of pumps, motors and cylinders, restrictions and valves, hydraulic lines, lumped volumes and sensors. For standard applications these classes cover all needed components. The modeling capabilities also make it very easy to create non-standard configurations. The components from the library can be connected in an arbitrary way, e.g. in series or in parallel, just by drawing connection lines, no special components for splits or mergers are required.

> Unrivalled flexibility

Contrary to special-purpose tools for the same type of simulations, the Hydraulics Library also has an open source code in Modelica® so that available models can be duplicated and modified to meet the needs of the users.

If specially designed components are used in the system design, these can be easily modeled by modifying library components. All relevant effects, like spool forces, metering orifices, pressure dependent bulk modulus, are available as sub-models.

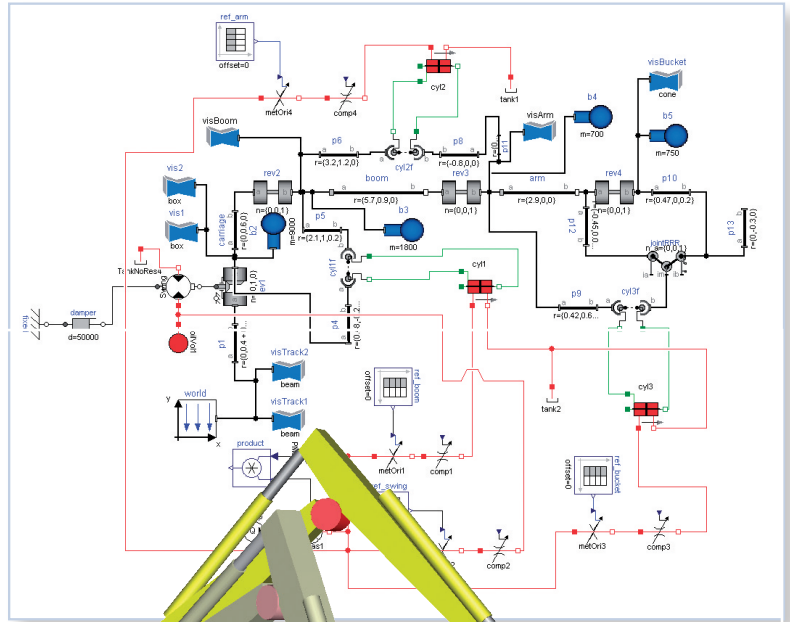
> Multi engineering

The Hydraulics Library seamlessly integrates with the other Dymola libraries, including the Vehicle Dynamics, Pneumatics, Smart Electric Drives, Power Train, Multi Body, Flexible Bodies, and Air Conditioning libraries.

An excavator is a truly multi-domain, non-linear system with several degrees of freedom that strongly influence one another. The effects of varying static and dynamical loads due to the different positions of the arm must be handled by the control system to make the final product operator friendly.

To get a realistic simulation model, the dynamics of both mechanics and hydraulics, as well as their combined interaction, have to be taken into account. With models based on the Hydraulics, Multi Body, and other Modelica libraries, this is handled automatically by the tool..

The Hydraulics Library is developed, supported, and maintained by Modelon AB, a Dassault Systèmes technology partner.



*Advanced Multi-physics
and real-time capabilities*

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