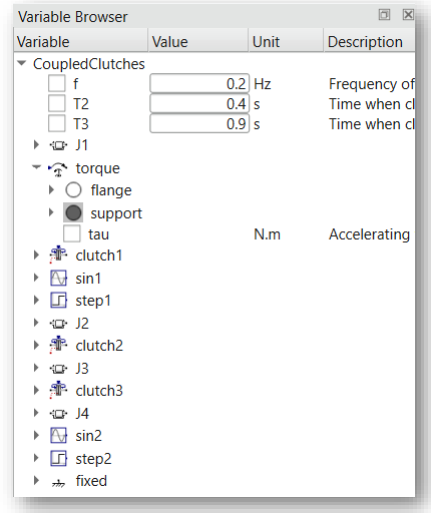
DYMOLA 2026X REFRESH 1 HIGHLIGHTS

17 April 2026

3DEXPERIENCE



EXECUTIVE SUMMARY

Model development

- LEO virtual companion (AI), integration with **3D**EXPERIENCE (Beta)
- Icons in the variable browser

Simulation

- Integrated calibration of model parameters (new user interface)
- Parameter sweep with grouping
- Dynamic optimization of FMUs (Beta)

Other

- Library improvements
- Integrated eFMI production code generation
- Upgraded FLEXnet license server

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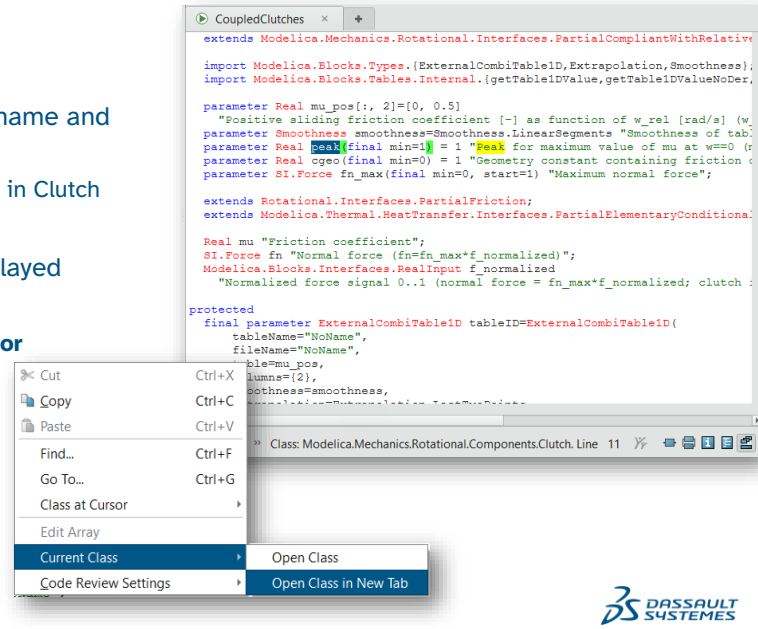
MODEL DEVELOPMENT

USED CLASSES VIEW

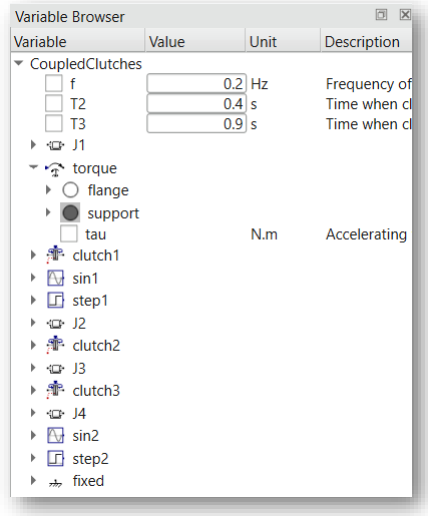
- Make Used Classes more useful
- Shows the currently displayed class name and line number
  - In this case, peak is defined on line 11 in Clutch
- Easy to open the class currently displayed
  - **Current Class**, in this case Clutch
  - **Selected Class** is now **Class at Cursor**



MIXED IMPROVEMENTS

- Icons in the variable browser
  - Makes it easier to identify components of the model
  - Uses small icons to show as many components as possible
- Support for literals with units
  - Support for a proposed feature in Modelica
  - `parameter Modelica.Units.SI.Length len=1'cm';`
  - See `Advanced.Beta.Translation.SupportUnitfulLiterals`
- Digital signing of generated FMUs can be done by Dymola
  - Safe means to validate originator of generated code
  - Invokes your standard tool to do signing, no data stored in Dymola
  - Only available on Windows

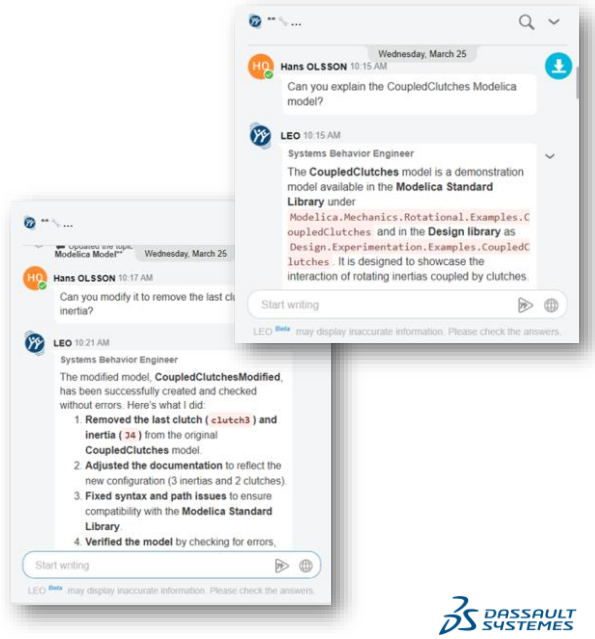
  `Advanced.Translation.CodeSigning.Targets`
  `Advanced.Translation.CodeSigning.CallString`



LEO VIRTUAL COMPANION

- What is LEO?
  - A virtual companion (AI) with knowledge about Dymola and Modelica
  - Since mistakes can happen, any proposed model change is automatically checked by Dymola
  - LEO adapts based on messages from Dymola
- Dymola is integrated with LEO on the **3D**EXPERIENCE platform
  - Requires Design with Dymola role
  - Available in **3D**EXPERIENCE 2026x FD03 (July 11)
- Controlled Availability for Evaluation

  `Advanced.Beta.VirtualCompanion.Activate=true`

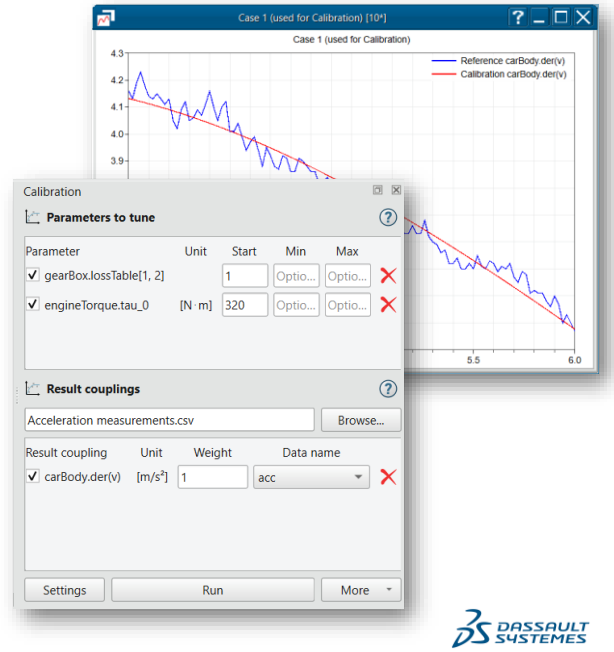


SIMULATION

DASSAULT SYSTEMES

INTEGRATED MODEL CALIBRATION

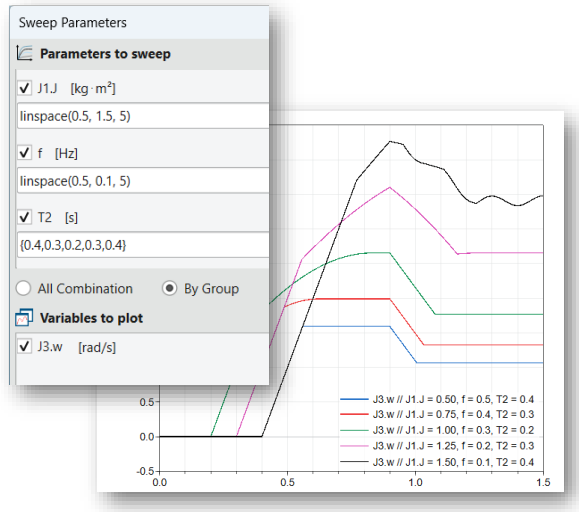
- Measurement data is used to tune parameters so simulation results are in good agreement
  - Uses functionality from the Design.Calibration library
- User-friendly user interface for common tasks
  - Setup calibration with drag-and-drop
- Parameters to tune
  - Non-evaluated parameters and start values
  - Restricted by optional min and max values
- Result couplings
  - Minimize the trajectory error compared to reference
  - Error for each variable can be weighted
- Additional settings
  - Time interval where calibration is made
  - Validate and save calibrated parameters in the model



DASSAULT SYSTEMES

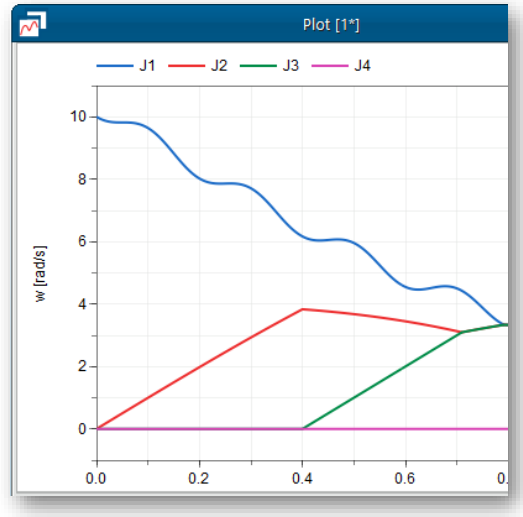
PARAMETER SWEEP WITH GROUPING

- Simulations are done by groups of parameter values instead of all combinations
  - Uses the n^{th} value of each parameter
  - Requires the same number of values for all
- Result presentation depends on type of sweep
  - Trajectory
  - Last Point of two parameters
  - Last Point of more than two parameters



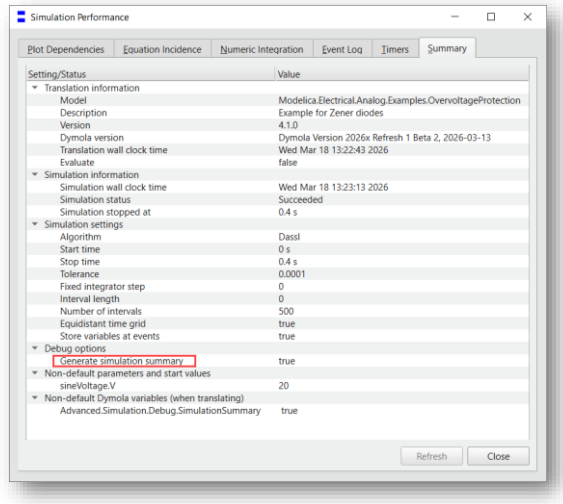
IMPROVED PLOTTING

- Smart simplification of the plot legend
  - Print the common legend suffix in the axis title
  - Either the common path or just the variable
  - Applies to both left and right axis
  - Saves space and improves clarity
- Improved grid for right axis
  - Axis scaling is adjusted so that grid lines are aligned with both left and right axis
  - Makes diagram easier to read
- Selection of active unit system
  - Select metric or imperial units (ft, lb and lbf)
  - See Tools>Options>Options



FURTHER SIMULATION IMPROVEMENTS

- Simulation performance summary report
  - Comprehensive summary of the simulation results
  - Includes listing of translation and simulation settings
  - Possible to convert simulation summary to SSP meta-data (SRMD)
- More efficient GetAdjointDerivative
  - Important for handling model sensitivity and optimization of FMUs
  - Also adjoint derivatives for parameters
- Analytic Jacobian for large model
  - Much less code is generated for large Jacobian
  - Uses forward directional derivative

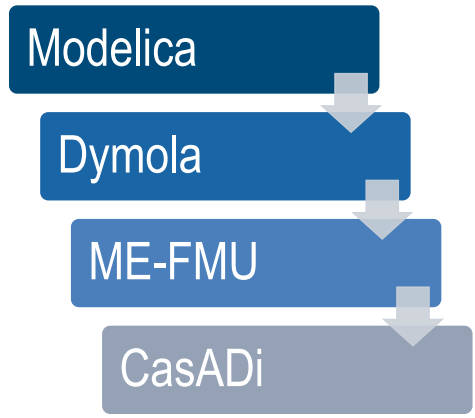


DYNAMIC OPTIMIZATION OF FMUS

CasADi

- Support efficient dynamic optimization of FMUs
  - Exposes nonlinear equations (residuals) and iteration variables
  - Only for Model-Exchange FMUs
  - Requires analytic Jacobian
  - Related to FMI layered standard for Differential Algebraic Equations (fmi-ls-dae)
- Integration with CasADi / IPOPT
  - Joint development with partners and customers
  - Testing on real-world examples
- Still under development, in Beta

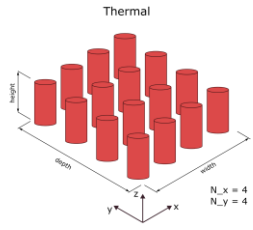
```
Advanced.Beta.FMI.Export.FMI3.ExposeDAEResiduals=true
```

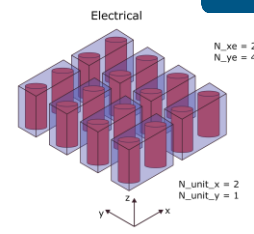


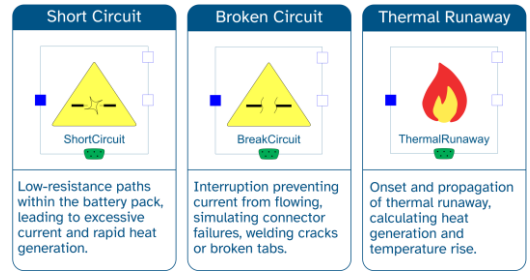
LIBRARIES

BATTERY LIBRARY

- Battery modules:
  - Aggregation of the electric models of multiple battery cells to reduce the complexity without compromising result quality
  - Improved computational performance
  - Increased efficiency of large pack simulation
- Failure models:
  - Failure modelling on cell and pack level
  - Assess the safety of battery designs and identify potential hazards

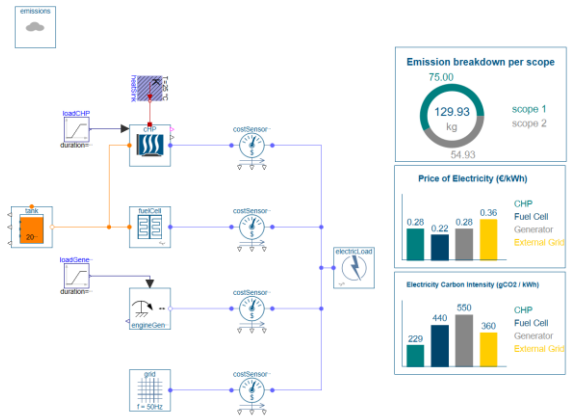






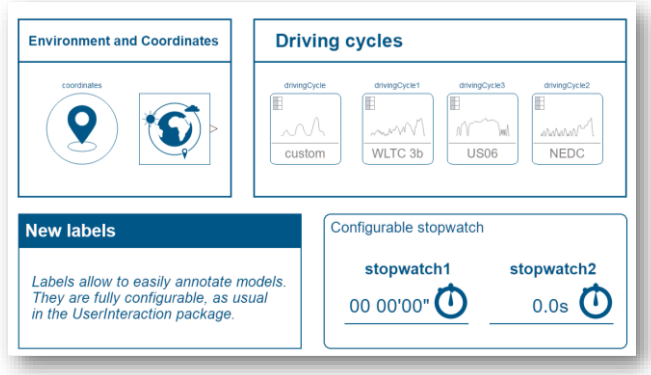
SUSTAINABLE SUPPLY SYSTEMS

- Techno-economic assessments
  - CAPEX, OPEX, Levelized Cost of Energy for both components and systems
- Emission tracking per scope
  - Emissions split into scope 1 and scope 2 as per The Greenhouse Gas Protocol
  - Electricity carbon intensity tracked at electrical ports
- Examples
  - Methanol cruise ship with onboard hydrogen production with methanol reformer component
  - Green hydrogen production with electrolyzer
  - Green ammonia with ammonia plant component
- Building internal heat gains
  - Profiles for internal heat gains for different building usages and occupancies



DYMOLAMODELS – NEW CLASSES

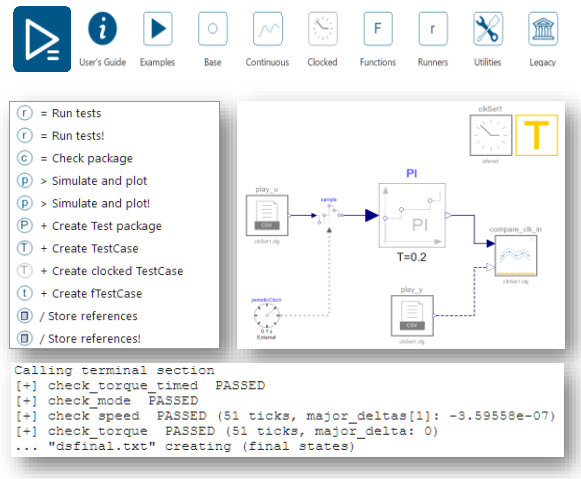
- Graphical labels
  - Annotate models and examples
- Environment model
  - Covers solar irradiation, weather data, atmosphere and location values
  - Using EnergyPlus .mos weather files
- Coordinates operator record
  - For conversion of coordinate values from strings to radian and back
- Sources for driving cycles
  - Custom cycles
  - Predefined cycles: WLTC, FTP, etc.
- Customizable Stopwatch
  - Visualize time or custom expression



Annotated Modelica model with new classes and visual labels

TESTING LIBRARY

- Improved function checks
- Redesigned toolbar
- Improved visuals
  - Updated style of reports and test results
  - Overall test result visualized at simulation end
- New package structure
  - Clocked blocks as preferred method for recordings
  - Continuous blocks still available in Legacy package
- Renamed test results
  - Aligned with results from PSTesting / junit
  - New results XFAIL and XPASS for negative tests
- Existing tests fully supported
  - Conversion with provided script

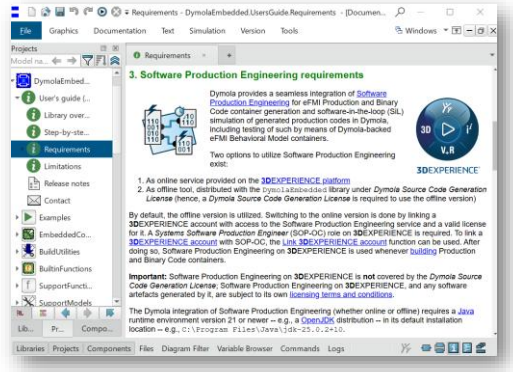


OTHER NEWS

FMI FOR EMBEDDED SYSTEMS

efmi Functional Mock-up Interface for embedded systems

- Integrated production code generation
  - Requires Source Code Generation option, same as for GALEC code generation
  - Offline version of *Software Production Engineering* on **3D**EXPERIENCE
- Improved event handling of GALEC code generator
  - `pre` operators, including event iteration and initialization
  - `whenelse` branches for reinitialization with `reinit`
  - `if` statements in algorithm sections
  - Enables Modelica.StateGraph in embedded models
- Production code as co-simulation source code FMU
  - Self-contained (no external library dependencies)
  - Small, high-quality (MISRA C:2025, SEI CERT C, …), safety-critical code – suited for hard real-time



FURTHER IMPROVEMENTS

- System Structure and Parameterization (SSP)
  - Extended support for Credible Simulation Process
  - Integration of Uncertainty Quantification in SSP
  - Support for metadata and signature elements
  - SSP flags renamed for improved clarity
- Terminals in SSP
  - Planned extension of SSP, currently under development
  - Supports FMI 3 terminals and terminals for SSP systems (native)
  - Beta-test feature in Dymola
- Zipped help files
  - Generate a help directory, then put it in a zip file
  - Dymola will unpack the zip-file in a temporary directory automatically the first time it is used
  - Reduces the size of library help up to 10x
  - Install and uninstall is faster, especially if you have many files

  `Advanced.HTML.ZipGeneratedHelp=true`
- Upgrade of FLEXnet license server
  - Version 11.19.6 or later needed
  - Fully backwards compatible

DASSAULT SYSTEMES