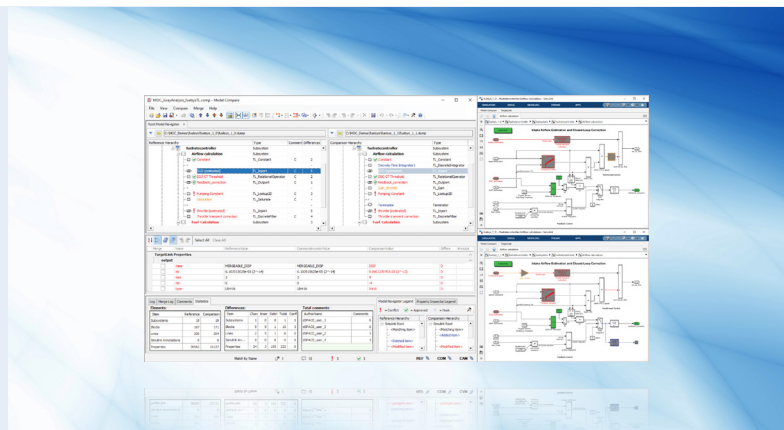# Model Compare

Comparing MathWorks® Simulink®, Stateflow®, and dSPACE TargetLink models

Highlights

- Intelligent and adjustable comparison algorithms with merge functionality
- Flexible difference filter configuration and highly configurable difference report generation
- Three-way analysis with conflict detection and automatic resolution options
- Built-in TargetLink support

Application Areas

Automatic comparison is a must whenever you work with multiple versions of a model. Model Compare from dSPACE can be used with any TargetLink, MathWorks® Simulink or Stateflow model, and also supports libraries. There is a broad range of use cases for Model Compare, for example:

- Managing different model versions or model variants
- Merging parallel development branches
- Verifying and reviewing model changes

Key Benefits

Model Compare finds all the changes in a model. Even large models can be compared in minutes, which would be practically impossible without tool support. Furthermore, the optional three-way model analysis detects conflicting changes and shows how models have changed rather than only their differences. You can use filters to focus on relevant differences and ignore unimportant ones, such as layout changes or simulation settings. The support for review sessions also enables reliable, safe, and controlled reviews of model changes. The merge support simplifies the synchronization of changes in different versions of a model.

TargetLink Support

Model Compare has built-in support for all TargetLink blocks and properties. They are displayed and handled like ordinary Simulink/Stateflow elements, so you do not have to bother with TargetLink implementation details. Since the semantics of TargetLink properties are known, they are also intelligently handled by the predefined filter options.

Review Sessions and Merge Support

You can associate review comments to block and property differences found by the tool, including date/author tracing. Complex reviews with multiple participants are supported. Detected changes can be transferred from one model to another to merge parallel development branches or manage different model variants. With easy-to-use commands, merging models this way is much less error-prone than it would be by hand. The remaining differences between the models are constantly kept up-to-date, so that you always see the current state of your work.

Main Features and Benefits

Feature	Description	Benefit
Support for TargetLink	■ Model Compare recognizes TargetLink blocks and properties, and handles them just like built-in blocks.	■ There is no need to bother with TargetLink implementation details.
Three-way analysis with conflict detection and automatic resolution option	■ Optional analysis of a third (common ancestor) model ■ Option for automatic conflict resolution	■ Detailed information on changes of the models rather than listing only their differences ■ Different model versions can be merged without user intervention
Powerful comparison algorithm	■ Models from different Simulink® versions are compared; block correspondences are detected even if the names of the blocks have changed; parameter values are compared either in unevaluated form (e.g., "Kp") or in evaluated form (e.g., "5.4").	■ Conversion and upgrade problems can be addressed and conflicting changes can be detected. You get concise comparison results even if blocks were renamed. Different workspace settings can be taken into account.
Flexible filter configuration	■ Model Compare can be configured to filter out unimportant differences, e.g., layout changes or simulation options, according to a variety of criteria. A comparison can be restricted to selected subsystems.	■ You can focus on the differences and model parts that are relevant to you. This greatly improves the efficiency of a comparison.
Convenient result display	■ The comparison results are displayed in synchronized tree views, with differences indicated by customizable color schemes. A statistics window displays the number of changed, added and removed elements.	■ You can easily see which elements correspond to each other. Added, removed and modified elements as well as the number and type of changes can be seen at a glance.
Review support	■ Comments can be associated with individual blocks and properties or with the complete comparison session.	■ Reviews are performed in a reliable, controlled and safe way. You can also use the comment function to structure your own working process.
Traceability from Model Compare to model	■ You can easily highlight Simulink and Stateflow elements by selecting them in Model Compare, and show any differences directly in the compared models.	■ It is easy to view the context of a change and all the differences in a subsystem.
Traceability from model back to Model Compare	■ You can trace model elements in Simulink back to Model Compare.	■ This is helpful to identify blocks and lines in Model Compare and to inspect all their differences at a glance.
Merge support	■ The commands Copy to Right, Copy to Left, and Delete can be used to transfer changes from one model to another. ■ Advanced merge functions for three-way analysis	■ You can merge parallel development branches and transfer changes between different model variants. ■ More convenience by automatically merging and resolving conflicts
Report generation	■ You can save comparison results and associated comments as HTML, PDF and XML reports, model screenshots can be integrated in the difference reports.	■ The information can be archived and published.
Tool automation	■ You can start the comparison via the command line, and reports can be generated automatically. Reports can be saved in XML format for easy processing by external tools.	■ You can process multiple models automatically and incorporate Model Compare into your own tool chain.

Order Information

Product	Order Number
Model Compare	■ MOC

Relevant Software

| Software		
Required	Operating system	■ www.dspace.com/goto?os_compatibility
	Integrated development environment	■ MathWorks® MATLAB®/Simulink®/Stateflow®
Optional	Production code generator TargetLink	■ See relevant product information
	dSPACE AUTOSAR Compare	■ DARC

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NEW: Model Compare 3.2

Feature Area	Improvement
Model comparison	■ New difference overview for a quick overview of modified model parts and for faster comparison results by selecting the changed model parts only instead of the entire model.
Workflow	■ Improved workflow integration through additional command line interface (CLI) options, which improves efficiency when using Model Compare via CLI or from a version control system, such as Git.
Documentation	■ New documentation for using Model Compare with Git, including all relevant information to set up the product as a diff tool and/or merge tool in your Git environment. ■ New tutorial video: Model Compare Quick Guide

Graphical Display of Differences

Model Compare shows all model differences clearly arranged in two synchronized tree views, where changed, added and removed elements are indicated by customizable colors. While navigating through the model hierarchy, all property differences can be inspected in the Property Inspector. Predefined and flexible filter configurations improve the efficiency of the comparison and let you adjust the view to your individual needs.

Differences can be traced from Model Compare directly to the Simulink/TargetLink models, where the corresponding elements are indicated by customizable colors. Thus, the differences can be easily inspected in the context of the models. In addition, elements of Simulink/TargetLink models can also be traced back to Model Compare to inspect all their differences at a glance.
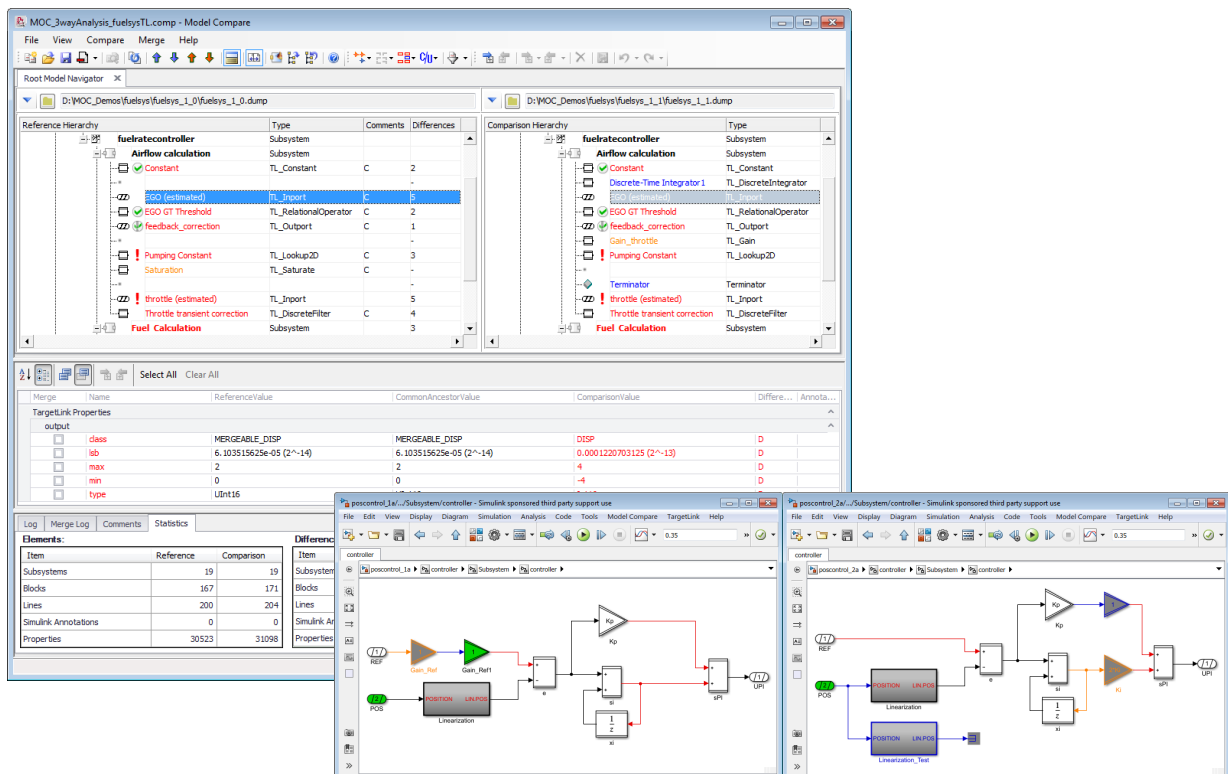

Graphical display of differences in Model Compare and directly in Simulink/TargetLink models.

Merge Support and Automatic Conflict Resolution

With Model Compare you can eliminate differences between two Simulink/TargetLink models by merging the two models. Changes of model elements as well as individual properties can be transferred from one model to the other by commands Copy to Right, Copy to Left or Delete, if these changes exist in only one model. After performing a three-way analysis, additional comfort copy commands are available for automatically merging or resolving conflicts more conveniently.

A smart line handling mechanism automatically adjusts signal lines of copied or deleted blocks. If a block is copied, the related signal lines are copied as well. If a block is deleted, the related signal lines are automatically deleted or reconnected. All merge operations are logged in the merge log window.
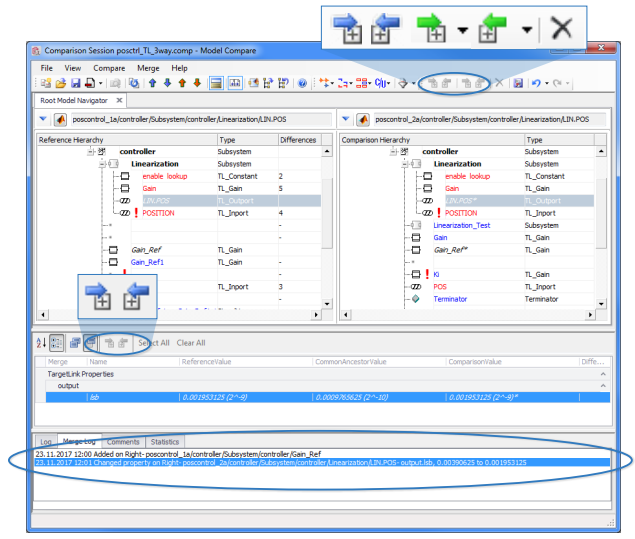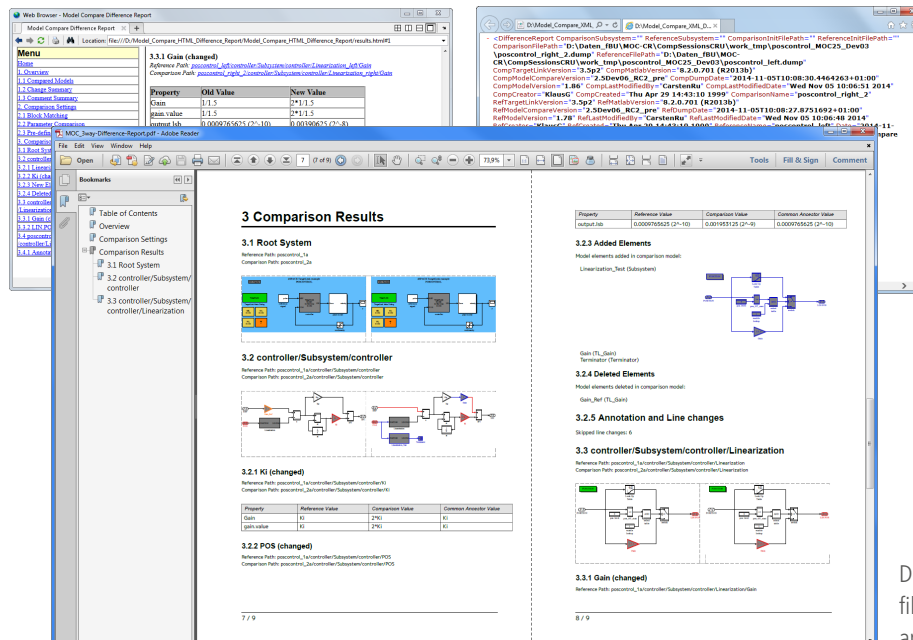
Model Compare Merge Support.

Report Generation

Comparison results and associated comments can be saved as difference reports in HTML, PDF and XML format. The generated reports also include all the comments that were created during a review. Thus, Model Compare´s difference reports are also a means of filing review results.

There are advanced configuration options for customizing the report according to individual preferences. You can specify the subsystem level up to which screenshots are provided and the level of detail of the report.

Difference reports in different file formats for publishing and/or archiving the comparison results.

Review Support

With Model Compare you can associate review comments with the found block and property differences or even with the complete comparison session. Remaining differences can be marked as approved. Time stamps as well as author information are added automatically by the tool. Thus, Model Compare supports even complex reviews with multiple participants.
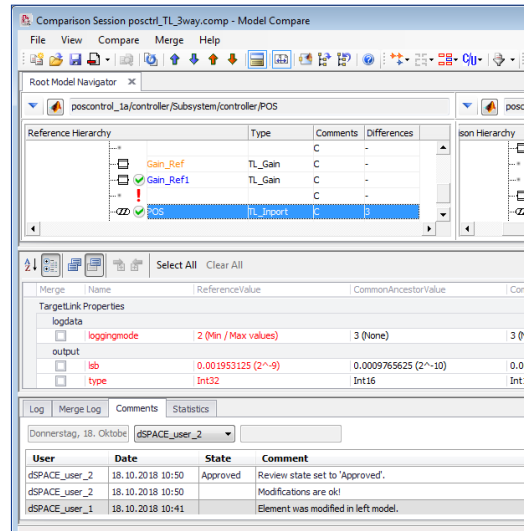

Review comments even from different users are supported.

Advanced Filter Options

To make your work as efficient as possible, Model Compare provides several filter options. Thus, you can focus on the differences and model parts that are relevant to you and your current work: Via display filters you can specify which model elements to show in the hierarchy display. You can use predefined filters to focus on a specific kind of difference or filter out unimportant ones such as layout changes or simulation settings. You can also define your own filters to exclude element properties or even entire model elements from the comparison. To reuse the defined filter settings in other projects, you can save them as favorites or export them as XML files.
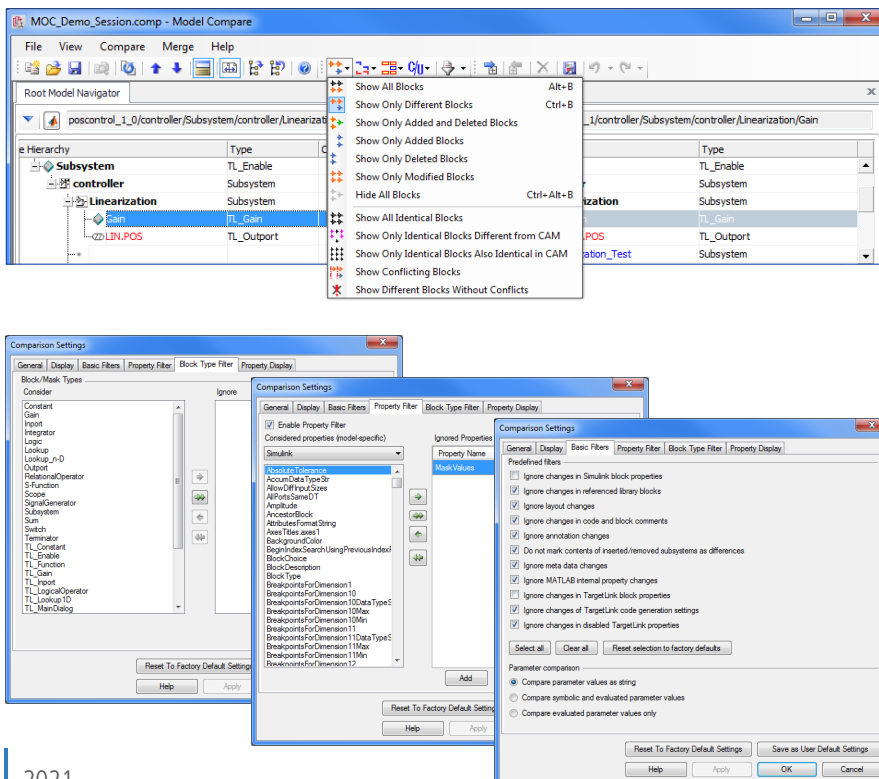

Display filter, block type and property filter as well as predefined basic filters for ensuring efficient model comparisons.

Customizing Block Comparison

In order to make the comparison as efficient as possible also for models from other domains, Model Compare provides an add-on mechanism. This mechanism lets you use hook scripts to integrate block-specific knowledge in the comparison of any number of Simulink-based models. Differences in mask variables or block dialog parameters can therefore be displayed immediately, a method that has already been established for TargetLink models. Thus, Model Compare provides a concise and efficient model comparison also for models from other domains, such as rapid control prototyping (RCP) and hardware-in-the-loop (HIL) simulation.
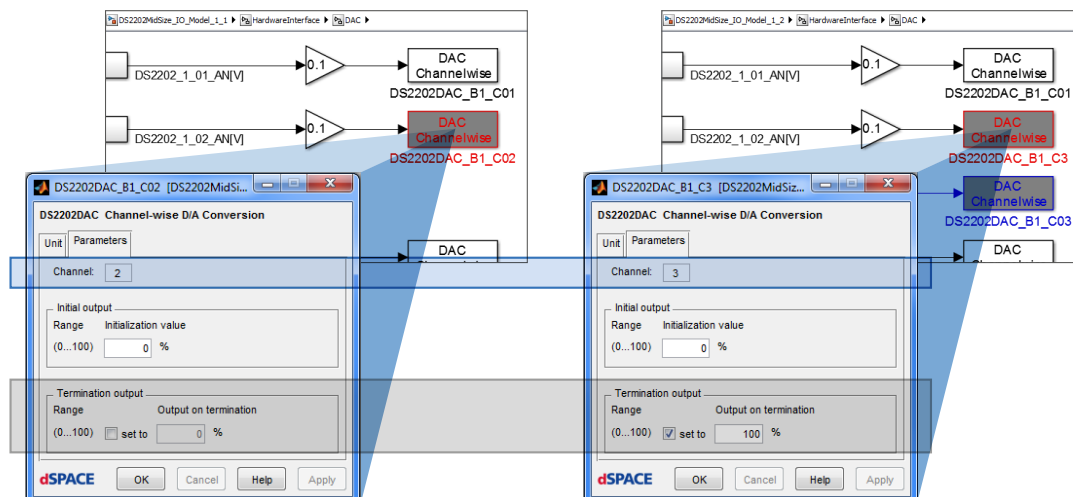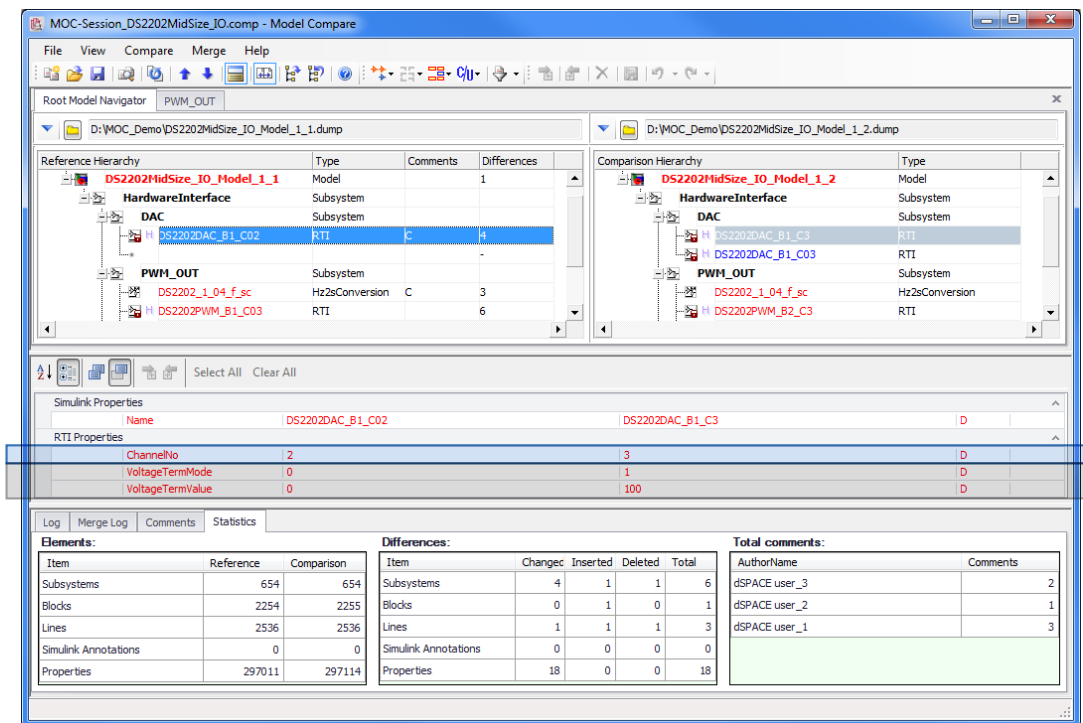
Example of 'customizing block comparison via a hook' for a block from RTI block library: Changes in the block properties Channel No. and Termination output block properties can be easily viewed in the Model Compare GUI.