

GitHub issues resolved for v4.1.0

As part of this release 560 [issues](#) (including 392 pull requests (PR)) were closed.

--MSL-general--

Documentation

- [#3552](#) (PR) Add division tag around image tags
- [#3673](#) (PR) Update DLR contact address
- [#3745](#) (PR) Update DLR contact link
- [#4136](#) (PR) Unify spelling of controllers
- [#4196](#) (PR) Fix and add ITEA links
- [#4208](#) (PR) Bump used Modelica language version to 3.6
- [#4382](#) Relevant enhancements to mention in the MSL 4.1.0 release notes

Miscellaneous

- [#3567](#) Modelica icon color
- [#3639](#) (PR) Fix missing include in Common.c (CI)
- [#3642](#) (PR) Include provided header files (CI)
- [#3643](#) (PR) Fix and extend table tests (CI)
- [#3681](#) (PR) Handle redirect errors in URL checker (CI)
- [#3709](#) (PR) Utilize GitHub Actions for CI
- [#3723](#) (PR) Check Modelica files for UTF-8 BOM (CI)
- [#3805](#) (PR) Update CI to check for deprecated Text.lineColor annotation
- [#3809](#) (PR) Fix exception where tag HTML was not in lower case (CI)
- [#3814](#) Unify spelling of controllers
- [#3851](#) (PR) Update tidy-html5 (CI)
- [#3886](#) (PR) Generate MSL Release Notes by GitHub Actions (CI)
- [#3899](#) (PR) Run spelling check via GitHub Actions (CI)
- [#3952](#) (PR) Update icons almost automatically updated to have correct gradient
- [#3972](#) (PR) Add problem matchers for GitHub Actions (CI)
- [#4072](#) Near-zero coordinates in graphical annotations
- [#4140](#) (PR) Clean-up of near-zero coordinates in graphical annotations
- [#4165](#) (PR) Fix codespell exceptions (CI)
- [#4175](#) Which Modelica Language version for MSL 4.1.0?
- [#4181](#) (PR) Update text annotations to not use deprecated features
- [#4183](#) (PR) Fix regex to optionally ignore quoted strings when checking for deprecated Text.lineColor annotation (CI)
- [#4203](#) (PR) Fix codespell exceptions (CI)
- [#4247](#) (PR) Update version, uses annotation and copyright year
- [#4327](#) (PR) Add release notes for v4.1.0
- [#4357](#) (PR) Update icon color of red dot
- [#4434](#) (PR) Bump actions to avoid deprecation warnings (CI)
- [#4624](#) (PR) Bump copyright year to 2025
- [#4630](#) (PR) Fix building html tidy with current CMake (CI)

Blocks

Bugs

- [#3627](#) (PR) Blocks.Routing.Extractor: add assert for input range
- [#3878](#) Unit-checking using Gain and LimIntegrator-blocks
- [#4045](#) (PR) Fix startTime of (SignalPWM) -> ZeroOrderHold
- [#4189](#) (PR) Avoid having both start-value and initial equation
- [#4345](#) (PR) Consider shiftTime for verbose extrapolation in CombiTimeTable

Enhancements

- [#3548](#) Avoid unnecessary discontinuities in sources (Cosine, Sinc)?
- [#3691](#) (PR) Add reading of CSV files from ModelicaTableAdditions to ModelicaStandardTables
- [#3692](#) (PR) Add tableOnFile parameter to icon of CombiTable blocks
- [#3762](#) (PR) Add a block (based on time events) to calculate the extrema of a signal
- [#3806](#) (PR) Missing initialization of Blocks.Math.Mean and derived blocks
- [#3831](#) (PR) Implement ImpulseSources
- [#3864](#) Undesired minimum gain of LimPID
- [#3985](#) (PR) Add assert condition block
- [#4006](#) (PR) Add new power block for raising an input to a user parameterized exponent
- [#4015](#) (PR) Implement continuous version of SignalExtrema
- [#4065](#) Unnecessary potential state events in Modelica.Blocks.Sources.Pulse
- [#4066](#) (PR) Replace state events by time events
- [#4291](#) (PR) Add the very first figure annotation

Examples

- [#3727](#) Value of motor.uniformNoise.localSeed in ActuatorWithNoise
- [#4094](#) (PR) Add a first figure to Modelica.Blocks.Examples.PID_Controller
- [#4433](#) (PR) Fix typos

Documentation

- [#3595](#) (PR) Precising the description of u1 and u2 in Division block
- [#3683](#) (PR) Document matrix name syntax for table text files
- [#3975](#) (PR) Update wrapAngle.mo

Miscellaneous

- [#3720](#) (PR) Remove superfluous zeros from coordinates of CombiTable block icons
- [#3881](#) (PR) Revert major part of [#227](#), and remove unit from gain parameter of Modelica.Blocks.Continuous.* blocks and Modelica.Blocks.Math.Gain
- [#3893](#) (PR) Consider the derivatives at boundaries in the 2D-table
- [#3906](#) Issues with Modelica.Blocks.Math.ContinuousMean
- [#3986](#) (PR) Do not preserveAspectRatio for terminate-block
- [#4027](#) (PR) Remove discrete input
- [#4035](#) startime of (SignalPWM) -> ZeroOrderHold
- [#4055](#) (PR) Propose better unit-handling in equation for LogSweep

- [#4118](#) (PR) Remove min attribute of gain in Blocks.Continuous.LimPID
- [#4122](#) (PR) Remove plural 's' in 'height of ramps'
- [#4150](#) (PR) Avoid discontinuities
- [#4151](#) (PR) Simpler mean
- [#4180](#) Remove deprecated Text.color attribute from graphical annotations
- [#4188](#) (PR) Fix unit errors in ExternalCombiTimeTable constructor
- [#4220](#) (PR) Remove real relation in non-discrete-time controlled if-statement
- [#4414](#) Finding minimum and maximum values over time

C-Sources

Bugs

- [#3556](#) MinGW possibly neglected in safe-math.h
- [#3562](#) Error message for out of bounds column in tables is broken
- [#3563](#) (PR) Fix invalid memory access in isValidCombiTimeTable and isValidCombiTable1D
- [#3568](#) (PR) Do not include intsafe.h on MinGW
- [#3660](#) Modelica.Utilities.Files.createDirectory fails if the directory does not exist
- [#3663](#) (PR) Add getcwd fallback in ModelicaInternal_fullPathName
- [#3669](#) (PR) Fix reading file with EOL=LF on Windows
- [#3894](#) Derivative signal of combiTable2Ds is set to zero outside of table with HoldLastPoint
- [#3896](#) (PR) Fix derivatives in 2D-table for one-sided extrapolation by constant continuation
- [#3983](#) (PR) Fix index-out-of-bounds exception for splines
- [#4301](#) Cannot compile library due to _BSD_SOURCE wrong usage

Enhancements

- [#3603](#) Memory allocation error in CombiTimeTable when given UTF16 LE file
- [#3604](#) (PR) ModelicaIO.c: Improve error message if reading text file containing zero bytes
- [#3686](#) (PR) Add ModelicaDuplicateString and ModelicaDuplicateStringWithErrorReturn (introduced in Modelica 3.5)
- [#3691](#) (PR) Add reading of CSV files from ModelicaTableAdditions to ModelicaStandardTables
- [#3700](#) (PR) Make array inputs of external C functions const (introduced in Modelica 3.5)
- [#3839](#) External ModelicaStandardTables lack const qualifiers for array inputs (Modelica Language Specification version 3.5)

Miscellaneous

- [#3246](#) (PR) Remove call of localtime
- [#3564](#) Unguarded clang pragmas in ModelicaStrings.c
- [#3565](#) (PR) Add pragma guards in ModelicaStrings.c
- [#3647](#) Linker warning mktemp is dangerous
- [#3696](#) (PR) Fix some compiler warnings
- [#3728](#) (PR) Fix Modelica.Utilities.Strings.hashString to always use provided HASH_AP and update 3rd-party header uthash to v2.3.0

- [#3783](#) (PR) Remove unused static function get_token
- [#3784](#) (PR) Fix LCC build
- [#3787](#) (PR) Fix C89 compliance
- [#3861](#) (PR) Fix -Wundef warning by first checking if macro is defined
- [#3867](#) Is ModelicaUtilities.h tool-specific?
- [#3893](#) (PR) Consider the derivatives at boundaries in the 2D-table
- [#3903](#) Modelica.Blocks.Tables: Wrong format specifier is ignored
- [#3905](#) (PR) Modelica.O.c: Fix error handling for invalid format specifier in text file
- [#4281](#) (PR) Upgrade zlib to v1.3.1
- [#4487](#) (PR) Restore and modernize ModelicaUtilities.h
- [#4489](#) Update matio for MSL 4.1.0
- [#4530](#) (PR) Fix feature check macros for POSIX realpath
- [#4531](#) (PR) Update matio library to 1.5.28

Clocked

Examples

- [#4458](#) ClockedWithDiscretizedContinuousController has clocked variable in initial equation

Documentation

- [#4299](#) (PR) Clarify the Clocks chapter of Modelica.Clocked User Guide

Miscellaneous

- [#3801](#) (PR) Remove duplicate "and" in doc string
- [#3971](#) Clocked noise example modifying something not in constraining class
- [#4070](#) Unused parameters in Modelica.Clocked.ClockSignals.Clocks.Logical
- [#4071](#) (PR) Propagate useSolver to these variants as well
- [#4074](#) (PR) Fix for [#3971](#)

Complex*

Bugs

- [#1260](#) Complex.scalarProduct not a scalar product
- [#3651](#) Complex transfer function block uses wrong order of coefficients
- [#3733](#) (PR) Fix interpretation of coefficients of complex transfer function
- [#3742](#) (PR) Fix implementation of scalarProduct
- [#4239](#) (PR) Simplify ComplexRampPhasor

Enhancements

- [#3584](#) (PR) Smooth complex

Documentation

- [#3659](#) (PR) Mark ComplexBlocks and FundamentalWave with DocumentationClass

Miscellaneous

- [#3638](#) (PR) Use one character instead of line drawings
- [#3677](#) (PR) Do not fail for $w \leq 0$ in Complex TransferFunction
- [#3768](#) Conversion from ModelicaServices and Complex version 3.2.3 to 4.0.0?
- [#3770](#) (PR) Add missing conversions for Complex and Services 3.2.3
- [#4264](#) (PR) Set unit instead of having it in description
- [#4452](#) (PR) AdditionalSqrt

Constants

Bugs

- [#2056](#) Proper definition of Modelica.Constants.{eps,small}
- [#4042](#) (PR) Give a proper definition of machine constants.

Miscellaneous

- [#3295](#) Unit of permeability
- [#3811](#) (PR) Change unit of permeability to V.s/(A.m)
- [#4155](#) (PR) Add units to mathematical constants

Electrical.Analog

Bugs

- [#3827](#) (PR) Fix M_Oline.segment as discussed in [#3826](#)
- [#3828](#) (PR) Fix initialization of Lines as discussed in [#3826](#)

Enhancements

- [#3748](#) Inconsistent M_OLine
- [#3830](#) (PR) Unify Lines models
- [#3831](#) (PR) Implement ImpulseSources
- [#3833](#) (PR) Improvements to line models
- [#3904](#) DC PowerSupply missing
- [#3926](#) (PR) Implement and test PowerSupply

Examples

- [#3590](#) (PR) Change homotopy parameter to be consistent
- [#3625](#) (PR) Wrong StopTime for DifferenceAmplifier
- [#3819](#) (PR) Lines examples
- [#4020](#) This looks like a typo in the description?
- [#4025](#) (PR) [#4020](#) This looks like a typo in the description?
- [#4206](#) (PR) Remove redundant diagram text from Analog examples (second attempt)
- [#4245](#) Connect(p, p) in Modelica.Electrical.Analog.Examples.Utilities.SwitchedCapacitor?
- [#4261](#) (PR) Remove self-connect

- [#4558](#) Shorten reference results for Chua circuit model

Documentation

- [#3815](#) (PR) Fix inconsistent M_OLine model
- [#3960](#) Documentation image M_OLine error

Miscellaneous

- [#3961](#) (PR) Remove outdated unused image files
- [#3987](#) (PR) Set Evaluate = true for IdealTransformer.considerMagnetization
- [#4119](#) (PR) Fix unit error in Thyristor
- [#4147](#) (PR) Fix annotations

Electrical.Batteries

Bugs

- [#3878](#) Unit-checking using Gain and LimIntegrator-blocks
- [#3901](#) Possible bug in Modelica.Electrical.Batteries.Utilities.PulseSeries
- [#3902](#) (PR) Electrical.Batteries.Utilities.PulseSeries

Examples

- [#4098](#) Unit error in Modelica.Electrical.Batteries.Examples.BatteryDischargeCharge
- [#4112](#) (PR) Fix unit error in CCCVcharging

Documentation

- [#3804](#) (PR) Fix/remove dead links

Electrical.Digital

Examples

- [#4174](#) Unused parameters in Modelica.Electrical.Digital.Examples.Utilities.DFF
- [#4176](#) (PR) Fix (and rename) parameters of Modelica.Electrical.Digital.Examples.Utilities.DFF

Electrical.Machines

Bugs

- [#4158](#) (PR) Remove unit-casting
- [#4402](#) mBasic in functions in Modelica.Electrical.Polyphase.Functions
- [#4444](#) (PR) Remove parameter keyword in functions

Enhancements

- [#3786](#) (PR) Rotational coupling
- [#3920](#) (PR) Liberate machine parameter m
- [#4052](#) (PR) Fix SI units by introducing reference phase impedance ZsRef

Examples

- [#3816](#) Remove
Modelica.Electrical.Machines.Examples.ControlledDCDrives.Utilities.Battery
- [#4011](#) (PR) Remove battery model from examples
- [#4363](#) MSL 4.1.0 Reference results
Modelica.Electrical.Machines.Examples.SynchronousMachines.SMPM_NoLoad
- [#4565](#) (PR) Update Electrical.Machines/Examples/SynchronousMachines/
SMPM_NoLoad/comparisonSignals.txt
- [#4579](#) (PR) Apply same patch with Ron and Goff
- [#4582](#) (PR) Apply same patch as [#4559](#) to Electrical.Machines

Documentation

- [#3937](#) Dead Modelica URI link in documentation
- [#3939](#) (PR) Remove commented Modelica URI link in documentation with list

Miscellaneous

- [#3472](#) Remove reference signals of zero sequence currents of electric machine examples
- [#3622](#) Unused parameter in function
- [#3623](#) (PR) Remove unused code ([#3622](#))
- [#3951](#) Missing gradient colors in some Icons
- [#4030](#) Bug in a component: Modelica.Electrical.Machines.Sensors.HallSensor
- [#4031](#) (PR) Fix HallSensor
- [#4517](#)
Modelica.Electrical.Machines.Examples.InductionMachines.IMC_InverterDrive is numerically fragile?

Electrical.Polyphase

Bugs

- [#3963](#) Parameter T not considered in Polyphase Resistors and Conductors
- [#3964](#) (PR) Propagate parameter T in Polyphase Resistors and Conductors
- [#4402](#) mBasic in functions in Modelica.Electrical.Polyphase.Functions
- [#4444](#) (PR) Remove parameter keyword in functions

Electrical.PowerConverters

Bugs

- [#3626](#) (PR) Correct a bug in

Modelica.Electrical.PowerConverters.DCAC.Control.SVPWM

- [#3897](#) (PR) PowerConverters.DCDC.HBridge
- [#3910](#) (PR) Fix parameter propagation of IntersectivePWM

Enhancements

- [#3679](#) (PR) Implement choice between sawtooth and triangle reference signal in PowerConverters/DCDC/Control/SignalPWM
- [#3774](#) (PR) Add ChopperBuckBoost to PowerConverters
- [#3895](#) Fire signals of H-Bridge

Examples

- [#3523](#) Jumps in signal at very tiny time intervals in PolyphaseTwoLevel_RL reference results

Documentation

- [#3682](#) (PR) Update link in documentation to no longer rely on Freescience.info
- [#3842](#) (PR) Fix permanent link redirect

Miscellaneous

- [#3887](#) Inadequate handling of geometric corner case in PowerConverters.DCAC.Control.SVPWM
- [#3888](#) (PR) Update block descriptions of control blocks
- [#3892](#) (PR) Avoid values out of bound, and simplify logic in PowerConverters.DCAC.Control.SVPWM
- [#4035](#) startTime of (SignalPWM) -> ZeroOrderHold
- [#4054](#) Model issues detected by unit checking ThreePhaseTwoLevel_PWM
- [#4152](#) (PR) Correct start-value for t0 in ThreePhaseTwoLevel

Electrical.QuasiStatic

Bugs

- [#4022](#) (PR) Remove duplicate definition of m

Enhancements

- [#3697](#) (PR) Quasi-static Transformer
- [#3705](#) (PR) Add the connection indicator to the terminal box icon
- [#3865](#) Why are there no single phase quasistatic RMS voltage and current sensors?
- [#3876](#) (PR) Add QuasiRMS voltage and current single-phase sensors

Examples

- [#4356](#) (PR) Update MultipleResonance.mo

Documentation

- [#3873](#) Documentation mentions Quasi-static AC machine models not being available
- [#3874](#) (PR) Update documentation of quasi-static AC machines
- [#3938](#) (PR) Strip leading newline in img.alt attributes

Miscellaneous

- [#4021](#) Duplicate non-identical component in Modelica.Electrical.QuasiStatic.Polyphase.Sources.FrequencySweepVoltageSource
- [#4264](#) (PR) Set unit instead of having it in description

Electrical.Spice3

Documentation

- [#3676](#) (PR) Remove repeated advice on package Internal (previously called Repository)

Miscellaneous

- [#3576](#) Rewrite if Boolean == true then
- [#3812](#) (PR) Simplify "if Boolean == true" to "if Boolean"
- [#4135](#) (PR) Delete redundant points of polygon annotation of connectors

Fluid

Bugs

- [#3758](#) Jump in Modelica.Fluid.Pipes.BaseClasses.WallFriction.LaminarAndQuadraticTurbulent.massFlowRate
- [#3924](#) (PR) Fix the bad Evaluate annotation
- [#3944](#) Bug in the SharpEdgedOrifice for Loss factors
- [#3953](#) Wrong enthalpies calculated by DynamicPipe
- [#3959](#) (PR) Fix Wb_flows discretization terms for DynamicPipe
- [#4128](#) Investigating regfun3
- [#4144](#) Dimension mismatch in function linearPower
- [#4157](#) (PR) If the limits don't make sense use linear interpolation in Modelica.Fluid.Utilities.regfun3
- [#4258](#) (PR) Bug in SharpEdgedOrifice for Loss factors resolved
- [#4259](#) (PR) Fix dimension error of Modelica.Fluid.Machines.BaseClasses.PumpCharacteristics.linearPower
- [#4526](#) Problems with ModelicaTest.Fluid.TestComponents.Vessels.TestSimpleTank
- [#4545](#) (PR) Avoid the tank to ever become completely empty

Examples

- [#3654](#) (PR) Remove unused/undocumented block setReal from example
- [#3656](#) The reference solution of

- Modelica.Fluid.Examples.Explanatory.MomentumBalanceFittings is wrong
- [#3657](#) (PR) Add start value to ensure convergence to the right flow in suddenExpansion1
- [#3779](#) (PR) choicesAllMatching=true is the correct annotation!
- [#3782](#) What is the quality of the TankWithEmptyingPipe1 reference result?
- [#3813](#) (PR) Decrease solver tolerance of Modelica.Fluid.Examples.AST_BatchPlant.Test.TankWithEmptyingPipe1
- [#4032](#) (PR) The dT is a temperature difference
- [#4033](#) (PR) Reduce guess for initial temperature difference across wall
- [#4312](#) Modelica.Fluid.Examples.TraceSubstances.RoomCO2WithControls is problematic because of chattering

Documentation

- [#3629](#) (PR) Fix outdated contact
- [#3715](#) (PR) Remove superfluous blank line in documentation of Modelica.Fluid.UsersGuide.ComponentDefinition.WallFriction
- [#3863](#) (PR) Add missing parenthesis in fluid user guide page
- [#4435](#) (PR) Fix links

Miscellaneous

- [#3628](#) Use of Modelica.Constants.eps in Modelica.Fluid.Utilities.regFun3
- [#3649](#) (PR) Just use "redeclare" instead of "redeclare final"
- [#3760](#) (PR) Fix assert message of Modelica.Fluid.Pipes.BaseClasses.WallFriction.NoFriction.massFlowRate_dp_staticHead
- [#3802](#) (PR) State temperatures in PartialHeatTransfer declared as Medium-specific type
- [#3951](#) Missing gradient colors in some Icons
- [#4104](#) (PR) Remove modification of 'quantity' for FixedBoundary.X
- [#4469](#) (PR) MassFlowSource_T and MassFlowSource_h only work if there is at least one port
- [#4533](#) (PR) Fix [#4312](#)
- [#4568](#) (PR) Fix for [#4548](#)

Fluid.Dissipation

Bugs

- [#4552](#) Bug in dp_volumeFlowRate_MFLOW function
- [#4580](#) (PR) Fix wrong expression for the $a = 0, b > 0$ case

Enhancements

- [#1429](#) Conditionally uninitialized output variable Re in Modelica.Fluid.Dissipation.HeatTransfer.HeatExchanger.kc_flatTube used

Miscellaneous

- [#3743](#) (PR) Resort variable declarations of Modelica.Fluid.Dissipation.HeatTransfer.HeatExchanger.{kc_flatTube,

- `kc_flatTube_KC, kc_roundTube_KC` such that they are declared before used
- [#3744](#) (PR) Add assertion in else branches of `Modelica.Fluid.Dissipation.HeatTransfer.HeatExchanger.{kc_flatTube, kc_flatTube_KC, kc_roundTube, kc_roundTube_KC}`
- [#4147](#) (PR) Fix annotations

Icons

Documentation

- [#4628](#) (PR) Remove outdated contact information, esp. mail addresses

Miscellaneous

- [#3632](#) (PR) Render borders
- [#4135](#) (PR) Delete redundant points of polygon annotation of connectors

Magnetic.FluxTubes

Bugs

- [#4158](#) (PR) Remove unit-casting
- [#4537](#) Wrong parameter in `Magnetic/FluxTubes/Material`
- [#4567](#) (PR) Correct `Magnetic.FluxTubes.Material.HysteresisTableData.M400_50A.sigma`

Enhancements

- [#3993](#) (PR) FluxTubes: some improvements in shapes and material

Examples

- [#4077](#) Unit error in `Modelica.Magnetic.FluxTubes.Examples.MovingCoilActuator.ArmatureStroke`
- [#4109](#) (PR) Fix unit errors in `ArmatureStroke`

Documentation

- [#3847](#) (PR) Fix link
- [#4211](#) (PR) Fix broken link in `Modelica.Magnetic.FluxTubes`
- [#4435](#) (PR) Fix links

Miscellaneous

- [#3295](#) Unit of permeability
- [#3951](#) Missing gradient colors in some Icons
- [#4007](#) Redundant connect equation in `ConstantActuator`
- [#4008](#) (PR) Remove redundant connect equation in `ConstantActuator`

Magnetic.FundamentalWave

Bugs

- [#4158](#) (PR) Remove unit-casting
- [#4172](#) (PR) Protect internal ports of base class machines

Enhancements

- [#3817](#) (PR) Implement split of stray inductance in common and individual part

Examples

- [#3822](#) (PR) Add documentation of SinglePhaseInductance
- [#4570](#) (PR) Attempt to fix [#4559](#) by increasing RonDiode and GoffDiode

Documentation

- [#3736](#) (PR) More clearly specify damper cage in synchronous machine models
- [#4616](#) (PR) Use proper modelica URIs

Miscellaneous

- [#3472](#) Remove reference signals of zero sequence currents of electric machine examples
- [#4187](#) (PR) Remove newlines at end of Text primitive

Magnetic.QuasiStatic

Bugs

- [#3997](#) (PR) Propagate the angle alpha also in the calculation of A in HollowCylinderRadialFlux
- [#4158](#) (PR) Remove unit-casting
- [#4172](#) (PR) Protect internal ports of base class machines

Enhancements

- [#3993](#) (PR) FluxTubes: some improvements in shapes and material

Examples

- [#3592](#) (PR) Fix name of plot variable in documentation
- [#3803](#) (PR) Add an example to demonstrate ideal field weakening
- [#3845](#) (PR) QuasiStatic example induction machine with inverter
- [#4337](#) MSL 4.1.0 Regressions - Magnetic.QuasiStatic

Documentation

- [#3593](#) Check documentation of induction machines' examples

- [#3659](#) (PR) Mark ComplexBlocks and FundamentalWave with DocumentationClass
- [#3736](#) (PR) More clearly specify damper cage in synchronous machine models
- [#3823](#) (PR) Remove obsolete "(quasi-static)" from documentation

Miscellaneous

- [#3472](#) Remove reference signals of zero sequence currents of electric machine examples
- [#3620](#) (PR) Refs [#3593](#): Fix documentation of quasi-static machine examples

Math

Bugs

- [#3836](#) Incorrect results from isPowerOf2 for large inputs
- [#3850](#) (PR) Avoid max({}) in Modelica.Math.Matrices.nullSpace

Enhancements

- [#3919](#) (PR) Use boolean array reductions

Examples

- [#4344](#) (PR) Math asserts
- [#4470](#) (PR) Math asserts ([#4344](#))

Documentation

- [#4435](#) (PR) Fix links
- [#4448](#) (PR) Fix minor documentation error for Modelica.Math.log

Miscellaneous

- [#3578](#) Order Modelica.Math.Matrices.LAPACK
- [#3602](#) (PR) Reorder Lapack functions in alphabetic order
- [#3703](#) (PR) Avoid deprecated "builtin" external language for common mathematical functions
- [#3843](#) (PR) Fully integer based version of isPowerOf2
- [#3849](#) Invalid function Modelica.Math.Matrices.nullSpace calculating max({})
- [#4036](#) Illegal value of 'lwork' in LAPACK.dtrsens
- [#4039](#) (PR) Most LAPACK routines don't want lwork=0 and/or work with size zero
- [#4232](#) Mismatching order in package.order
- [#4314](#) (PR) Compatibility fix for Dymola 2024x; not needed in coming release.

Mechanics.MultiBody

Bugs

- [#3588](#) Quaternions.from_T returns error for valid matrix
- [#3710](#) Singular Jacobian of the initial equations for the rotational constraint in

Modelica.Mechanics.MultiBody.Joints.Constraints.Prismatic

- [#3718](#) (PR) Correct Constraints.Prismatic
- [#3724](#) (PR) Stable calculation of quaternion from transformation matrix
- [#3989](#) ForceAndTorque model does not set color of force arrow
- [#3990](#) (PR) Pass forceColor to arrow visualizer
- [#4145](#) Error with frame_resolve math in BasicAbsoluteAngularVelocity sensor
- [#4148](#) (PR) Fix false calculation of w (omega) when resolveInFrame == frame_resolve

Enhancements

- [#3859](#) (PR) Fix missing or ambiguous SI-units in MultiBody.Sensors
- [#3908](#) Late inlining of
Modelica.Mechanics.MultiBody.Frames.Internal.maxWithoutEvent
- [#4133](#) (PR) Replace 'Inline=false' with late inlining

Examples

- [#3706](#) Wrongly fixed initial conditions in example
Modelica.Mechanics.MultiBody.Examples.Constraints.PrismaticConstraint
- [#3712](#) (PR) Initialize motion in x direction (r_rel_a_1) instead of in z (r_rel_a_3)
- [#3776](#) Link rot
- [#3866](#) startBackward and startForward should not be reference results
- [#3870](#) (PR) Remove startBackward and startForward from reference results
- [#4080](#) Unit error in
Modelica.Mechanics.MultiBody.Examples.Loops.Utilities.GasForce2
- [#4081](#) (PR) Delete variables dens and R_air from
Modelica.Mechanics.MultiBody.Examples.Loops.Utilities.GasForce2
- [#4108](#) (PR) Fix unit error in RobotR3.OneAxis

Documentation

- [#3610](#) shapeType documentation example for file:// is inconsistent with standard file URIs
- [#3613](#) (PR) Add missing URI separator in file URIs
- [#3804](#) (PR) Fix/remove dead links
- [#3933](#) (PR) Update documentation of
Modelica.Mechanics.MultiBody.Visualizers.Advanced
- [#4184](#) (PR) Restore documentation of
Modelica.Mechanics.MultiBody.Visualizers.Internal.Lines
- [#4217](#) (PR) Documentation: clarify mind-set of planar rotation

Miscellaneous

- [#2474](#) Spherical, etc. render poorly on non-white backgrounds
- [#3445](#) Wrong rotation direction in planarRotation functions
- [#3634](#) (PR) Utilize ellipses' closure
- [#3707](#) No propagation of `fixed = false` in InitSpringConstant
- [#3716](#) (PR) Improve icons of joint assemblies RRR and RRP
- [#3725](#) (PR) Simplify selection of constraint equations to be used
- [#3729](#) (PR) Fix position of component's and parameter's name according to icon conventions

- [#3730](#) (PR) Use ellipses instead of arcs by lines in `Mechanics.MultiBody.Forces`
- [#3835](#) (PR) Remove `Evaluate=true` for `fixed=false` parameter 'n_b'
- [#3932](#) (PR) Remove superfluous import statements for `Modelica.Units.Conversions.to_unit1`
- [#4147](#) (PR) Fix annotations
- [#4171](#) (PR) Initialize output array C even when `multiColoredSurface=false`
- [#4192](#) Unit errors when calling `Modelica.Mechanics.MultiBody.Frames.from_nxy`
- [#4194](#) (PR) Correct units for normalizing vectors.
- [#4246](#) Unused `ndim` in MBS World
- [#4248](#) (PR) Use vector for visualization of physical quantities
- [#4266](#) (PR) Delete unused protected parameters `ndim`, `ndim2` and `ndim_pointGravity`
- [#4445](#) (PR) Add `unit="1"` to quaternions
- [#4520](#) (PR) Make propagation final of lifted parameters in Spring

Mechanics.Rotational

Enhancements

- [#3661](#) Improve table design of `Modelica.Mechanics.Rotational.Components.Clutch` to use static tables instead of dynamic
- [#3662](#) (PR) Enhance frictional models based on `ExternalCombiTable1D`
- [#3702](#) (PR) Rotational and translational inverse speed dependent torque/force
- [#3786](#) (PR) Rotational coupling
- [#3976](#) (PR) Eddy current sources

Examples

- [#3866](#) `startBackward` and `startForward` should not be reference results
- [#3870](#) (PR) Remove `startBackward` and `startForward` from reference results
- [#4010](#) (PR) Minor fixes of the documentation of `Mechanics.Rotational.Examples`

Documentation

- [#1493](#) `Mechanics.Rotational.Interfaces.PartialFriction.w_small`
- [#3594](#) (PR) Fix wrong or missing documentation
- [#3633](#) (PR) Describe the effect of `w_small` in friction elements
- [#3862](#) (PR) Improve documentation of both rotational and translational sensors

Miscellaneous

- [#3735](#) (PR) Use ellipses instead of arcs by lines
- [#4204](#) (PR) Use `mustBeConnected` annotation (introduced in Modelica 3.6)
- [#4256](#) (PR) Fix position prescribed friction

Mechanics.Translational

Enhancements

- [#3664](#) Improve design of frictional translational components to use static tables

instead of dynamic

- [#3690](#) (PR) Enhance frictional translational models based on ExternalCombiTable1D
- [#3702](#) (PR) Rotational and translational inverse speed dependent torque/force
- [#3976](#) (PR) Eddy current sources

Examples

- [#3866](#) startBackward and startForward should not be reference results
- [#3870](#) (PR) Remove startBackward and startForward from reference results

Documentation

- [#3594](#) (PR) Fix wrong or missing documentation
- [#3862](#) (PR) Improve documentation of both rotational and translational sensors
- [#3942](#) (PR) Fix copy/paste error in description of Translational.Sources.Force2

Miscellaneous

- [#4197](#) Unit issue in Modelica.Mechanics.Translational.Components.ElastoGap
- [#4200](#) (PR) Improve ElastoGap
- [#4204](#) (PR) Use mustBeConnected annotation (introduced in Modelica 3.6)
- [#4256](#) (PR) Fix position prescribed friction

Media

Bugs

- [#3666](#) ReferenceMoistAir, substances mass conservation issue
- [#3695](#) Trajectory of 'k' in R134a_setState_pTX doesn't look suitable for comparison
- [#3704](#) (PR) Change Modelica.Media.R134a.R134a_ph.dofpT ([#3695](#))
- [#3834](#) (PR) Correct error in function Modelica.Media.Air.ReferenceMoistAir.Utilities.pd_pTX_der
- [#4389](#) Wrong input type in specificEnthalpy_pTX, temperature_phX, and density_phX
- [#4428](#) ModelicaTest.Media.TestOnly.WaterIF97_dewEnthalpy uses partial package
- [#4512](#) Issue with ReferenceMoistAir Beyond 500°C
- [#4546](#) (PR) Fix Utilities functions of ReferenceMoistAir to also work with Xi
- [#4626](#) (PR) Fix Modelica.Media.R134a.R134a_ph.setState_pTX

Examples

- [#4099](#) Unit error in Modelica.Media.Examples.SimpleLiquidWater
- [#4115](#) (PR) Fix unit errors in Examples.MoistAir

Documentation

- [#3629](#) (PR) Fix outdated contact
- [#4084](#) (PR) Documentation: improve indentation of HTML code
- [#4549](#) Modelica.Media.Interfaces.Types.IdealGas.FluidConstants.dipoleMoment and Modelica.Media.Interfaces.Types.TwoPhase.FluidConstants.dipoleMoment

- typo in conversion factor from debye to C.m
- [#4586](#) Modelica.Media.IdealGases.SingleGases typo in documentation
- [#4619](#) (PR) Fix typo in conversion factor from debye to C.m
- [#4625](#) (PR) Fix column layout in documentation of Modelica.Media.IdealGases.SingleGases ([#4588](#))
- [#4628](#) (PR) Remove outdated contact information, esp. mail addresses

Miscellaneous

- [#3576](#) Rewrite if Boolean == true then
- [#3650](#) Modelica Media Interface is information incomplete w.r.t. independent mass fractions
- [#3652](#) (PR) Fix descriptions and improve documentation style
- [#3763](#) (PR) Make constants in functions protected
- [#3766](#) (PR) Update FluidData.mo
- [#3812](#) (PR) Simplify "if Boolean == true" to "if Boolean"
- [#3885](#) (PR) Refactor spliceFunction_der
- [#4038](#) (PR) spliceFunction_der check limits
- [#4096](#) (PR) Fix unit error in SimpleAir
- [#4100](#) (PR) Use plain SI.Mass instead of medium-based 'quantity' for MixtureGases.m1 and MixtureGases.m2
- [#4103](#) (PR) Fix unit error in SimpleLiquidWater model
- [#4116](#) (PR) Fix unit errors in ReferenceAir.MoistAir
- [#4117](#) (PR) Fix unit error in IdealGasH2O
- [#4232](#) Mismatching order in package.order
- [#4233](#) Old value for universal gas constant used for calculation of specific gas constant
- [#4238](#) (PR) R_s for each ideal gas record now calculated with R_NASA
- [#4243](#) (PR) Add massFraction function to Media library
- [#4262](#) (PR) Utilize PressureSlope unit in Media consistently
- [#4452](#) (PR) AdditionalSqrt
- [#4453](#) (PR) Fix dimension errors in functions of Modelica.Media.Interfaces.PartialSimpleMedium
- [#4462](#) (PR) Make type explicit
- [#4541](#) (PR) Generate events in functions to avoid non-discrete booleans

ModelicaReference

Documentation

- [#3773](#) getInstanceName and spatialDistribution not listed in ModelicaReference
- [#3808](#) (PR) getInstanceName and spatialDistribution not listed in ModelicaReference
- [#3980](#) (PR) Fix variable name
- [#4023](#) Obsolete form of noDerivative in ModelicaReference
- [#4024](#) (PR) Update obsolete form of noDerivative in ModelicaReference
- [#4127](#) (PR) Type cast result of malloc
- [#4298](#) (PR) Fix syntax errors in ModelicaReference documentation snippets

Miscellaneous

- [#3923](#) (PR) Fix misspelled file name

ModelicaServices

Miscellaneous

- [#3768](#) Conversion from ModelicaServices and Complex version 3.2.3 to 4.0.0?
- [#3770](#) (PR) Add missing conversions for Complex and Services 3.2.3

ModelicaTest

Bugs

- [#3695](#) Trajectory of 'k' in R134a_setState_pTX doesn't look suitable for comparison
- [#4428](#) ModelicaTest.Media.TestOnly.WaterIF97_dewEnthalpy uses partial package
- [#4437](#) (PR) Fix illegal ModelicaTest.Media.TestOnly.WaterIF97_dewEnthalpy
- [#4526](#) Problems with ModelicaTest.Fluid.TestComponents.Vessels.TestSimpleTank

Enhancements

- [#3689](#) (PR) Add 2 more test examples to ModelicaTest.Electrical.Machines

Examples

- [#3866](#) startBackward and startForward should not be reference results
- [#3870](#) (PR) Remove startBackward and startForward from reference results

Miscellaneous

- [#3778](#) Reference result degradation for TestValvesCompressibleReverse (fixed by Dymola 2022)
- [#3852](#) Invalid models ModelicaTest.Media.TestsWithFluids.MediaTestModels.*
- [#3881](#) (PR) Revert major part of [#227](#), and remove unit from gain parameter of Modelica.Blocks.Continuous.* blocks and Modelica.Blocks.Math.Gain
- [#3918](#) (PR) Update ModelicaTest/Media.mo: Reduce dp_nominal in TestsWithFluid.Components.PartialTestModel by a factor of 1000
- [#4114](#) (PR) Fix unit error in TestOnly.MoistAir, R134a_setState_pTX and WaterIF97_dewEnthalpy
- [#4195](#) (PR) Add all defined outputs of the test example to reference signals
- [#4229](#) (PR) Add ZeroThresholds test in Blocks
- [#4273](#) (PR) Utilize PressureSlope unit in ModelicaTest consistently
- [#4349](#) MSL 4.1.0 Reference results for new models
- [#4367](#) Too few variables tested for ModelicaTest.Media.TestsWithFluid.MediaTestModels.Incompressible.Essotherm650?
- [#4424](#) Completely specify initial conditions for DynamicPipeEnergyConservationCheck and DynamicPipeEnergyConservationCheck2
- [#4450](#) (PR) Add comparison signals for DynamicPipeEnergyConservationCheck

- and DynamicPipeEnergyConservationCheck2
- [#4510](#) ModelicaTest.Electrical.QuasiStatic.*.FrequencySweep is missing experiment annotation
- [#4515](#) (PR) Remove extra comparisonSignals file that doesn't match an existing model
- [#4521](#) (PR) Add missing experiment annotations
- [#4554](#) Asserts on Real values with test models are too tight
- [#4566](#) (PR) Fix for [#4424](#)
- [#4581](#) (PR) Add numerical tolerance to floating-point number comparison in ModelicaTest.Fluid.TestComponents.Machines.TestLinearPower
- [#4629](#) (PR) Add test model
ModelicaTest.Media.TestOnly.R134a_setState_pTX_high_T

Resources

Bugs

- [#3614](#) (PR) Update Run.mos for MultiBody examples
- [#3767](#) (PR) Add more explicit conversion rules for inherited gasConstant function

Examples

- [#4565](#) (PR) Update Electrical.Machines/Examples/SynchronousMachines/SMPM_NoLoad/comparisonSignals.txt

Documentation

- [#4251](#) (PR) Create Modelica.UsersGuide.ReleaseNotes.Version_4_1_0

Miscellaneous

- [#3580](#) (PR) Save the CFLAGS already passed to the script
- [#3591](#) (PR) Remove zero inductor currents in comparison signals
- [#3618](#) (PR) Fix result file name in Run.mos script
- [#3753](#) (PR) Add semicolon after conversion commands of ConvertModelica_from_3.2.3_to_4.0.0.mos
- [#3794](#) (PR) Turn compiler warning of implicit function declaration to error
- [#3800](#) (PR) Fix (all but one) conversion issues reported by Dymola
- [#3867](#) Is ModelicaUtilities.h tool-specific?
- [#3961](#) (PR) Remove outdated unused image files
- [#4167](#) (PR) Remove voltageSensor.v from the comparison list
- [#4179](#) (PR) Remove duplicates in SignalNames of 10 examples of ModelicaTest
- [#4268](#) (PR) Make third-party licenses explicit
- [#4300](#) (PR) Add DifferencesTo400.html - MSL 4.1.0 w.r.t. 4.0.0
- [#4316](#) MSL v4.1.0-beta.1 feedback: broken Dymola plot scripts
- [#4322](#) (PR) Fix plot scripts
- [#4349](#) MSL 4.1.0 Reference results for new models
- [#4371](#) (PR) Update CoupledClutches.mos
- [#4463](#) (PR) Remove useless and numerically critical error signals from MoistAir tests
- [#4487](#) (PR) Restore and modernize ModelicaUtilities.h

- [#4590](#) (PR) Update list of resolved GH issues for v4.1.0-rc.1
- [#4633](#) (PR) Add DifferencesTo400.html - MSL 4.1.0 w.r.t. 4.0.0 ([#4300](#))

StateGraph

Examples

- [#4076](#) Modelica.StateGraph.Examples.Utilities.Tank could set units for its variables

Documentation

- [#4202](#) (PR) Fix broken links in Modelica.StateGraph

Miscellaneous

- [#4264](#) (PR) Set unit instead of having it in description

Thermal.FluidHeatFlow

Enhancements

- [#3956](#) (PR) Add animated level on the icon layer of the OpenTank

Examples

- [#4141](#) (PR) Improve documentation and description for FluidHeatFlow

Documentation

- [#3474](#) Improve doc strings and documentation of FluidHeatFlow

Thermal.HeatTransfer

Documentation

- [#3954](#) Broken link to academia.edu
- [#4199](#) (PR) Fix link to Holman2010

Miscellaneous

- [#4540](#) (PR) Remove redundant text in celsius to kelvin icon

Units

Enhancements

- [#3872](#) (PR) Add electrical quantities per unit length

Miscellaneous

- [#3295](#) Unit of permeability
- [#3811](#) (PR) Change unit of permeability to V.s/(A.m)
- [#4103](#) (PR) Fix unit error in SimpleLiquidWater model
- [#4105](#) (PR) Add StoichiometricCoefficient next to StoichiometricNumber
- [#4264](#) (PR) Set unit instead of having it in description

UsersGuide

Documentation

- [#3804](#) (PR) Fix/remove dead links
- [#3844](#) Conflicting guidelines for HTML documentation conventions for tables
- [#3848](#) (PR) Remove `align=bottom` from guidelines and code
- [#3854](#) (PR) Remove obsoleted BMBF link
- [#4216](#) (PR) Add recommendation for styling of 'tab' and 'group' annotations
- [#4221](#) (PR) Add recommendation for code formatting (and apply it)
- [#4251](#) (PR) Create Modelica.UsersGuide.ReleaseNotes.Version_4_1_0
- [#4435](#) (PR) Fix links
- [#4501](#) (PR) Remove dead link to old OM wiki
- [#4628](#) (PR) Remove outdated contact information, esp. mail addresses

Utilities

Bugs

- [#3615](#) ModelicaServices classes extends from classes in a partial package
- [#3617](#) (PR) Models should be partial, not the package

Enhancements

- [#3503](#) (PR) Improve fault-tolerance of Modelica.Utilities.Strings.substring w.r.t. index arguments and remove undocumented case with `endIndex=-999`

Examples

- [#3608](#) Incorrect dimension parameter used when defining A in Modelica.Utilities.Examples.ReadRealMatrixFromFile
- [#3609](#) (PR) Use correct dimensions
- [#3921](#) Enhancement of Modelica.Utilities.Examples.readRealParameter
- [#3922](#) (PR) Add optional default return value parameter

Documentation

- [#4059](#) (PR) Document unicode for String functions
- [#4073](#) (PR) Fix documentation of Modelica.Utilities.System.getTime()
- [#4440](#) (PR) Update documentation according to changes in the Modelica Specification

Miscellaneous

- [#3728](#) (PR) Fix Modelica.Utilities.Strings.hashString to always use provided HASH_AP and update 3rd-party header uthash to v2.3.0
- [#4419](#) Is Modelica.Utilities.Strings.hashString supposed to be tool-independent?
- [#4578](#) Modelica.Utilities.Streams.error should not require that ModelicaError is exported by ModelicaExternalC
- [#4583](#) (PR) Rewrite Streams.error in terms of assert